Optimal Untuk Negeri
optimal

OJCCR

Optimal Journal of Clinical Case Report

Volume 1, No 1, July 2026

E-ISSN 3164-872X

SUSUNAN DEWAN REDAKSI

Editor in Chief

Dr. Raden Siti Maryam, S.Kp., M.Kep., Ns., Sp.Kep.Kom

Associate Editor

Dr. Rima Hayati, M.Si., Apt.

Dr. Surmita, S.Gz., M.Kes., AIFO

Dr. Hermita Bus Umar, SKM., MKM

Dr. Yeni Fitrianingsih, SST., M.Kes.

Dr. Bdn. Marni Br Karo, S.Tr.Keb., SKM., M.Kes

Editorial Board Members :

Dr. Sundari, SST., MPH

Dr. Fatimah Sari, S.Si.T., Bd., M.Kes

Dr. Andi Sitti Rahma, M.Kes

Dr. Yuni Purwati, S.Kep., Ns., M.Kep.

Dr. Tita Rohita, S.Kep., Ners., M.M., M.Kep

Dr. Ns. Wirda Hayati, M.Kep., Sp.Kom

Dr. Fitriani Kahar, S.ST., M.Kes

I Kadek Wartana, MPH

apt. Fitriyanti, M.Farm

apt. Muh. Agus Salim, M.Farm

apt. Miming Andika, M.Farm

apt. Amelia Sari, M.Farm

Penerbit

PT. Optimal Untuk Negeri

Alamat Redaksi

Kencana Tower Lt. Mezzanine, Jl. Raya Meruya Ilir No. 88 RT. 001 RW. 005, Kel. Meruya Utara, Kec. Kembangan, Jakarta Barat, DKI Jakarta - 11620

DAFTAR ISI

SUSUNAN DEWAN REDAKSI ..... **i**
DAFTAR ISI ..... **ii**
CLINICAL PHARMACY EVALUATION OF IRRITANT CONTACT DERMATITIS ASSOCIATED WITH FACIAL WHITENING CREAM USE IN AN AESTHETIC CLINIC: A CASE REPORT **1**
Abstrak 1
INTRODUCTION 1
CASE PRESENTATION 2
DISCUSSION 11
CONCLUSION 14
ACKNOWLEDGEMENTS 15
REFERENCES 16
STAGE 1 ACUTE NECROTIZING ULCERATIVE GINGIVITIS TRIGGERED BY ACADEMIC STRESS AND SLEEP DEPRIVATION: A CASE REPORT **18**
Abstract 18
INTRODUCTION 19
CASE PRESENTATION 20
DISCUSSION 29
CONCLUSION 34
ACKNOWLEDGEMENTS 35
REFERENCES 36
NURSING MANAGEMENT OF INEFFECTIVE AIRWAY CLEARANCE IN A PATIENT WITH BRONCHOPNEUMONIA: A CASE REPORT **38**
Abstract 38
INTRODUCTION 38
CASE PRESENTATION 39
DISCUSSION 40
CONCLUSION 41
REFERENCES 41
MANAGEMENT OF GERIATRIC NURSING IN ELDERLY AT RISK OF FALLS AND DECLINING AUTONOMY: A CASE REPORT **43**
Abstract 43
INTRODUCTION 43
CASE PRESENTATION 44
DISCUSSION 47
CONCLUSION 50
ACKNOWLEDGEMENTS 51
REFERENCES 51
CASE REPORT: COMBINED PURSED-LIP BREATHING AND CHEST CLAPPING FOR INEFFECTIVE AIRWAY CLEARANCE DURING ACUTE ASTHMA EXACERBATION **53**
Abstract 53
INTRODUCTION 53
CASE PRESENTATION 54
DISCUSSION 62
CONCLUSION 64
ACKNOWLEDGEMENTS 65
REFERENCES 66
INTEGRATING CONSERVATION AND CULTURAL CARE THEORIES IN NURSING

MANAGEMENT OF DIABETIC FOOT ULCER: A CASE STUDY 68
Abstract 68
INTRODUCTION 68
CASE PRESENTATION 69
DISCUSSION 72
CONCLUSION 74
ACKNOWLEDGEMENTS 75
REFERENCES 75
TOKEN ECONOMY THERAPY AS AN INNOVATIVE APPROACH TO IMPROVE BATHING SELF-CARE KNOWLEDGE IN PATIENTS WITH SCHIZOPHRENIA: A CASE REPORT 78
Abstract 78
INTRODUCTION 78
CASE PRESENTATION 79
DISCUSSION 85
CONCLUSION 87
ACKNOWLEDGEMENTS 88
REFERENCES 89
ROY ADAPTATION MODEL-GUIDED NURSING MANAGEMENT OF STEMI COMPLICATED BY CARDIOGENIC SHOCK: A CASE REPORT 91
Abstract 91
INTRODUCTION 92
CASE PRESENTATION 93
DISCUSSION 101
CONCLUSION 105
ACKNOWLEDGEMENTS 106
REFERENCES 106
SERIAL GLASGOW COMA SCALE ASSESSMENT DURING THE EMERGENCY MANAGEMENT OF MODERATE TRAUMATIC BRAIN INJURY IN PATIENTS WITH DIFFERENT COMORBIDITY PROFILES: A CASE SERIES 110
Abstract 110
INTRODUCTION 110
CASE PRESENTATION 111
DISCUSSION 119
CONCLUSION 120
ACKNOWLEDGEMENTS 121
REFERENCES 122
IMPROVING TUBERCULOSIS PATIENT COMPLIANCE THROUGH FAMILY NURSING INTERVENTIONS USING THE ABC (ANTECEDENTS–BEHAVIOUR–CONSEQUENCES) APPROACH 123
Abstract 123
INTRODUCTION 124
CASE PRESENTATION 125
DISCUSSION 130
CONCLUSION 133
ACKNOWLEDGEMENTS 134
REFERENCES 136
DIABETIC FOOT EXERCISE FOR BLOOD GLUCOSE INSTABILITY IN TWO OLDER ADULTS WITH TYPE 2 DIABETES MELLITUS: A CLINICAL CASE REPORT 137
Abstract 137
INTRODUCTION 137
CASE PRESENTATION 138
DISCUSSION 141

CONCLUSION 143
ACKNOWLEDGEMENTS 144
REFERENCES 144
CLINICAL CASE REPORT ARTICLE TITLE: IMPLEMENTATION OF OCCUPATIONAL HEALTH NURSES IN NURSING MANAGEMENT AT SITE OH CLINICAL INDONESIAN COMPANY 145
Abstract 145
INTRODUCTION 146
CASE PRESENTATION 147
DISCUSSION 172
CONCLUTION 175
REFERENCES 175
THE EFFECT OF ABDOMINAL STRETCHING EXERCISE ON REDUCING THE INTENSITY OF MENSTRUAL PAIN (DYSMENORRHEA) IN PHYSIOTHERAPY STUDENTS AT THE MAKASSAR MINISTRY OF HEALTH POLYTECHNIC. 182
Abstract 182
INTRODUCTION 182
METHODS 184
RESULTS 184
DISCUSSION 186
CONCLUSION 187
ACKNOWLEDGMENTS 187
REFERENCES 187
ENHANCING FAMILY AUTONOMY IN MANAGING RISING BLOOD PRESSURE AMONG FAMILY MEMBERS THROUGH THE IMPLEMENTATION OF BRISK WALKING EXERCISE 189
Abstract 189
INTRODUCTION 189
CASE PRESENTATION 191
DISCUSSION 196
CONCLUSION 198
ACKNOWLEDGMENTS 199
REFERENCES 199

Optimal Journal Clinical Case Report, Volume 01, No.01,July 2026, (Page. 01-17)
ISSN 3164-872X

CLINICAL PHARMACY EVALUATION OF IRRITANT CONTACT DERMATITIS ASSOCIATED WITH FACIAL WHITENING CREAM USE IN AN AESTHETIC CLINIC: A CASE REPORT

Rahmadani[a *], Kiki Rawitri [b], Yayuk Putri Rahayu [c], Silvi Rinda Sari[d],Sri Wahyuni[e]

[a,b,c,d,e]Universitas Muslim Nusantara Al-Washliyah, Jl. Garu II A No.93, Harjosari I, Kec. Medan Amplas, Kota Medan, Sumatera Utara 20147

**Corresponding author: rahmadst121@gmail.com*

Abstrak

Background: Facial whitening creams containing active ingredients such as tretinoin, hydroquinone, and topical corticosteroids are commonly prescribed in aesthetic clinics for the management of hyperpigmentation and skin rejuvenation. Although generally effective, inappropriate use or individual intolerance may lead to adverse cutaneous reactions, including irritant contact dermatitis. Reporting such cases is important to highlight the role of clinical pharmacy services in identifying, assessing, and managing cosmetic-related adverse reactions. **Case Summary:** A 28-year-old female presented to an aesthetic clinic with facial erythema, burning sensation, skin dryness, and desquamation after two weeks of regular use of a prescribed facial whitening cream. She had no previous history of dermatological disorders, allergies, or chronic illnesses. Her symptoms progressively worsened despite continued application. Clinical examination revealed diffuse facial erythema and mild scaling without signs of infection or systemic involvement. **Investigation and Diagnosis:** A comprehensive medication and cosmetic-use history was obtained by the clinical pharmacist. Differential diagnoses included allergic contact dermatitis, rosacea, and irritant contact dermatitis. Based on the temporal relationship between symptom onset and product use, characteristic clinical manifestations, and symptom improvement after product discontinuation, the condition was diagnosed as irritant contact dermatitis associated with facial whitening cream use. Causality assessment using the Naranjo Adverse Drug Reaction Probability Scale yielded a score of 6, indicating a probable association. **Management:** The whitening cream was temporarily discontinued. Supportive management included a ceramide-based moisturizer and broad-spectrum sunscreen with SPF 50+. The patient received pharmacist-led counseling regarding skin-barrier protection, gradual reintroduction of active topical agents, and recognition of potential adverse reactions. Follow-up monitoring was conducted to assess treatment response. **Outcome:** Clinical improvement was observed within seven days, with reduced erythema and burning sensation. At the two-week follow-up, the irritation had substantially resolved, no further complications were reported, and the patient resumed a modified skincare regimen under professional supervision. **Conclusion:** This case emphasizes the importance of clinical pharmacy involvement in cosmetovigilance and the management of cosmetic-related adverse skin reactions. Early identification, causality assessment, patient education, and appropriate therapeutic interventions can improve patient safety and treatment outcomes in aesthetic practice.

Keywords: case report; clinical reasoning; diagnosis; management; outcome.

INTRODUCTION

Facial whitening creams are widely used in aesthetic practice for the treatment of hyperpigmentation disorders, melasma, post-inflammatory hyperpigmentation, and skin photoaging. These formulations frequently contain active ingredients such as hydroquinone, tretinoin, corticosteroids, alpha-hydroxy acids, and other depigmenting agents that improve skin appearance through modulation of melanogenesis and enhancement of epidermal turnover. Despite their clinical benefits, these products may cause adverse cutaneous reactions ranging from mild irritation to severe dermatitis, particularly when used inappropriately or in susceptible individuals. The increasing demand for cosmetic

and aesthetic treatments has consequently raised concerns regarding the safety of whitening products and the need for effective cosmetovigilance systems in clinical practice (Lucca et al., 2020; Paikray et al., 2024).

Adverse reactions associated with cosmetic products represent an important public health issue. Previous studies have shown that the skin is the most commonly affected organ in cosmetic-related adverse events, with erythema, itching, burning sensation, scaling, and dermatitis being among the most frequently reported manifestations. Irritant contact dermatitis (ICD) is one of the most common non-immunologic inflammatory skin reactions resulting from direct damage to the skin barrier by chemical agents. In aesthetic clinics, topical agents such as tretinoin and hydroquinone are recognized causes of irritation, especially during the initial phase of treatment or when prescribed at higher concentrations (Ferner, 2015; Del Pozzo-Magaña, 2024).

Among cosmetic-related adverse skin reactions, irritant contact dermatitis (ICD) and allergic contact dermatitis (ACD) are the two most common differential diagnoses. Although both conditions may present with facial erythema and scaling, their underlying mechanisms differ. ICD is a non-immunologic inflammatory reaction caused by direct damage to the skin barrier following exposure to chemical or physical irritants, whereas ACD is a delayed type IV hypersensitivity reaction that requires prior sensitization to an allergen. Clinically, ICD is more frequently characterized by burning, stinging, dryness, and symptoms confined to the site of exposure, while ACD commonly presents with intense pruritus, papules, vesicles, edema, and may extend beyond the area of direct contact. Recognizing these distinctions is essential for accurate diagnosis and appropriate management of cosmetic-related adverse reactions (Johansen et al., 2022; Fonacier et al., 2015). In the present case, these distinguishing clinical features guided the differential diagnosis and ultimately supported the diagnosis of irritant contact dermatitis.

From a clinical pharmacy perspective, distinguishing ICD from ACD at an early stage is essential because the management strategies, patient counseling, and follow-up recommendations may differ according to the underlying mechanism of the adverse reaction. Pharmacists play an important role in obtaining a comprehensive medication and cosmetic use history, assessing causality, identifying drug-related problems, and educating patients on the safe use of cosmetic products. The application of pharmacovigilance principles to cosmetic products, commonly referred to as cosmetovigilance, has therefore become increasingly important in improving patient safety in aesthetic practice (Raschi et al., 2021; Patel et al., 2021).

Although irritant contact dermatitis associated with facial whitening agents has been documented in dermatological literature, there is still a paucity of case reports focusing on the contribution of clinical pharmacy services in assessing causality, identifying drug-related problems, and providing evidence-based interventions in aesthetic practice. Most available publications emphasize dermatological diagnosis and treatment while providing limited discussion regarding clinical pharmacy involvement and patient education strategies. This represents an important knowledge gap considering the expanding role of pharmacists in multidisciplinary aesthetic healthcare services (Paikray et al., 2024; Lucca et al., 2020).

The novelty of this case lies in the integration of clinical pharmacy evaluation, adverse reaction causality assessment, and pharmacist-led patient counseling in the management of irritant contact dermatitis associated with facial whitening cream use in an aesthetic clinic. This report provides educational value by illustrating the practical application of clinical reasoning and cosmetovigilance principles in routine aesthetic care, highlighting the importance of interdisciplinary collaboration to optimize patient outcomes and medication safety.

Therefore, this case report aims to describe the clinical pharmacy evaluation, diagnosis, management, and outcome of irritant contact dermatitis associated with facial whitening cream use in an aesthetic clinic, while emphasizing the role of pharmacists in the identification and management of cosmetic-related adverse reactions.

CASE PRESENTATION

Case A 28 year-old women presented to an aesthetic clinic with complaints of facial redness, burning sensation, skin dryness, and peeling that had progressively worsened over the previous two weeks. The patient sought treatment

because the symtoms interfered with daily activities and caused cosmetic discomfort. Irritant skin reactions are among the most frequently reported adverse effects associated with topical depigmenting and keratolytic used in aesthetic dermatology (Ferneer,2015)

The patient reported that the symptoms started approximately five days after initiating a prescribed facial whitening cream regimen. Initially, mild erythema and skin tightness were noted, which gradually progressed to diffuse facial redness, scaling, and a persistent burning sensation. No fever, respiratory symptoms, mucosal involvement, or systemic manifestations were reported. The chronological relationship between topical product exposure and symptom onset suggested a possible cosmetic-related adverse reaction, which is commonly observed in cosmetovigilance reports (Lucca et al., 2020).

The whitening cream had been prescribed as part of a treatment program for post-inflammatory facial hyperpigmentation. According to the prescription record, the formulation contained tretinoin 0.05%, hydroquinone 4%, and dexamethasone 0.025%, applied once daily at night. The patient also confirmed that she had received counseling regarding the correct method of application at the time of prescription and stated that she followed these instructions throughout the treatment period. The patient denied using additional over-the-counter cosmetic products, herbal preparations, or topical medications during the treatment period. Both tretinoin and hydroquinone are recognized causes of skin irritation, particularly during the early stages of treatment (Del Pozzo-Magaña, 2024).

The patient had no previous history of atopic dermatitis, psoriasis, rosacea, allergic contact dermatitis, or other chronic dermatological conditions. Past medical history was unremarkable, and there was no history of chronic systemic disease such as diabetes mellitus, autoimmune disorders, or immunodeficiency. No known drug allergies or cosmetic allergies had been documented before this episode. Previous studies have shown that adverse cosmetic reactions may also occur in individuals without prior dermatological disease or allergy history (Paikray et al., 2024).

Medication history revealed no concurrent use of systemic medications, including antibiotics, corticosteroids, isotretinoin, antihistamines, or immunosuppressive agents. The patient had never undergone chemical peeling, laser procedures, or other invasive aesthetic treatments before the onset of symptoms. Family history was negative for chronic inflammatory skin disorders and hypersensitivity reactions.

The patient worked in an office environment and reported frequent exposure to sunlight during daily commuting. She denied smoking, alcohol consumption, and recreational drug use. No occupational exposure to known skin irritants or sensitizers was identified. Environmental and lifestyle factors may contribute to skin barrier disruption and increase susceptibility to irritant reactions during topical dermatologic therapy (Patel et al., 2021).

Physical examination demonstrated diffuse erythema involving both cheeks, forehead, and chin, accompanied by mild desquamation and skin dryness. No vesicles, pustules, ulceration, edema, or secondary bacterial infection were observed. Examination of other body areas was unremarkable. These findings were consistent with the clinical manifestations commonly reported in irritant contact dermatitis induced by topical cosmetic agents (Johansen et al., 2022).

Vital signs were within normal limits, including blood pressure of 118/76 mmHg, heart rate of 78 beats/minute, respiratory rate of 18 breaths/minute, body temperature of 36.7°C, and oxygen saturation of 99% on room air. The patient appeared generally well and showed no signs of systemic toxicity.

Initial diagnostic evaluation was based on clinical assessment and comprehensive medication history review. The temporal association between symptom onset and initiation of the whitening cream, together with the absence of systemic manifestations, suggested a topical treatment-related adverse reaction. Differential diagnoses at presentation included irritant contact dermatitis, allergic contact dermatitis, rosacea flare, and seborrheic dermatitis. Further diagnostic reasoning and causality assessment were performed to establish the final diagnosis.

CLINICAL REASONING

The diagnostic evaluation in this case was primarily based on the temporal relationship between the initiation of the facial whitening cream and the onset of cutaneous symptoms, combined with the patient's clinical presentation and medication history. The patient developed facial erythema, burning sensation, dryness, and desquamation within two weeks of using a topical formulation containing tretinoin, hydroquinone, and dexamethasone. These manifestations are consistent with adverse cutaneous reactions commonly associated with topical depigmenting and keratolytic agents used in aesthetic dermatology (Del Pozzo-Magaña, 2024; Ferner, 2015).

The combination of tretinoin, hydroquinone, and dexamethasone may further increase the risk of irritant contact dermatitis because each component affects the skin barrier through different mechanisms. Tretinoin accelerates epidermal cell turnover and reduces cohesion of corneocytes, resulting in transient impairment of the stratum corneum and increased transepidermal water loss, thereby making the skin more susceptible to irritation. Hydroquinone inhibits melanogenesis but may also exert direct cytotoxic effects on keratinocytes and melanocytes, particularly at higher concentrations or during prolonged use, further compromising barrier integrity. Although dexamethasone suppresses cutaneous inflammation and may initially reduce visible erythema, prolonged use of topical corticosteroids can induce epidermal atrophy, reduce lipid synthesis, and impair barrier repair. Consequently, the combined formulation may produce additive or synergistic effects on skin barrier disruption, increasing the likelihood of irritant reactions despite appropriate use under medical supervision ; Del Pozzo-Magaña & Lazo-Langner, 2024; Bhatia et al., 2023).

The first differential diagnosis considered was irritant contact dermatitis (ICD). ICD is a non-immunologic inflammatory skin condition resulting from direct damage to the epidermal barrier by chemical or physical irritants. Clinical manifestations typically include erythema, burning, stinging, dryness, scaling, and skin tightness localized to the area of exposure. The patient’s symptoms appeared shortly after initiation of treatment, were confined to the application site, and occurred in the absence of systemic manifestations, supporting the diagnosis of irritant contact dermatitis. Furthermore, tretinoin and hydroquinone are well-recognized irritants that may induce dose-dependent skin barrier disruption, particularly during the early treatment period (Johansen et al., 2022; Del Pozzo-Magaña, 2024).

Allergic contact dermatitis (ACD) was also considered as a differential diagnosis because cosmetic ingredients are common causes of delayed hypersensitivity reactions. However, several clinical features made ACD less likely. Allergic contact dermatitis often presents with intense pruritus, papules, vesicles, edema, or oozing lesions and may spread beyond the area of direct exposure. In contrast, the patient predominantly reported burning sensation and dryness rather than severe itching, and no vesiculation, edema, or dissemination of lesions was observed. Additionally, there was no prior history of allergy to cosmetic products or topical medications, although sensitization can occur in previously healthy individuals (Thyssen et al., 2007; Johansen et al., 2022).

Another differential diagnosis was rosacea, particularly erythematotelangiectatic rosacea, which may present with persistent facial redness and burning sensations. However, the patient had no previous history of recurrent facial flushing, telangiectasia, papules, pustules, or known rosacea triggers such as spicy foods, alcohol, or emotional stress. Moreover, the close temporal association with the initiation of topical therapy and the improvement following product discontinuation favored a treatment-related adverse reaction rather than a chronic inflammatory dermatosis (Patel et al., 2021).

Seborrheic dermatitis was also considered because facial scaling and erythema can occur in seborrheic areas. Nevertheless, the distribution of lesions in this case did not predominantly involve classic seborrheic regions such as the nasolabial folds, eyebrows, scalp, or retroauricular areas. Furthermore, the acute onset following exposure to a potentially irritating topical formulation was inconsistent with the usual chronic and relapsing course of seborrheic dermatitis (Borda & Wikramanayake, 2015).

The final diagnosis of irritant contact dermatitis associated with facial whitening cream use was established based on the cumulative clinical evidence. Key supporting findings included: (1) a clear temporal relationship between product initiation and symptom onset; (2) characteristic symptoms of erythema, burning sensation, dryness, and desquamation; (3) localization of lesions to the treatment area; (4) absence of features suggestive of allergic or infectious skin disease; and (5) significant clinical improvement following discontinuation of the whitening cream and implementation of supportive skin care measures. These findings align with established diagnostic criteria and clinical characteristics of irritant contact dermatitis reported in dermatological literature (Johansen et al., 2022; Ferner, 2015).

To further strengthen diagnostic confidence, causality assessment was performed using the Naranjo Adverse Drug Reaction Probability Scale, which yielded a score consistent with a probable adverse reaction. The temporal sequence of exposure, positive dechallenge response, lack of alternative explanations, and objective clinical findings supported a probable association between the whitening cream and the observed dermatologic reaction. Although rechallenge was not ethically performed due to the risk of symptom recurrence, the available evidence was considered sufficient to support the final diagnosis (Naranjo et al., 1981; Raschi et al., 2021).

Overall, the diagnostic process integrated patient history, clinical examination, differential diagnosis assessment, causality evaluation, and therapeutic response. This systematic clinical reasoning pathway enabled the identification of irritant contact dermatitis as the most plausible diagnosis and guided appropriate management to prevent further skin barrier damage and optimize patient outcomes.

DIAGNOSTIC ASSESSMENT

A comprehensive diagnostic assessment was performed to evaluate the patient's facial erythema, burning sensation, skin dryness, and desquamation following the use of a prescribed facial whitening cream. The diagnostic work-up included detailed history taking, physical examination, medication review, assessment of cosmetic exposure, and causality evaluation. No evidence of systemic involvement was identified during clinical evaluation (Johansen et al., 2022).

Routine laboratory investigations were not considered necessary because the patient exhibited localized cutaneous manifestations without signs of infection, systemic hypersensitivity, or underlying systemic disease. Current dermatological guidelines indicate that irritant contact dermatitis is primarily a clinical diagnosis based on patient history and physical examination findings (Fonacier et al., 2015).

Patch testing was not performed because the clinical presentation was highly suggestive of irritant contact dermatitis rather than allergic contact dermatitis. The patient demonstrated a clear temporal relationship between initiation of the whitening cream and symptom onset, symptoms were predominantly characterized by burning sensation, dryness, and localized erythema without vesiculation or intense pruritus, and significant clinical improvement was observed after discontinuation of the suspected product (positive dechallenge). Therefore, additional patch testing was considered unnecessary for routine clinical management, as the diagnosis could be established based on clinical history, physical examination, and therapeutic response in accordance with current contact dermatitis guidelines (Johansen et al., 2022).

No radiological imaging studies, ultrasound examinations, computed tomography (CT), or magnetic resonance imaging (MRI) were performed because there was no clinical indication for further structural assessment. The patient's presentation was limited to superficial skin involvement and lacked features suggestive of deep tissue pathology or systemic disease (Del Pozzo-Magaña, 2024).

To support diagnostic decision-making, a structured adverse reaction assessment was conducted using the Naranjo Adverse Drug Reaction Probability Scale. The causality assessment demonstrated a probable relationship between the whitening cream and the observed dermatological reaction. The diagnosis further supported by clinical improvement following discontinuation of the suspected product (Naranjo et al., 1981).

Table 1. Summary of Diagnostic Findings

Assessment Category	Findings
Chief complaint	Facial redness, burning sensation, dryness, and peeling
Duration of symptoms	2 weeks after initiation of whitening cream
Product exposure	Whitening cream containing tretinoin 0.05%, hydroquinone 4%, dexamethasone 0.025%
Physical examination	Diffuse facial erythema, mild desquamation, dry skin
Vesicles/Pustules	Not observed
Edema	Not observed
Secondary infection	Not observed
Systemic manifestations	None
Vital signs	Within normal limits
Laboratory tests	Not indicated
Imaging studies	Not indicated
Differential diagnoses	Irritant contact dermatitis, allergic contact dermatitis, rosacea, seborrheic dermatitis
Final diagnosis	Irritant contact dermatitis associated with facial whitening cream use

Table 2. Vital Signs and Clinical Examination

Parameter	Result	Reference Range
Blood pressure	118/76 mmHg	Normal
Heart rate	78 beats/min	60–100 beats/min
Respiratory rate	18 breaths/min	12–20 breaths/min
Body temperature	36.7°C	36.1–37.2°C
Oxygen saturation	99%	≥95%

Table 3. Naranjo Adverse Drug Reaction Probability Scale

Question	Score
Previous conclusive reports on this reaction	+1
Event occurred after drug administration	+2
Improvement after discontinuation (dechallenge)	+1
Alternative causes excluded	+2
Objective evidence present	+0
Total Score	6

Interpretation: Probable adverse drug reaction (score 5–8) (Naranjo et al., 1981).

The overall diagnostic assessment supported the diagnosis of irritant contact dermatitis associated with facial whitening cream use, based on the temporal relationship between exposure and symptom onset, characteristic clinical manifestations, exclusion of alternative diagnoses, and positive response following product discontinuation.

THERAPEAUTIC INTERVENTION

Following the diagnosis of irritant contact dermatitis associated with facial whitening cream use, the primary therapeutic intervention was the immediate discontinuation of the suspected causative product containing tretinoin

0.05%, hydroquinone 4%, and dexamethasone 0.025%. Withdrawal of the offending agent is considered the cornerstone of management for irritant contact dermatitis because continued exposure may further impair the epidermal barrier, prolong inflammation, and delay recovery. Early identification and elimination of the causative irritant are essential to prevent progression of symptoms and improve patient outcomes (Johansen et al., 2022; Fonacier et al., 2015).

Although the whitening cream contained dexamethasone 0.025%, the presence of a topical corticosteroid did not completely prevent the development of irritant contact dermatitis. Dexamethasone primarily suppresses inflammatory responses after skin irritation has occurred but does not eliminate the direct cytotoxic and barrier-disrupting effects of irritant agents such as tretinoin and hydroquinone. Tretinoin accelerates epidermal turnover and transiently impairs the stratum corneum, whereas hydroquinone may induce direct irritation through its effects on epidermal cells. Consequently, the anti-inflammatory activity of dexamethasone may reduce the visible severity of inflammation but is insufficient to fully counteract the cumulative barrier damage caused by these active ingredients. Furthermore, prolonged use of topical corticosteroids may itself impair epidermal barrier integrity by reducing keratinocyte proliferation, lipid synthesis, and skin repair, potentially increasing susceptibility to irritant reactions (Del Pozzo-Magaña & Lazo-Langner, 2024).

Supportive skin barrier restoration therapy was initiated using a ceramide-based moisturizer, applied twice daily to affected areas for 14 days. Moisturizers play a critical role in restoring skin barrier integrity, reducing transepidermal water loss, alleviating dryness, and promoting epidermal healing. Ceramide-containing formulations are particularly beneficial because they replenish essential lipids within the stratum corneum and improve skin hydration in patients with irritant dermatitis (Loden, 2012; Proksch et al., 2008).

In addition, the patient was prescribed a broad-spectrum sunscreen (SPF 50+, PA+++) for daily morning use with reapplication every 2–3 hours during outdoor activities. Sunscreen was recommended to minimize ultraviolet-induced skin irritation and prevent post-inflammatory hyperpigmentation, which may occur following inflammatory skin reactions. Photoprotection is considered an essential component of treatment in patients undergoing recovery from cosmetic-related skin irritation (Draelos, 2018).

No systemic corticosteroids, oral antihistamines, or topical antibiotics were prescribed because the patient exhibited mild-to-moderate localized symptoms without severe inflammation, pruritus, secondary infection, or systemic involvement. Avoiding unnecessary pharmacological treatment aligns with patient safety principles and reduces the risk of medication-related adverse effects. Current dermatological recommendations support conservative management for uncomplicated irritant contact dermatitis when symptoms are mild and localized (Fonacier et al., 2015; Johansen et al., 2022).

A pharmacist-led counseling intervention was provided to improve treatment adherence and prevent recurrence. Patient education focused on proper skin care practices, avoidance of potential irritants, appropriate sunscreen application, recognition of early signs of adverse reactions, and the importance of reporting new symptoms promptly. The patient was also advised to avoid exfoliating products, alcohol-based toners, and other potentially irritating cosmetic products during the recovery period. Pharmacist involvement in patient education has been shown to improve medication safety and therapeutic outcomes in dermatological and cosmetic care settings (Raschi et al., 2021; Patel et al., 2021).

Clinical monitoring was conducted through follow-up visits at Day 7 and Day 14 after intervention. During each assessment, the severity of erythema, burning sensation, skin dryness, and desquamation was evaluated through clinical examination and patient-reported symptoms. Monitoring demonstrated progressive improvement without the emergence of new adverse events. The absence of worsening symptoms or secondary complications confirmed the appropriateness of the selected management strategy (Ferner, 2015).

After complete symptom resolution, a gradual reintroduction strategy for aesthetic treatment was planned. The patient was advised that any future use of active depigmenting agents should begin with lower concentrations and reduced application frequency (two to three times weekly) under professional supervision. This approach was chosen to minimize the risk of recurrent skin irritation while maintaining therapeutic benefits for hyperpigmentation management. Gradual dose escalation is commonly recommended for topical retinoids and other potentially irritating dermatologic agents to improve tolerability and adherence (Draelos, 2018; Del Pozzo-Magaña, 2024).

Table 4. Summary of Therapeutic Interventions

Intervention	Dosage/Administration	Duration	Clinical Rationale
Discontinuation of whitening cream	Immediate cessation	Until symptom resolution	Eliminate causative irritant
Ceramide-based moisturizer	Apply twice daily	14 days	Restore skin barrier function
Broad-spectrum sunscreen SPF 50+	Apply every morning; reapply every 2–3 hours outdoors	Ongoing	Prevent UV-induced irritation and post-inflammatory hyperpigmentation
Pharmacist counseling	One-on-one education session	Throughout treatment	Improve adherence and prevent recurrence
Clinical monitoring	Follow-up on Day 7 and Day 14	2 weeks	Assess treatment response and safety
Gradual reintroduction of active agents	2–3 times weekly if clinically indicated	After recovery	Improve tolerability and reduce recurrence risk

The selected therapeutic strategy prioritized patient safety, elimination of the suspected irritant, restoration of skin barrier function, and prevention of future adverse reactions. The multidisciplinary approach involving pharmacist-led monitoring and counseling contributed to effective symptom management and favorable clinical outcomes.

THERAPEUTIC SEQUENCE

The therapeutic management in this case followed a stepwise clinical approach based on the severity of symptoms, suspected etiology, and patient safety considerations. The sequence of interventions was guided by the initial clinical assessment suggesting irritant contact dermatitis associated with the use of a facial whitening cream containing tretinoin and hydroquinone.

At the initial presentation (Day 0), the first and most critical intervention was the immediate discontinuation of the facial whitening cream. This decision was made to eliminate ongoing exposure to the suspected irritant, as continued application of topical depigmenting agents is known to exacerbate epidermal barrier disruption and prolong inflammatory responses. Early withdrawal of the offending agent is considered the primary and most effective step in the management of irritant contact dermatitis (Johansen et al., 2022; Fonacier et al., 2015).

On Day 1 to Day 3, the patient was observed for symptom progression without the introduction of systemic pharmacotherapy. During this period, no worsening of erythema, edema, or development of new lesions was noted. The decision to withhold corticosteroids or antihistamines was based on the absence of severe inflammation, pruritus,

or systemic involvement, thereby minimizing unnecessary pharmacological exposure and potential adverse drug effects (Ferner, 2015).

By Day 4, the patient reported a reduction in burning sensation and slight improvement in skin tightness. Clinical evaluation confirmed a gradual decrease in erythema intensity. At this stage, treatment was maintained without modification, reinforcing the principle of conservative management when clinical improvement is evident under supportive therapy alone.

At Day 7, a significant clinical improvement was observed, characterized by reduced facial erythema and resolution of burning sensation. Mild residual dryness and desquamation persisted. Based on this improvement, continued use of moisturizer and initiation of strict photoprotection with broad-spectrum sunscreen (SPF 50+) were reinforced to prevent post-inflammatory hyperpigmentation and support ongoing skin recovery (Draelos, 2018).

At Day 10, the patient showed near-complete resolution of inflammatory symptoms. No new adverse reactions were reported. At this point, patient counseling was intensified, focusing on avoidance of irritant cosmetic products and education regarding safe reintroduction of topical agents if clinically indicated. No escalation or de-escalation of therapy was required.

By Day 14, complete resolution of symptoms was achieved. The skin appeared clinically normal with no erythema or scaling. Given the favorable outcome, a preventive strategy was implemented, recommending gradual reintroduction of active dermatologic agents (if required in the future) at lower frequency (2–3 times per week) under professional supervision. This adjustment was made to reduce the risk of recurrence while maintaining therapeutic benefit for hyperpigmentation management (Del Pozzo-Magaña, 2024).

Throughout the entire treatment period, no changes to the core management strategy were required, as the patient demonstrated progressive improvement with conservative therapy alone. The chronological therapeutic sequence highlights the importance of early identification, prompt withdrawal of the offending agent, and stepwise supportive care in achieving optimal outcomes in irritant contact dermatitis associated with cosmetic products.

CASE TIMELINE

Below is the chronological sequence of clinical events for the reported case of irritant contact dermatitis associated with facial whitening cream use in an aesthetic clinic.

Table 5 Clinical case timeline

Time Point	Clinical Event	Details
Day -14	Initiation of treatment	Patient started using prescribed facial whitening cream containing tretinoin 0.05%, hydroquinone 4%, and dexamethasone 0.025% once nightly
Day -10	Early symptom onset	Mild facial tightness and slight erythema began to appear
Day -7	Symptom progression	Increasing facial redness and dryness noted; no systemic symptoms
Day -5	Worsening condition	Burning sensation and skin peeling developed; symptoms confined to application area
Day 0 (Clinic visit)	Clinical evaluation	Patient presented to aesthetic clinic with facial erythema, burning sensation, dryness, and desquamation; suspected irritant contact dermatitis
Day 0	Therapeutic intervention initiated	Immediate discontinuation of whitening cream; initiation of ceramide-based moisturizer twice daily; patient education provided
Day 1–3	Early follow-up phase	No new lesions; gradual reduction in burning sensation; erythema persists but stable

Day 4–6	Clinical improvement	Noticeable reduction in erythema and discomfort; no progression of symptoms
Day 7	Follow-up assessment	Significant improvement in skin condition; mild residual dryness; sunscreen SPF 50+ reinforced
Day 10	Recovery phase	Near-complete resolution of erythema; no new adverse reactions
Day 14	Outcome evaluation	Complete resolution of symptoms; skin returned to baseline condition; counseling on prevention and safe reintroduction of topical agents

This timeline demonstrates a clear temporal relationship between exposure to the whitening cream and onset of symptoms, as well as a positive dechallenge response following discontinuation of the product. The chronological pattern strongly supports the diagnosis of irritant contact dermatitis related to cosmetic use.

OUTCOME AND FOLLOW-UP OUTCOME

The patient showed progressive clinical improvement following discontinuation of the facial whitening cream and initiation of supportive therapy. Within the first week of intervention, a marked reduction in burning sensation and facial erythema was observed, indicating early recovery of the impaired skin barrier. Mild residual dryness and desquamation persisted but did not worsen, suggesting a favorable response to conservative management without the need for additional pharmacological escalation (Fonacier et al., 2015; Johansen et al., 2022).

At the two-week follow-up, the patient achieved complete resolution of cutaneous symptoms. Physical examination demonstrated restoration of normal skin appearance with no erythema, scaling, edema, or secondary infection. No systemic complications or delayed hypersensitivity reactions were reported. The absence of recurrence during this period further supported the diagnosis of irritant contact dermatitis related to topical cosmetic exposure (Del Pozzo-Magaña, 2024).

Throughout the observation period, no adverse effects were associated with the therapeutic interventions, including ceramide-based moisturizer and broad-spectrum sunscreen. The patient tolerated all recommended treatments well and demonstrated good adherence to prescribed skincare modifications. Pharmacist-led counseling contributed to improved patient understanding of irritant avoidance and appropriate cosmetic use, which likely supported adherence and recovery (Raschi et al., 2021; Patel et al., 2021).

No short-term complications such as post-inflammatory hyperpigmentation, secondary infection, or persistent erythema were observed. However, the patient was identified as being at potential risk for recurrence if re-exposed to high-strength topical depigmenting agents without proper titration and supervision. Therefore, preventive counseling was emphasized as part of long-term management strategy.

For long-term follow-up, the patient was advised to undergo periodic reassessment if resuming aesthetic treatments involving active topical agents. A gradual reintroduction protocol with lower concentrations and reduced frequency was recommended to minimize the risk of recurrent irritant reactions. Education regarding early recognition of adverse cutaneous symptoms was reinforced to ensure prompt discontinuation of offending products if symptoms recur (Draelos, 2018; Del Pozzo-Magaña, 2024).

Overall, the clinical outcome was favorable, with complete resolution of symptoms and no complications. The case demonstrates that early identification, prompt discontinuation of the causative agent, and supportive dermatological care lead to excellent recovery in irritant contact dermatitis associated with cosmetic use. Furthermore, it highlights the importance of clinical pharmacy involvement in improving patient safety and preventing recurrence through structured counseling and monitoring.

DISCUSSION

This case describes irritant contact dermatitis associated with the use of a facial whitening cream containing tretinoin, hydroquinone, and dexamethasone in an aesthetic clinic setting, with a clear temporal relationship between exposure and symptom onset, followed by complete resolution after discontinuation of the product and supportive therapy. The clinical presentation—erythema, burning sensation, dryness, and desquamation localized to the application site—is consistent with irritant-induced epidermal barrier disruption, which is a well-recognized adverse effect of topical depigmenting agents used in cosmetic dermatology (Ferner, 2015; Del Pozzo-Magaña, 2024).

The findings in this case are consistent with existing literature reporting that topical retinoids such as tretinoin commonly induce irritant dermatitis, particularly during the initial weeks of therapy due to increased epidermal turnover and barrier sensitivity. Hydroquinone, although effective for hyperpigmentation, is also associated with dose-dependent irritation and may exacerbate inflammatory skin responses when used in combination with other active agents. The combination of multiple active compounds in a single formulation may increase cumulative irritant potential, as observed in cosmetic and cosmeceutical products used in aesthetic practice (Draelos, 2018; Lucca et al., 2020).

The clinical findings in this case are consistent with previously reported cases of cosmetic-related irritant contact dermatitis associated with topical depigmenting agents. Del Pozzo-Magaña and Lazo-Langner (2024) described that topical retinoids and hydroquinone are among the most frequent causes of localized erythema, burning sensation, scaling, and skin barrier disruption during the early phase of treatment. Similarly, Lucca et al. (2020) reported that erythema, burning sensation, and desquamation were the most commonly documented adverse reactions in cosmetovigilance reports involving facial cosmetic products. However, unlike most published reports, which primarily emphasize dermatological diagnosis and treatment, the present case highlights a structured clinical pharmacy approach, including comprehensive medication review, causality assessment using the Naranjo Adverse Drug Reaction Probability Scale, pharmacist-led patient counseling, and follow-up monitoring. This multidisciplinary approach provides additional practical value for improving patient safety in aesthetic practice.

Differential diagnosis in this case included allergic contact dermatitis, rosacea, and seborrheic dermatitis. However, the absence of vesiculation, intense pruritus, and lesion spread beyond the application site made allergic contact dermatitis less likely. Similarly, the acute onset linked to product exposure and subsequent resolution after withdrawal helped exclude chronic inflammatory conditions such as rosacea and seborrheic dermatitis. These diagnostic considerations align with established dermatological guidelines emphasizing clinical pattern recognition and exposure history as key determinants in contact dermatitis evaluation (Johansen et al., 2022).

A notable aspect of this case is the application of structured clinical pharmacy involvement in the assessment and management of a cosmetic-related adverse reaction. Pharmacist-led evaluation facilitated early identification of the suspected causative agent, systematic causality assessment using the Naranjo scale, and implementation of evidence-based supportive therapy. This aligns with emerging literature highlighting the expanding role of pharmacists in dermatology and cosmetovigilance, particularly in improving medication safety and reducing preventable adverse drug reactions (Patel et al., 2021; Raschi et al., 2021).

From a clinical perspective, this case underscores the importance of recognizing irritant contact dermatitis as a frequent but often underreported complication of aesthetic treatments. In real-world practice, patients may continue using irritant products despite early symptoms due to lack of awareness or inadequate counseling. Early intervention, including prompt discontinuation of the offending agent and barrier repair therapy, was critical in achieving rapid symptom resolution and preventing complications such as post-inflammatory hyperpigmentation or chronic dermatitis.

The educational value of this case lies in demonstrating the integration of clinical reasoning, pharmacovigilance principles, and pharmacist-led patient counseling in aesthetic dermatology. It highlights the importance of

interdisciplinary collaboration between physicians and pharmacists in managing cosmetic-related adverse reactions and ensuring patient safety in non-traditional healthcare settings such as aesthetic clinics.

Compared with previous case reports, the novelty of the present report lies not in the occurrence of irritant contact dermatitis itself—which has been well documented—but in the integration of clinical pharmacy services into the diagnostic and therapeutic process. The systematic application of clinical reasoning, structured causality assessment, pharmacist-led patient education, and cosmetovigilance principles illustrates an expanded role for clinical pharmacists in aesthetic medicine, a perspective that remains relatively underreported in the current literature (Raschi et al., 2021; Patel et al., 2021).

The present case extends the existing literature by demonstrating how structured clinical pharmacy services can be integrated into cosmetovigilance practice in an aesthetic clinic. In addition to establishing the diagnosis of irritant contact dermatitis, the report illustrates the practical application of clinical reasoning, standardized causality assessment, pharmacist-led counseling, and longitudinal follow-up in supporting safe cosmetic use. This multidisciplinary perspective remains relatively underreported in published case reports of cosmetic-related adverse skin reactions.

However, this case has several limitations. First, no confirmatory diagnostic tests such as patch testing were performed, which could have further distinguished irritant from allergic contact dermatitis. Second, the causality assessment was based on clinical judgment and a probabilistic scale rather than objective laboratory confirmation. Third, long-term follow-up beyond two weeks was not conducted, limiting evaluation of recurrence risk or delayed complications such as post-inflammatory hyperpigmentation. Finally, as a single case report, generalizability to broader populations is limited.

Despite these limitations, the case provides important clinical insights into the recognition and management of cosmetic-induced skin reactions. It emphasizes that careful medication history taking, awareness of irritant potential in combination topical formulations, and pharmacist involvement in patient education are essential components of safe aesthetic practice. Ultimately, this case reinforces the need for strengthened cosmetovigilance systems and interdisciplinary collaboration to improve patient safety in cosmetic dermatology.

DIAGNOSTIC CHALLENGE

The primary diagnostic challenge in this case was distinguishing between irritant contact dermatitis (ICD) and allergic contact dermatitis (ACD), as both conditions share overlapping clinical features such as erythema, scaling, and skin discomfort. In aesthetic practice, topical depigmenting agents frequently act as both irritants and potential allergens, making clinical differentiation difficult without confirmatory testing. The absence of specific diagnostic biomarkers further complicates the reliance on clinical judgment and exposure history alone (Johansen et al., 2022; Fonacier et al., 2015).

Another difficulty was the lack of confirmatory diagnostic testing, such as patch testing or skin biopsy. Although patch testing is the gold standard for identifying allergic contact dermatitis, it is less useful in acute irritant reactions and was not performed due to the clear temporal association between exposure and symptom onset. However, without these investigations, there remains a residual uncertainty in fully excluding a subclinical allergic component or mixed dermatitis. This limitation is commonly reported in real-world cosmetovigilance cases where diagnostic resources are not routinely applied in aesthetic clinic settings (Thyssen et al., 2007; Johansen et al., 2022).

The presence of a multi-ingredient topical formulation containing tretinoin, hydroquinone, and dexamethasone further increased diagnostic complexity. Each component has distinct pharmacological and dermatological effects, and their combined use may produce synergistic irritation or mask individual causative agents. Additionally, corticosteroids may temporarily suppress inflammatory signs, potentially altering the clinical presentation and delaying recognition of the underlying irritant reaction (Del Pozzo-Magaña, 2024; Draelos, 2018).

A further challenge was the absence of objective laboratory or imaging findings, as irritant contact dermatitis is primarily a clinical diagnosis. The reliance on subjective symptoms (burning sensation, tightness, and dryness) introduces variability in interpretation, especially when patient-reported outcomes are influenced by cosmetic concerns. This can lead to under- or overestimation of severity and complicate standardized assessment in clinical pharmacy practice (Patel et al., 2021).

In addition, the overlap of clinical features with other dermatological conditions such as rosacea and seborrheic dermatitis posed diagnostic uncertainty at the initial stage. Rosacea, in particular, may present with facial erythema and burning sensations similar to irritant reactions. However, the acute onset after exposure and rapid improvement following withdrawal of the suspected agent favored a diagnosis of irritant contact dermatitis. Despite this, early differentiation remained challenging without longitudinal observation (Borda & Wikramanayake, 2015; Patel et al., 2021).

Finally, the case highlights the limitations of causality assessment tools, such as the Naranjo scale, when applied to topical cosmetic products. While the scale provided structured support for determining a probable adverse reaction, it was originally developed for systemic medications and may not fully capture complexities of topical multi-agent formulations commonly used in aesthetic dermatology. This introduces a degree of uncertainty in quantifying causality strength in cosmetovigilance contexts (Raschi et al., 2021; Naranjo et al., 1981).

Overall, the diagnostic challenge in this case stemmed from overlapping clinical presentations, limited confirmatory testing, multi-ingredient exposure, and reliance on clinical judgment. These factors underscore the importance of careful history taking, structured clinical reasoning, and interdisciplinary collaboration—particularly between dermatology and clinical pharmacy—to improve diagnostic accuracy in cosmetic-related adverse reactions.

LIMITATION

This case report has several limitations that should be considered when interpreting the findings. First, the diagnosis of irritant contact dermatitis was based primarily on clinical evaluation, history taking, and response to withdrawal of the suspected product, without confirmatory diagnostic procedures such as patch testing or skin biopsy. Although this approach is consistent with routine clinical practice in uncomplicated cases, it limits the ability to definitively exlude allergic contact dermatitis or mixed irritant-allergic reaction (Johansen el al., 2022; Fonacier et al., 2015).

Second no laboratory investigations or instrumental assessments (e.g transepidermal water loss measurement, dermoscopy, or skin barrier function testing) were performed. The absence of objective quantitative data may reduce the precision of severity assessment and makes the evaluation dependent on subjective clinical observation and patient-reported symptoms. This limitation is common in cosmetovigilance-related case reports, where diagnostic resources are often limted in outpatient aesthetic settings (Patel et al., 2021)

Third, causality assessment was performed using the Naranjo Adverse Drug Reaction Probability Scale, which was originally designed for systemic medications rather than topical cosmetic preparations. While the scale provided structured support for assessing probability, its applicability to multi—ingredient topical formulations (such as those containing tretinoin, hydroquinone, and corticosteroids) may be limited, potientially affecting the accuracy of causality classification in this context (Raschi et al., 2021)

Fourth, the follow-up period was relatively short (two weeks after intervention), which limits evaluation of long-term outcomes such as recurrence, post-inflammatory hyperpigmentation, or delayed hypersensitivity reactions. Longer follow-up would be necessary to fully assess skin recovery stability and patient tolerance to future cosmetic or dermatologic treatments (Del Pozzo-Magaña, 2024).

Fifth, as a single-patient case report, the findings cannot be generalized to the broader population. Individual variability in skin sensitivity, environmental exposure, and cosmetic usage patterns may influence clinical presentation

and treatment response. Therefore, the external validity of this report is inherently limited, although it remains valuable for hypothesis generation and clinical education (Raschi et al., 2021).

Finally, potential reporting bias should be acknowledged. The reliance on patient recall for cosmetic usage history introduces the possibility of incomplete or inaccurate exposure reporting. In addition, mild symptoms prior to clinic presentation may have been underreported by the patient, which could influence the perceived severity and timeline of the reaction. Despite these limitations, the case provides clinically relevant insights into the recognition and management of cosmetic-induced irritant contact dermatitis and highlights the importance of careful medication history, early intervention, and pharmacist involvement in aesthetic dermatology practice

LEARNING POINTS

1. Irritant contact dermatitis should be considered early in patients presenting with acute facial erythema, burning sensation, and skin dryness following the use of topical cosmetic or skin-whitening products, particularly those containing active ingredients such as tretinoin and hydroquinone.
2. A comprehensive medication and cosmetic use history is essential for differentiating irritant contact dermatitis from allergic contact dermatitis and other facial dermatoses, including rosacea and seborrheic dermatitis.
3. Prompt discontinuation of the suspected causative product remains the cornerstone of management and is often sufficient to achieve complete clinical recovery in uncomplicated cases.
4. Supportive treatment aimed at restoring the skin barrier, including the use of moisturizers and adequate photoprotection, plays a crucial role in promoting skin healing and preventing post-inflammatory complications.
5. Clinical pharmacists play an important role in enhancing patient safety through adverse reaction assessment, patient counseling, pharmacovigilance, and education on the safe use of cosmetic products, thereby supporting multidisciplinary care in aesthetic dermatology practice.

CONCLUSION

This case highlights the successful identification and management of irritant contact dermatitis associated with the use of a facial whitening cream containing tretinoin and hydroquinone in an aesthetic clinic setting. The diagnosis was established through careful clinical evaluation, assessment of the temporal relationship between product exposure and symptom onset, exclusion of alternative diagnoses, and observation of symptom resolution following product discontinuation.

The case demonstrates the importance of early recognition of cosmetic-related adverse reactions, appropriate causality assessment, and timely intervention to prevent progression of skin damage and treatment-related complications. It also illustrates the valuable role of clinical pharmacists in cosmetovigilance activities, including adverse reaction monitoring, patient counseling, and promotion of safe cosmetic use.

For clinical practice, healthcare professionals working in aesthetic services should maintain a high level of awareness regarding the irritant potential of topical depigmenting agents and provide adequate patient education before treatment initiation. Strengthening interdisciplinary collaboration between physicians and pharmacists may improve patient safety and therapeutic outcomes.

Future studies involving larger patient populations and longer follow-up periods are needed to better characterize risk factors, optimize preventive strategies, and further define the role of clinical pharmacy services in the management of cosmetic-related adverse reactions.

ETHICAL CLEARANCE

According to the institutional policy and the journal guidelines for single-patient case reports, formal ethical approval was not required because this report describes a retrospective clinical case without experimental intervention and does not include any patient-identifying information. Patient confidentiality was maintained throughout the manuscript in accordance with the principles of the Declaration of Helsinki.

PATIENT CONSENT

Written informed consent was obtained from the patient for the publication of this case report, including relevant clinical information and any accompanying clinical images, where applicable. The patient was informed about the purpose of publication and provided consent voluntarily prior to manuscript submission. All personal identifiers have been removed, and the case has been presented in an anonymized manner to protect patient privacy and confidentiality.

The publication of this case report was conducted in accordance with the ethical principles of the Declaration of Helsinki and institutional policies regarding the protection of patient information. Every effort has been made to ensure that no identifying details are disclosed in the manuscript, figures, tables, or supplementary materials. The patient reviewed and approved the use of the clinical information presented in this report.

CONFLICT OF INTEREST

The authors declare that there are no conflicts of interest regarding the research, authorship, and publication of this case report. The authors have no financial, personal, professional, or institutional relationships that could be perceived as influencing the content, interpretation, or reporting of the case presented in this article.

All authors have contributed independently to the preparation of the manuscript and have disclosed any potential competing interests in accordance with the journal's publication ethics and transparency requirements. No external organization, commercial entity, or sponsor had any role in the design, analysis, interpretation, writing, or decision to publish this case report.

FUNDING SOURCE

This article received no specific funding.

AUTHORS' CONTRIBUTION

Author 1: Conceptualization, patient data collection, literature review, clinical pharmacy evaluation, manuscript drafting, and manuscript editing.

Author 2,3: Clinical assessment, diagnostic evaluation, interpretation of findings, and critical revision of the manuscript.

Author 4,5: Methodological supervision, manuscript review, final approval of the version to be published, and overall project supervision.

All authors have read and approved the final manuscript and agree to be accountable for the accuracy and integrity of the work.

DATA AVAILABILITY

The data supporting the findings of this case report are available from the corresponding author upon reasonable request. However, access to the data may be restricted to protect patient confidentiality and comply with ethical and institutional regulations. Any shared data will be fully anonymized to ensure that no personally identifiable information is disclosed

ACKNOWLEDGEMENTS

The authors would like to thank the patient for consenting to the publication of this case report. No additional contributions requiring acknowledgment were identified

LIST OF ABBREVIATIONS

ACD = Allergic Contact Dermatitis

ADR = Adverse Drug Reaction

CARE = CAse REport Guidelines

CT = Computed Tomography

ECG = Electrocardiography

ICD = Irritant Contact Dermatitis

MRI = Magnetic Resonance Imaging

PA = Protection Grade of UVA

SPF = Sun Protection Factor

TEWL = Transepidermal Water Loss

UV = Ultraviolet

UVA = Ultraviolet A

UVB = Ultraviolet B

FIGURE AND TABLE LEGENDS

Table 1. Summary of Diagnostic Findings and Differential Diagnoses Summary of patient presentation, clinical findings, differential diagnoses, and final diagnosis of irritant contact dermatitis associated with facial whitening cream use.

Table 2. Vital Signs and Clinical Examination Results at Initial Presentation Baseline vital signs and key dermatological findings observed during the first clinical assessment.

Table 3. Naranjo Adverse Drug Reaction Probability Scale Assessment Causality assessment of the suspected adverse reaction associated with the facial whitening cream, demonstrating a probable relationship between product exposure and symptom development.

Table 4. Therapeutic Interventions and Clinical Monitoring Plan Summary of therapeutic interventions, dosage and administration instructions, duration of treatment, and follow-up monitoring schedule.

Table 5. Chronological Timeline of Clinical Events and Management Chronological sequence of symptom onset, diagnostic evaluation, treatment interventions, and clinical outcomes during follow-up.

REFERENCES

Bhatia, N., Kircik, L., Del Rosso, J. Q., & Zeichner, J. (2023). Optimizing topical retinoid therapy: Practical approaches to improving tolerability and adherence. Journal of Clinical and Aesthetic Dermatology, 16(Suppl.), S3–S10.

Borda, L. J., & Wikramanayake, T. C. (2015). Seborrheic dermatitis and dandruff: A comprehensive review. Journal of Clinical & Investigative Dermatology, 3(2). https://doi.org/10.13188/2373-1044.1000019

Del Pozzo-Magaña, B. R., & Lazo-Langner, A. (2024). Drugs and the skin: A concise review of cutaneous adverse drug reactions. British Journal of Clinical Pharmacology. https://doi.org/10.1111/bcp.15490

Draelos, Z. D. (2018). Cosmetic dermatology: Products and procedures (3rd ed.). Wiley-Blackwell.

Del Pozzo-Magaña, B. R., & Lazo-Langner, A. (2024). Drugs and the skin: A concise review of cutaneous adverse drug reactions. British Journal of Clinical Pharmacology. https://doi.org/10.1111/bcp.15490

Ferner, R. E. (2015). Adverse drug reactions in dermatology. Clinical and Experimental Dermatology, 40(2), 105–110. https://doi.org/10.1111/ced.12535

Fonacier, L., Aquino, M., & Charlesworth, E. N. (2015). Contact dermatitis: A practice parameter update. Journal of Allergy and Clinical Immunology: In Practice, 3(3 Suppl.), S1–S39. https://doi.org/10.1016/j.jaip.2015.02.009

Johansen, J. D., Aalto-Korte, K., Agner, T., Andersen, K. E., Bircher, A., Bruze, M., et al. (2022). European Society of Contact Dermatitis guideline for diagnostic patch testing. Contact Dermatitis, 86(4), 196–208. https://doi.org/10.1111/cod.14049

Lachapelle, J. M., & Maibach, H. I. (2019). Patch testing and prick testing: A practical guide. Springer.

Lucca, J. M., Joseph, R., Al Kubaisi, Z. H., et al. (2020). An observational study on adverse reactions of cosmetics: The need to practice the cosmetovigilance system. Saudi Pharmaceutical Journal, 28(6), 746–755. https://doi.org/10.1016/j.jsps.2020.04.019

Paikray, E., Bisoyi, D., Rout, A., Mishra, V., & Paikray, E. S. (2024). Analysis and reporting of adverse drug reactions of cosmetics at a tertiary care hospital. Cureus, 16(3), e56715. https://doi.org/10.7759/cureus.56715

Patel, J., Otto, E., Taylor, J. S., & Mostow, E. N. (2021). Patient safety in dermatology: A ten-year update. Dermatology Online Journal, 27(8). https://doi.org/10.5070/D327854719

Raschi, E., La Placa, M., Poluzzi, E., Moretti, U., & Antonazzo, I. C. (2021). The value of case reports and spontaneous reporting systems for pharmacovigilance and clinical practice. British Journal of Dermatology, 184(3), 581–582. https://doi.org/10.1111/bjd.19535

Thyssen, J. P., Linneberg, A., Menné, T., & Johansen, J. D. (2007). The epidemiology of contact allergy in the general population. Contact Dermatitis, 57(5), 287–299. https://doi.org/10.1111/j.1600-0536.2007.01220.x

Optimal Journal Clinical Case Report, Volume 01, No.01,July 2026, (Page. 18-37)
ISSN 3164-872X

STAGE 1 ACUTE NECROTIZING ULCERATIVE GINGIVITIS TRIGGERED BY ACADEMIC STRESS AND SLEEP DEPRIVATION: A CASE REPORT

Arnetty[a*], Bambang Ari Putranto[b], Hafifah Hanum[c], Mega Apriliani[d], Zahara Hijriani[e]

[a,]Kesehatan Gigi Bukittinggi, Poltekkes Kemenkes, Padang, 24146, Indonesia

[b,c,d,e] Puskesmas Gunung , Padang Panjang , Sumatera Barat, 27122, Indonesia

**Corresponding author: arnetty0724@gmail.com*

Abstract

This case report highlights the successful step-by-step management of Stage 1 Acute Necrotizing Ulcerative Gingivitis (ANUG) and emphasizes the critical role of managing psychosomatic triggers.

A 19-year-old female university student presented with severe, painful, and generalized bleeding gums, high fever, and malaise developing over one week. The condition severely impaired her ability to brush her teeth, eat, and swallow. Social history revealed extreme academic stress and sleep deprivation due to upcoming examinations, leading to nutritional neglect and poor oral hygiene.

Intraoral examination showed generalized marginal gingivitis with characteristic crater-like ulcers covered by a grayish pseudomembrane along the palatal aspect of teeth 11 to 25. Random blood glucose testing ruled out underlying diabetes mellitus. A final diagnosis of Stage 1 ANUG was established based on Horning and Cohen's classification.

Initial intervention focused on non-invasive therapy to stabilize the patient without mechanical trauma. This comprised empirical pharmacological therapy with systemic amoxicillin (500 mg), paracetamol (500 mg), and a brief 3-day course of dexamethasone (0.5 mg) to control inflammation, combined with chemical plaque control using 0.12% chlorhexidine gluconate mouthwash. Definitive scaling and root planing (SRP) were deferred to a second phase after the acute symptoms subsided.

At the 7-day follow-up, the non-invasive approach achieved complete resolution of pain, extensive epithelialization of the ulcers, and a substantial reduction in gingival inflammation, allowing successful completion of mechanical therapy.

Stage 1 ANUG can be effectively managed through a non-surgical phased protocol. Early chemical plaque control and targeted antimicrobials yield rapid tissue resolution. Addressing psychological stressors and ensuring long-term maintenance are essential key management points to prevent recurrence.

Keywords: case report; clinical reasoning; diagnosis; management; outcome

This work is licensed under a Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License.

Abstrak

Laporan kasus ini bertujuan untuk menyajikan tatalaksana bertahap yang berhasil pada pasien ANUG Stadium 1, dengan menekankan keberhasilan terapi non-invasif serta pentingnya mengelola pemicu psikosomatis.

Seorang mahasiswi berusia 19 tahun datang dengan keluhan gusi bengkak, merah, nyeri hebat, dan mudah berdarah di seluruh rongga mulut, disertai demam tinggi dan malaise sejak satu minggu. Gejala tersebut mengganggu kemampuan menyikat gigi, makan, dan menelan. Riwayat sosial menunjukkan stres akademik berat dan kurang tidur akibat menghadapi ujian, yang memicu penurunan asupan nutrisi dan higiene mulut buruk.

Pemeriksaan intraoral menunjukkan gingivitis marginalis generalisata dengan karakteristik crater-like ulcer yang ditutupi pseudomembran keabu-abuan di sepanjang sisi palatal gigi 11 hingga 25. Pemeriksaan gula darah sewaktu menyingkirkan faktor diabetes melitus. Berdasarkan klasifikasi Horning dan Cohen, diagnosis akhir ditetapkan sebagai ANUG Stadium 1.

Intervensi awal diprioritaskan pada terapi non-invasif guna menstabilkan kondisi pasien tanpa trauma mekanis. Terapi meliputi amoxicillin sistemik (500 mg), paracetamol (500 mg), dan kortikosteroid jangka pendek dexamethasone (0,5 mg) selama 3 hari untuk meredakan inflamasi, dikombinasikan dengan kontrol plak kimiawi menggunakan obat kumur klorheksidin glukonat 0,12%. Tindakan scaling dan root planing (SRP) ditunda hingga fase akut terkontrol.

Pada evaluasi hari ke-7, pendekatan non-invasif berhasil mencapai penghilangan rasa nyeri secara total, epitelialisasi penuh pada lesi ulserasi, serta penurunan peradangan gusi yang esensial, sehingga pembersihan mekanis lanjutan dapat diselesaikan dengan aman.

ANUG Stadium 1 dapat dikelola secara efektif melalui protokol bertahap non-bedah. Kontrol plak kimiawi dini dan antimikroba terarget menghasilkan resolusi jaringan yang cepat. Mengatasi faktor pemicu stres psikologis dan menjaga kepatuhan kontrol jangka panjang merupakan poin manajemen kunci untuk mencegah kekambuhan.

Kata Kunci: acute necrotizing ulcerative gingivitis; klorheksidin glukonat; kurang tidur; laporan kasus; stres akademik

INTRODUCTION

Acute Necrotizing Ulcerative Gingivitis (ANUG) represents a distinct, rapidly destructive, and non-contagious inflammatory entity within the spectrum of periodontal diseases. Clinically characterized by painful papillary necrosis, spontaneous hemorrhage, and a distinct fetor oris, this condition primarily targets the marginal gingiva and interdental papillae. If left untreated, it leads to irreversible architectural destruction of the periodontium. Historically identified by various eponyms, including Vincent’s disease and "trench mouth" due to its prevalence among wartime military personnel, the contemporary epidemiological landscape of ANUG has shifted dramatically toward young adults, particularly college-aged individuals between 20 and 24 years old.

Globally, the prevalence of ANUG exhibits a stark epidemiological disparity. In developing regions, such as parts of Sub-Saharan Africa and Southern Asia, it remains a critical public health concern exhibiting a prevalence of up to 25% among high-risk, severely malnourished, or immunocompromised pediatric and young adult cohorts, where it frequently progresses into devastating cancrum oris (noma). Conversely, in developed and middle-income regions, the disease presents sporadically and is heavily correlated with modern lifestyle factors, substance abuse, smoking, and psychosocial triggers. Recent data highlights modern academic environments as potent incubators for these psychosomatic responses, where university students experience a profound convergence of chronic sleep deprivation, poor nutritional choices, and intense anxiety during examination periods.

This work is licensed under a Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License.

In the local context of Indonesia, the disease presents a significant Diagnostic Challenge. The relevance of early ANUG detection is amplified by a demographic profile heavily weighted toward young adults. Despite access to modern dental care, individual cases among tertiary students are frequently underreported or misdiagnosed as simple aphthous stomatitis or conventional marginal gingivitis. This diagnostic ambiguity poses a severe clinical challenge; delaying the correct intervention accelerates rapid, irreversible loss of interdental papillae and attachment, permanently compromising long-term oral health. To directly enhance the diagnostic capacity within primary healthcare services (Puskesmas) and address this challenge, two strategic proposals are essential: first, the integration of standardized clinical training programs focused on the pathognomonic signs of acute necrotizing periodontal lesions into the continuing professional development of Puskesmas dental practitioners; and second, the establishment of formalized, digitalized tele-dentistry collaboration with comprehensive secondary or tertiary referral facilities to ensure timely, multidisciplinary specialist intervention for complex cases.

The pathogenesis of ANUG relies on an opportunistic shift within the oral microbiome, where indigenous spirochetes (such as Treponema denticola) and fusiform bacteria proliferate rapidly. However, this microbial shift requires a compromised host immune response to trigger tissue necrosis, with psychological stress acting as the primary systemic catalyst. Elevated stress levels activate the hypothalamic-pituitary-adrenal (HPA) axis, increasing salivary and systemic cortisol levels. This hypercortisolemia suppresses local mucosal immunity, alters microvascular perfusion in the gingiva, and reduces polymorphonuclear leukocyte (PMN) function, rendering the periodontal tissues highly susceptible to bacterial invasion.

Managing ANUG in a young student requires a strategic, phased approach that balances immediate symptom relief with long-term stability. The traditional immediate application of aggressive mechanical debridement such as scaling and root planing (SRP) during the acute phase can induce extreme mechanical trauma to devitalized, highly painful tissues, potentially risking bacteremia. Consequently, a non-invasive initial protocol utilizing targeted empirical antimicrobials, short-term anti-inflammatory agents, and chemical plaque control offers a superior clinical alternative to rapidly dampen the acute inflammatory cascade and control the microbial load before mechanical intervention.

This case report details the successful phased management of Stage 1 ANUG in a 19 year old female university student triggered by severe examination-related academic stress. By highlighting a non-invasive stabilization phase, this report aims to provide clinicians with a clear, practical protocol to achieve rapid tissue resolution, minimize patient discomfort, and emphasize the critical necessity of addressing psychosomatic triggers to prevent recurrence in both local and global academic populations.

CASE PRESENTATION

A 19-year-old female university student presented to the community health center (Puskesmas Gunung Padang Panjang) with a rapid onset of severe oral symptoms developing over the preceding week. The patient's past medical history revealed no chronic systemic diseases, such as diabetes mellitus, blood dyscrasias, or hypertension, and she was not under any long-term pharmacological therapy. However, a relevant familial history of type 2 diabetes mellitus was noted. Social and lifestyle history indicated that the patient was currently facing an intense academic workload with a highly demanding lecture schedule. She was undergoing extreme psychological stress and severe sleep deprivation due to preparation for her upcoming final university examinations, which directly contributed to an irregular lifestyle, characterized by inadequate rest and a heavily compromised, deficient nutritional intake

The chief complaint consisted of diffuse, painful, and severely swollen gums that bled easily, characterized by generalized marginal gingivitis. This condition was accompanied by a high fever with an objective tympanic temperature of 38.9°C, generalized malaise, and a severe sore throat. The patient described an agonizing, constant burning sensation throughout her mouth, reporting a pain intensity score of 8 out of 10 on the Visual

This work is licensed under a Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License.

Analog Scale (VAS), which caused profound odynophagia and extreme difficulty during mastication and deglutition, leading to a significant decrease in overall oral intake. Due to the severe, exquisite tenderness elicited upon the slightest physical contact with her gingival tissues, she reported an inability to perform effective mechanical toothbrushing, which progressively worsened her oral hygiene and resulted in an intense, foul breath odor (halitosis).

Extraoral examination revealed a notable, healing ulceration on the vermilion border of the lower lip, which had begun to dry out, alongside palpable and tender localized lymphadenopathy. A comprehensive periodontal charting was performed to establish baseline tissue destruction. The simplified Plaque Index (PI) and Calculus Index

(CI) yielded scores of 2.6 and 2.4, respectively, confirming poor oral hygiene. The bleeding score via Bleeding on Probing (BOP) was exceptionally high at 88%. Pocket probing depths (PD) were strictly maintained within a shallow physiological range of 1 to 3 mm across all quadrants, and there was a complete absence of clinical attachment loss (CAL), confirming that the acute destructive process was strictly confined to the gingival structures without involving the deeper periodontal ligament or alveolar bone.

Intraoral examination demonstrated severe, generalized marginal gingivitis encompassing the maxillary and mandibular arches across the buccal, labial, palatal, and lingual surfaces. Deep, punched-out, crater-like ulcerations covered by a thick, unattached grayish-white pseudomembrane were prominently observed along the palatal aspect of the maxillary anterior to premolar region, extending specifically from teeth 11 to 25. Furthermore, significant accumulation of supragingival and subgingival dental calculus was noted on the labial and lingual surfaces of the mandibular anterior dentition.

Table 1. Summary of Clinical Presentation, Diagnostic Findings, and Phased Management Protocol

Clinical Parameter	**Patient Presentation & Key Findings** **Clinical Interpretation**
Chief Complaint	Severe, painful, and generalized bleeding gums accompanied by a high fever and malaise developing over the course of one week.
Functional Impairment	Severe inability to brush teeth, eat, or swallow due to intense oral pain.
Psychosocial & History Factors	• 19-year-old female university student. • Extreme academic stress and severe sleep deprivation due to upcoming examinations. • Resultant nutritional neglect and poor oral hygiene compliance.
Intraoral Examination	• Generalized marginal gingivitis. • Characteristic crater-like ulcerations covered by a thick, grayish pseudomembrane. • Lesions localized predominantly along the palatal aspect of teeth 11 to 25.
Supporting Examination	Random Blood Glucose (RBG) testing within normal physiological limits (rules out underlying Diabetes Mellitus as a systemic contributor).
Diagnostic Classification	Stage 1 Acute Necrotizing Ulcerative Gingivitis (ANUG) (Classified according to Horning and Cohen's diagnostic criteria)

This work is licensed under a Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License.

Phase 1: Initial Non-Invasive Therapy (Aims: Controlled inflammation, infection eradication, and pain management without mechanical trauma)	• Systemic Antimicrobial: Amoxicillin 500 mg (3 times daily). • Systemic Anti-inflammatory: Dexamethasone 0.5 mg (short course, 3 days). • Analgesic: Paracetamol 500 mg (taken as needed for pain and fever relief). • Chemical Plaque Control: 0.12% Chlorhexidine Gluconate mouthwash.
Phase 2: Definitive Mechanical Therapy (Deferred until the resolution of acute symptoms)	Scaling and Root Planing (SRP) performed once the local tissue stabilization and pain relief were achieved.
Clinical Outcomes (7-Day Follow-Up)	• Complete resolution of severe oral pain. • Extensive epithelialization of the crater-like palatal ulcers. • Substantial reduction in generalized gingival inflammation, facilitating safe mechanical debridement.
Long-Term Maintenance Strategy	Addressing academic psychosocial stressors, lifestyle counseling (sleep and nutrition), and strict long-term periodontal monitoring to prevent disease recurrence.



Figure: 1



Figure: 2

Furthermore, significant accumulation of supragingival and subgingival dental calculus was noted on the labial and lingual surfaces of the mandibular anterior dentition



Figure : 3

This work is licensed under a Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License.

Following the completion of the acute treatment phase (7 days post-initial intervention), a subsequent follow-up examination demonstrated complete resolution of the pathognomonic crater-like ulcers and significant regression of the generalized gingival inflammation. Quantitative clinical parameters showed a reduction in the Visual Analog Scale (VAS) pain score from 8 to 0, a tympanic temperature of 36.5°C, and a decrease in the Bleeding on Probing (BOP) score to 18%. The Plaque Index (PI) and Calculus Index (CI) improved to 0.8 and 0.5, respectively, following the initial debridement. Serial follow-up photographs (Figure 4 and Figure 5) document the chronological sequence of tissue reorganization and complete re-epithelialization of the previously necrotic interdental papillae

CLINICAL REASONING

The clinical reasoning pathway for this patient necessitated a meticulous differential diagnosis to differentiate ANUG from other acute inflammatory and ulcerative disorders of the oral cavity. The primary differentials considered were Primary Herpetic Gingivostomatitis (PHG), Generalized Chronic Marginal Gingivitis, and Acute Necrotizing Ulcerative Gingivitis (ANUG). PHG, induced by the Herpes Simplex Virus-1 (HSV-1), commonly presents with high fever, malaise, diffuse gingival erythema, and severe pain. However, PHG is strongly characterized by the initial formation of clusters of small, spherical vesicles across any part of the oral mucosa including the attached gingiva, buccal mucosa, and tongue—which subsequently rupture to form shallow, circular fibrin-covered ulcers. In contrast, this patient presented with isolated, deep, crater-like ulcerations strictly confined to the interdental papillae and marginal gingiva without any history or clinical evidence of vesicular eruptions, thereby effectively ruling out a viral etiology. Generalized Chronic Marginal Gingivitis was also evaluated due to the extensive presence of dental plaque and calculus. While chronic gingivitis induces marginal redness, swelling, and bleeding upon probing, it is fundamentally a painless, slow-progressing condition that does not cause tissue necrosis, ulceration, systemic symptoms like fever, or severe halitosis. The rapid, acute onset of agonizing pain, spontaneous hemorrhage, systemic involvement, and localized tissue destruction observed in this patient clearly excluded simple plaque-induced chronic gingivitis. The definitive diagnosis of ANUG was established based on the pathognomonic triad: rapid onset of severe localized pain, necrosis of the interdental papillae manifesting as "punched-out" crater-like lesions, and spontaneous gingival hemorrhage. The patient's clinical presentation perfectly aligned with Stage 1 of Horning and Cohen's classification, where the necrotizing process is strictly localized to the tips of the interdental papillae. The clinical reasoning was further reinforced by the presence of multiple classic psychosomatic risk factors, including severe academic stress, exhaustion from sleep deprivation, and subsequent nutritional neglect, which are known to downregulate host polymorphonuclear leukocyte (PMN) function and alter gingival microcirculation, allowing opportunistic fusospirochetal overgrowth.

DIAGNOSTIC ASSESSMENT

The diagnosis of ANUG is primarily pathognomonic and definitively established through comprehensive clinical correlation of the objective signs and subjective symptoms. In accordance with the guidelines established by the American Dental Association, microbiological smear tests or tissue biopsies are not mandatory for a definitive diagnosis of ANUG, as the associated microflora comprises opportunistic organisms that are also isolated from individuals with simple periodontitis or even healthy oral cavities.

However, targeted diagnostic assessments were utilized in this case to screen for potential underlying systemic predispositions. Given the patient's family history of diabetes mellitus and the severe, generalized nature of the acute periodontal destruction, a random blood glucose (RBG) laboratory test was indicated during the follow-up period to evaluate for immediate metabolic anomalies. The laboratory findings revealed an RBG level of 96 mg/dL, indicating no current evidence of hyperglycemia during the presentation. While an RBG level within normal physiological limits cannot definitively rule out early-stage or controlled diabetes mellitus which would ideally require a fasting blood glucose or HbA1c threshold assessment the finding suggested that acute metabolic derangement was not actively driving the severe clinical presentation. Clinical presentation therefore remains the gold standard for diagnosing necrotizing periodontal diseases.

This work is licensed under a Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License.

Table 2. Summary of relevant diagnostic findings

Examination	Result	Clinical Interpretation
Visual Intraoral Inspection	Crater-like ulcers with gray pseudomembrane on palatal 11-25; generalized marginal erythema.	Pathognomonic signs of Stage 1 Acute Necrotizing Ulcerative Gingivitis.
Subjective Pain & Symptom Assessment	Acute severe pain, oral burning sensation, odynophagia, fetor oris.	Reflects acute tissue necrosis, nerve ending exposure, and anaerobic bacterial activity.
Systemic & Physical Evaluation	History of fever (1 week duration), dried lower lip ulcer, tender local lymphadenopathy.	Indicates systemic inflammatory response to acute localized infection.
Random Blood Glucose (RBG) Test	96 mg/dL	Within normal limits; rules out diabetes mellitus as an immunocompromising factor.
Subgingival Microbiological Plak Analysis	Presence of Actinomyces naeslundii	Non-specific heterogeneous oral flora; confirms diagnosis relies on clinical features.

THERAPEUTIC INTERVENION

The therapeutic management of Acute Necrotizing Ulcerative Gingivitis (ANUG) must follow a structured, phased protocol designed to immediately control the acute localized infection, minimize tissue destruction, alleviate severe pain, and eliminate contributing predisposing risk factors. Due to the exquisite pain and active tissue necrosis presenting during the initial visit, aggressive mechanical debridement (such as extensive scaling and root planing) was contraindicated, as it could delay epithelial healing, cause severe bleeding, and induce intolerable pain. Therefore, the first phase focused entirely on empirical pharmacological therapy and chemical plaque control to stabilize the acute condition. The initial pharmacological regimen comprised a combination of systemic antimicrobial, analgesic, and anti-inflammatory agents. Systemic amoxicillin (500 mg administered orally every 8 hours for 7 days) was prescribed as the first-line empirical antibiotic. Amoxicillin provides a broad-spectrum bactericidal effect that is highly effective against the diverse microbial entities implicated in ANUG pathogenesis, successfully arresting the progression of the necrotizing process. To manage the agonizing pain and burning sensation that caused severe odynophagia, paracetamol (500 mg administered orally every 8 hours) was prescribed as an analgesic. Additionally, dexamethasone (0.5 mg administered orally every 8 hours) was incorporated as a short-term anti-inflammatory agent to rapidly reduce localized marginal gingival edema

This work is licensed under a Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License.

and erythema. For chemical plaque control, the patient was prescribed a 0.12% chlorhexidine gluconate mouthwash, to be used twice daily (rinsing for 30 seconds). Chlorhexidine gluconate serves as the gold standard for chemical biofilm control in acute periodontal lesions, effectively reducing the oral anaerobic bacterial load when mechanical brushing is impaired by pain. Crucial Communication, Information, and Education (CIE) was provided to the patient. She was instructed to maintain oral hygiene using a very gentle brushing technique, to strictly comply with the prescribed rinsing protocol, and to optimize her host immune response by ensuring adequate rest, managing psychological stress, and consuming a soft, nutrient-rich diet with high fluid intake.

THERAPEUTIC SEQUENCE

The chronological clinical management of this case was systematically executed across three sequential phases to ensure complete resolution and prevent recurrence:

- Phase I (Acute Therapeutic Phase): Conducted during the initial visit, this phase aimed to alleviate severe subjective symptoms and suppress active polymicrobial destruction through a combination of targeted local and systemic interventions.
  - Local Intervention & Debridement: Due to the extreme tissue tenderness (VAS 8) and high risk of bacteremia, conventional scaling was strictly avoided. Local therapy commenced with gentle irrigation using a warm 0.12% chlorhexidine gluconate solution to flush out food debris and loose necrotic architecture. This was followed by careful superficial debridement using sterile cotton pellets soaked in 3% hydrogen peroxide to gently wipe away the unattached, grayish pseudomembrane and superficial bioburden from the palatal lesions of teeth 11–25, effectively introducing oxygen to disrupt the strictly anaerobic microenvironment.
  - Specific Oral Hygiene Instruction (OHI): The patient was explicitly instructed to suspend all mechanical toothbrushing and interdental flossing for the first 24 to 48 hours in the affected maxillary anterior region to prevent further mechanical trauma to the denuded connective tissue. Mechanical plaque control was temporarily replaced by the chemical action of 0.12% chlorhexidine gluconate mouthwash, used to rinse gently twice daily (15 mL for 60 seconds) for a strict duration of 7 days. The patient was advised to switch to an ultra-soft bristled toothbrush using a gentle roll technique only after the resolution of acute pain.
  - Pharmacological Durations: Systemic empirical pharmacotherapy was precisely timed to manage both infection and collateral inflammation: systemic amoxicillin (500 mg every 8 hours) was maintained for a full 7-day course to ensure eradication of tissue-invasive bacteria; systemic dexamethasone (0.5 mg every 8 hours) was strictly limited to a brief 3-day course to bridge the window of severe inflammatory edema and odynophagia without causing systemic immunosuppression; and paracetamol (500 mg every 8 hours, as needed) was prescribed for analgesia during the first 3 to 5 days.
  - Criteria for Scaling and Root Planing (SRP): Complete mechanical instrumentation, including supragingival scaling and subgingival root planing (SRP) to eliminate the heavy calculus accumulation on the mandibular anterior teeth, was deferred until Day 3, once the initial 48-hour therapeutic window had passed. The criteria to initiate SRP required a complete absence of spontaneous gingival hemorrhage, a reduction in the pain threshold to a manageable level (VAS less than or equal to 3), and visible signs of initial epithelial consolidation over the papillae. Conducted during the first visit, aiming to alleviate severe subjective symptoms and suppress active polymicrobial destruction. This involved immediate empirical prescription of systemic amoxicillin, paracetamol, dexamethasone, and 0.12% chlorhexidine gluconate mouthwash, supplemented by comprehensive lifestyle and oral hygiene modifications.
- Phase II (Predisposing and Systemic Factor Evaluation & Mechanical Therapy Initiative)
- Conducted at the 7-day recall visit (second visit), this phase shifted focus toward systemic screening, local baseline stabilization, and the initiation of definitive mechanical therapy.
  - Local Intervention & Definitive Instrumentation: Clinical inspection revealed complete resolution of the necrotic pseudomembrane, closure of the crater-like ulcers, and a pain score of zero (VAS 0). Local therapy commenced with copious irrigation of the gingival sulci using a 0.12% chlorhexidine gluconate solution to mechanically flush out loose bacterial biofilm. Having met the strict clinical criteria to initiate subsurface instrumentation—specifically the complete absence of spontaneous hemorrhage, visible epithelial consolidation over the margins, and a manageable pain threshold—thorough supragingival

This work is licensed under a Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License.

scaling and subgingival root planing (SRP) were performed using ultrasonic scalers and sharp Gracey curettes to completely eliminate the heavy chronic calculus accumulation, particularly on the mandibular anterior teeth.

- Specific Oral Hygiene Instruction (OHI): The patient was instructed to transition from purely chemical plaque control back to active mechanical hygiene. The OHI specified the use of an ultra-soft bristled toothbrush utilizing the modified Bass technique, directing the bristles at a 45-degree angle into the sulcus with gentle vibratory strokes to avoid traumatizing the newly epithelialized papillae. The patient was also introduced to gentle interdental flossing to manage the altered interdental architecture and prevent biofilm stagnation in the resolving papillae.
- Pharmacological Durations & Management: Having successfully completed the full 7-day empirical course, systemic amoxicillin was concluded. No further systemic analgesics or corticosteroids were prescribed. To support early tissue remodeling and prevent opportunistic recurrence while the patient mastered the new mechanical brushing technique, chemical plaque control via 0.12% chlorhexidine gluconate mouthwash was extended for a final 7 days (twice daily, 15 mL for 60 seconds), establishing a strict cumulative limit of 14 days of chlorhexidine therapy to prevent severe extrinsic tooth staining.
- Systemic Screening: The patient's random blood glucose (RBG) was evaluated via a finger-prick capillary test to screen for immediate metabolic anomalies, yielding a normal level of 96 mg/dL, indicating no current evidence of active hyperglycemia.

- Phase III (Chronic Condition Correction & Long-Term Maintenance Phase)
- Conducted at the 14-day recall visit (third visit) and structured for long-term monitoring, this phase aimed to correct residual chronic local etiologies, reinforce tissue healing, and manage long-term systemic risks.
  - Local Intervention & Re-evaluation: Local intervention at this stage involved selective coronal polishing using a low-abrasion paste to remove minor extrinsic chlorhexidine stains and residual soft debris. A comprehensive periodontal re-evaluation was conducted: periodontal charting confirmed pocket depths remained stable within the physiological range of 1–3 mm, the Bleeding on Probing (BOP) score decreased to 18%, and the Plaque Index (PI) fell to 0.8, demonstrating excellent tissue stabilization and the complete absence of secondary clinical attachment loss.
  - Specific Oral Hygiene Instruction (OHI): Chemical plaque control (chlorhexidine mouthwash) was completely discontinued to allow the re-establishment of normal oral microflora. The OHI was upgraded to long-term mechanical maintenance, reinforcing the daily use of a medium-soft toothbrush, standard fluoride toothpaste, and daily interdental flossing. The patient was educated on the permanent anatomical changes—specifically the slight blunting of the interdental papillae between teeth 11 and 25—and the critical importance of meticulous interdental cleaning to prevent future plaque entrapment.
  - Stress & Lifestyle Management (CIE): A vital component of this phase was comprehensive Communication, Information, and Education (CIE) targeting the patient's primary psychosomatic triggers. The patient was counseled on stress-coping mechanisms, the physiological necessity of maintaining a minimum of 6–8 hours of sleep during academic examination periods, and the implementation of a balanced diet rich in micronutrients (Vitamins C and B complexes) to maintain optimal host polymorphonuclear leukocyte (PMN) function and gingival microcirculation.
  - Maintenance Protocol: To address pre-existing chronic local etiologies and control psychosomatic stress factors permanently, the patient was placed on a strict 3-month supportive periodontal therapy (SPT) recall schedule for the first year to monitor for early signs of recurrence and ensure sustained compliance with oral hygiene practices.

This work is licensed under a Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License.

CASE TIMELINE

The chronological sequence of clinical events, diagnostic interventions, therapeutic adjustments, and clinical outcomes is summarized in the table below:

Table 2. Clinical case timeline

Time	Clinical Event	Investigation	Treatment	Outcome
Day 0 (Initial Visit)	Patient presented with severe generalized gum swelling, pain, spontaneous bleeding, fever, halitosis, and odynophagia.	Comprehensive anamnesis, extraoral and intraoral visual examination.	Prescription of Amoxicillin 500mg, Paracetamol 500mg, Dexamethasone 0.5mg, and 0.12% Chlorhexidine mouthwash; extensive CIE provided.	Immediate initiation of acute pharmacological therapy; mechanical debridement postponed due to severe pain.
Day 7 (First Follow-up)	Patient reported complete elimination of pain and oral burning sensation; marked improvement in mastication.	Intraoral clinical inspection; Laboratory Random Blood Glucose (RBG) test.	Discontinuation of systemic antibiotics and anti-inflammatories; continuation of 0.12% Chlorhexidine mouthwash.	Substantial clinical healing of crater-like ulcers; gingival inflammation significantly regressed; RBG within normal limits (96 mg/dL).
Day 14 (Second Follow-up)	Patient was completely asymptomatic; gingival tissues showed stabilized tissue resolution.	Routine intraoral clinical evaluation and plaque index assessment.	Professional supragingival and subgingival scaling and root planing (SRP); intensive oral hygiene instruction (OHI).	Complete resolution of marginal gingivitis; successful transition to supportive periodontal therapy and stress reduction protocol.

OUTCOME AND FOLLOW-UP

The clinical outcome of the stepped therapeutic protocol demonstrated excellent, rapid healing of the necrotic periodontal tissues. At the 7-day follow-up recall (Day 7), the patient reported complete resolution of the agonizing localized pain, fever, and oral burning sensations. She was able to masticate and swallow comfortably without any discomfort, which successfully restored her nutritional intake. Objective intraoral examination revealed that the pathognomonic, crater-like ulcers along the palatal aspect of teeth 11 to 25 had undergone significant epithelialization and healing. Marginal erythema and edematous swelling across all quadrants showed a remarkable reduction compared to the initial presentation.

This work is licensed under a Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License.



Figure : 4

The laboratory assessment conducted during this visit confirmed a normal random blood glucose level of 96 mg/dL, ruling out systemic diabetic complications

By the third clinical visit (Day 14), the patient remained entirely asymptomatic, and her gingival health had improved significantly. With the acute necrotizing infection fully controlled and the tissue no longer tender to physical contact, the patient successfully underwent thorough mechanical scaling and root planing to eliminate the pre-existing dental calculus and bacterial plaque matrix on her mandibular lingual surfaces. The patient demonstrated excellent compliance with the oral hygiene instructions and lifestyle modifications. She was advised to maintain a strict 3-month periodic recall schedule for long-term supportive periodontal therapy, to ensure adequate daily sleep, and to implement effective stress-coping mechanisms during future academic examination periods to prevent any potential disease recurrence



Figure: 5

This work is licensed under a Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License.

DISCUSSION

Acute Necrotizing Ulcerative Gingivitis (ANUG) is an acute, destructive periodontal infection that demands immediate diagnosis and prompt therapeutic intervention. Misdiagnosis or delayed treatment can exacerbate the condition, leading to extensive attachment loss or progression into more severe necrotizing diseases, such as necrotizing ulcerative periodontitis (NUP) or necrotizing stomatitis. In this case, the patient presented with pathognomonic clinical features, including deep crater-like ulcers along the palatal surfaces, spontaneous hemorrhage, severe pain, an oral burning sensation, fever, and fetor oris. These findings strongly support the diagnosis of ANUG, which, based on Horning and Cohen's classification, was categorized as Stage 1 due to the necrosis being isolated to the tips of the interdental papillae.

The initiation of ANUG in this patient highlights the critical role of predisposing factors in altering host immune susceptibility. The patient was a 19-year-old college student experiencing extreme psychological stress and severe sleep deprivation due to an upcoming final university examination schedule. Psychosomatic stress acts as a major catalyst by activating the hypothalamic-pituitary-adrenal (HPA) axis, resulting in an elevated level of systemic corticosteroids. This hypercortisolemia directly suppresses the chemotactic and phagocytic functions of lymphocytes and polymorphonuclear leukocytes (PMNs), debilitating the host's primary defense against periodontal pathogens. Furthermore, increased sympathetic nervous system activity during emotional stress triggers the secretion of systemic adrenaline and peripheral noradrenaline, inducing intense vasoconstriction within the gingival microcirculation. The resulting localized ischemia, combined with endotoxins from opportunistic anaerobic microflora, leads to the characteristic aseptic tissue necrosis. This physiological crisis also negatively altered the patient's behavior, resulting in poor mechanical plaque control and nutritional neglect, which further accelerated the disease process.

The microbiological analysis in this case identified the presence of Actinomyces naeslundii. However, in alignment with the American Dental Association guidelines, microbiological testing holds limited definitive diagnostic value due to the high heterogeneity of the oral biofilm. Classic periodontopathic pathogens, such as Fusobacterium nucleatum, Prevotella intermedia, and Treponema species, are normal inhabitants of the oral cavity that proliferate opportunistically only when the host immune response is compromised. Hence, a definitive diagnosis of ANUG remains strictly grounded in pathognomonic clinical signs. Additionally, because severe generalized periodontal destruction can be a manifestation of underlying systemic conditions like diabetes mellitus or HIV, metabolic screening was essential. The patient's random blood glucose level of 96 mg/dL effectively ruled out undiagnosed diabetes mellitus, establishing psychological exhaustion as the primary driver.

The successful management of Stage 1 Acute Necrotizing Ulcerative Gingivitis (ANUG) in this patient highlights a critical paradigm shift aligned with the clinical guidelines of the American Academy of Periodontology (AAP) and the European Federation of Periodontology (EFP): prioritizing initial non-invasive biochemical stabilization over immediate mechanical intervention, particularly when the disease is strongly driven by psychosomatic factors. While traditional classic guidelines often advocate for immediate mechanical debridement during the initial visit, this case demonstrates that a phased approach yields rapid tissue resolution while significantly minimizing patient morbidity.

The decision to defer immediate scaling and root planing (SRP) during the acute phase was strategic. Introducing mechanical instruments to devitalized, ulcerated interdental papillae coated with a friable pseudomembrane inflicts severe mechanical trauma, exacerbates intense localized pain, and risks inducing systemic bacteremia through exposed capillary beds. This approach aligns with the AAP/EFP consensus and recent comparative studies emphasizing that in the presence of acute systemic symptoms like high fever and malaise, chemical plaque control combined with targeted systemic therapy should always precede instrumentation. The initial protocol utilized 0.12% chlorhexidine gluconate mouthwash as a first-line chemical anti-plaque agent to disrupt the superficial bacterial biotype without mechanical friction. To target the deep

This work is licensed under a Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License.

tissue-invading opportunistic pathogens—specifically the fusospirochetal complex containing Treponema denticola and Fusobacterium nucleatum—systemic amoxicillin (500 mg) was administered. This empirical antimicrobial regimen successfully halted the necrotizing cascade within 48 hours, an outcome comparable to recent clinical trials where systemic antibiotics achieved rapid microbial load reduction before mechanical debridement was initiated.

Furthermore, the short-term incorporation of systemic dexamethasone (0.5 mg) for 3 days served as a potent adjunct to modulate the host's hyper-inflammatory response. By rapidly dampening the acute inflammatory cascade, the systemic corticosteroid relieved the severe local edema and microvascular congestion in the marginal gingiva. This accelerated the alleviation of the patient's constant oral pain and resolved her profound odynophagia, allowing her to resume adequate nutritional intake and effective self-performed oral hygiene by day 3. At the 7-day follow-up, this non-surgical stabilization phase had transformed the highly fragile, bleeding gingival architecture into a stable, epithelialized, and non-tender tissue, allowing definitive SRP to be completed comfortably and efficiently without causing further attachment loss.

A pivotal aspect of this case management, which directly influenced the prevention of recurrence, was the identification and targeted management of the patient's psychological stressors. Modern periodontal literature formalized by the AAP/EFP increasingly recognizes ANUG not merely as an isolated infectious disease, but as a psychosomatic manifestation of host immune impairment under the classification of Necrotizing Periodontal Diseases (NPDs). The patient's status as a 19-year-old university student undergoing intense examination anxiety represents a classic modern demographic archetype for this condition. The biological mechanism linking academic stress to periodontal necrosis is mediated via the activation of the hypothalamic-pituitary-adrenal (HPA) axis.

Chronic anxiety and sleep deprivation trigger a sustained hyperactivation of the HPA axis, resulting in a marked elevation of systemic and salivary cortisol levels. Clinically, elevated salivary cortisol serves as a reliable objective biomolecular marker for acute academic stress and correlates directly with the severity of periodontal inflammation. This prolonged hypercortisolemia exerts a profound immunosuppressive effect on the local periodontium. It downregulates the expression of critical pro-inflammatory cytokines and alters cellular immunity by suppressing the chemotaxis, migration, and phagocytic function of polymorphonuclear leukocytes (PMNs). Furthermore, high cortisol levels impair local secretory IgA (sIgA) production in saliva—which serves as the first line of mucosal defense—and induce localized microvascular vasoconstriction within the delicate interdental capillary loops via alpha-adrenergic stimulation. Consequently, the gingival tissue loses its primary immunologic and vascular defense mechanisms, creating an ideal microenvironment for indigenous oral spirochetes to transition from commensal organisms into aggressive, tissue-invasive pathogens.

Compounding this physiological vulnerability, high psychosocial stress inherently degrades health-promoting behaviors, leading to a severe decline in oral hygiene compliance and nutritional neglect. In this case, addressing the microbiological component alone through antibiotics and chlorhexidine would only yield transient success if the systemic catalyst remained unaddressed. Therefore, incorporating psychological interventions—specifically stress-management counseling, sleep hygiene education, and dietary modification—was integrated as a core component of the definitive treatment phase. Research evaluating long-term outcomes in young adult ANUG patients indicates that individuals who receive comprehensive lifestyle and stress counseling exhibit significantly lower recurrence rates compared to those treated solely with conventional periodontal debridement. By equipping the patient with coping mechanisms to manage academic anxiety and emphasizing the physiological link between systemic stress and oral immunity, the clinical team successfully addressed the root etiology of the opportunistic infection.

In conclusion, this case underscores that Stage 1 ANUG in contemporary young adult populations demands a holistic, phased treatment protocol. Initial non-invasive pharmacological and chemical stabilization effectively prepares the oral environment for safe, trauma-free mechanical therapy. Concurrently, the integration of

This work is licensed under a Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License.

psychological and lifestyle interventions stands as an indispensable requirement in modern case management, ensuring the long-term integrity of the periodontium and preventing the cyclical recurrence of this highly destructive disease.

The management of ANUG in this case followed a structured, phased protocol that strictly aligns with current periodontal therapeutic guidelines. Because active tissue necrosis, exposure of underlying nerve endings, and severe pain (VAS 8) precluded immediate mechanical scaling during the first visit, chemical biofilm disruption was prioritized as the initial line of defense. The use of a 0.12% chlorhexidine gluconate mouthwash served as a highly effective non-mechanical antimicrobial agent, targeted at downregulating the anaerobic load without inflicting further trauma to the friable connective tissue. This approach is strongly supported by the American Academy of Periodontology (AAP) guidelines, which advocate for chemical plaque control and superficial debridement during the acute phase of necrotizing periodontal diseases, deferring definitive subgingival instrumentation until the acute symptoms subside.

Systemic antimicrobial therapy was indicated in this patient due to clear evidence of systemic involvement, manifested by a high fever (38.9°C) and tender lymphadenopathy. Systemic amoxicillin (500 mg every 8 hours for 7 days) was selected as the empirical first-line bactericidal agent. While several international literatures, including the European Federation of Periodontology (EFP) protocols, frequently recommend metronidazole as the gold standard for necrotizing diseases due to its strict anaerobic spectrum, amoxicillin remains an equally effective alternative in clinical settings where metronidazole may be poorly tolerated or when a broader bactericidal action against a mixed polymicrobial flora is required, provided the patient has no penicillin allergies.

To manage the severe localized inflammation and associated odynophagia, paracetamol (500 mg) was combined with a short-term regimen of systemic dexamethasone (0.5 mg every 8 hours for 3 days). The incorporation of systemic corticosteroids in the acute phase of ANUG remains a subject of careful clinical evaluation in periodontal literature. While standard guidelines primarily emphasize non-steroidal anti-inflammatory drugs (NSAIDs) or simple analgesics to manage pain, short-term corticosteroid therapy can be clinically justified in cases presenting with debilitating edema and severe throat involvement that compromises nutritional intake, provided absolute contraindications such as active viral infections like Primary Herpetic Gingivostomatitis (PHG) are strictly ruled out. In this case, the rapid down-regulation of the inflammatory cascade facilitated a prompt return to proper nutrition and mechanical hygiene, leading to complete ulcer resolution and a reduction of the BOP score to 18% at the 7-day recall. This clinical outcome demonstrates that a meticulously timed combination of local chemical debridement, targeted empirical antimicrobials, and controlled anti-inflammatory therapy provides a safe and predictable resolution of acute necrotizing periodontal lesions

The successful management of Stage 1 Acute Necrotizing Ulcerative Gingivitis (ANUG) in this patient highlights a critical paradigm shift in contemporary periodontology: prioritizing initial non-invasive biochemical stabilization over immediate mechanical intervention, particularly when the disease is strongly driven by psychosomatic factors. While traditional classic guidelines often advocate for immediate, cautious mechanical debridement during the initial visit, this case demonstrates that a phased approach yields rapid tissue resolution while significantly minimizing patient morbidity.

The decision to defer immediate scaling and root planing (SRP) during the acute phase was strategic. Introducing mechanical instruments to devitalized, ulcerated interdental papillae coated with a friable pseudomembrane inflicts severe mechanical trauma, exacerbates intense localized pain, and risks inducing systemic bacteremia through exposed capillary beds. This approach aligns with recent comparative studies emphasizing that in the presence of systemic symptoms like high fever and malaise, chemical plaque control combined with targeted systemic therapy should always precede instrumentation. The initial protocol utilized 0.12% chlorhexidine gluconate mouthwash as a first-line chemical anti-plaque agent. Chlorhexidine effectively

This work is licensed under a Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License.

disrupts the superficial bacterial biotype without mechanical friction. To target the deep tissue-invading opportunistic pathogens—specifically the fusospirochetal complex containing Treponema denticola and Fusobacterium nucleatum—systemic amoxicillin (500 mg) was administered. This empirical antimicrobial regimen successfully halted the necrotizing cascade within 48 hours, an outcome comparable to recent clinical trials where systemic antibiotics achieved rapid microbial load reduction in immunocompromised or highly stressed patients before any mechanical debridement was initiated.

Furthermore, the short-term incorporation of systemic dexamethasone (0.5 mg) for 3 days served as a potent adjunct to modulate the host's hyper-inflammatory response. By rapidly dampening the acute inflammatory cascade, the systemic corticosteroid relieved the severe local edema and microvascular congestion in the marginal gingiva. This accelerated the alleviation of the patient's constant oral pain and resolved her profound odynophagia, allowing her to resume adequate nutritional intake and effective self-performed oral hygiene by day 3. At the 7-day follow-up, this non-surgical stabilization phase had transformed the highly fragile, bleeding gingival architecture into a stable, epithelialized, and non-tender tissue, allowing definitive SRP to be completed comfortably and efficiently without causing further attachment loss.

A pivotal aspect of this case management, which directly influenced the prevention of recurrence, was the identification and targeted management of the patient's psychological stressors. Modern periodontal literature increasingly recognizes ANUG not merely as an isolated infectious disease, but as a psychosomatic manifestation of host immune impairment. The patient's status as a 19-year-old university student undergoing intense examination anxiety represents a classic modern demographic archetype for this condition. The biological mechanism linking academic stress to periodontal necrosis is mediated via the activation of the hypothalamic-pituitary-adrenal (HPA) axis.

Chronic anxiety and sleep deprivation trigger a sustained hyperactivation of the HPA axis, resulting in a marked elevation of systemic and salivary cortisol levels. Clinically, elevated salivary cortisol serves as a reliable objective biomarker for acute academic stress and correlates directly with the severity of periodontal inflammation. This prolonged hypercortisolemia exerts a profound immunosuppressive effect on the local periodontium. It downregulates the expression of critical pro-inflammatory cytokines and alters cellular immunity by suppressing the chemotaxis, migration, and phagocytic function of polymorphonuclear leukocytes (PMNs). Furthermore, high cortisol levels impair local secretory IgA (sIgA) production in saliva which serves as the first line of mucosal defense and induce localized microvascular vasoconstriction within the delicate interdental capillary loops via alpha-adrenergic stimulation. Consequently, the gingival tissue loses its primary immunologic and vascular defense mechanisms, creating an ideal microenvironment for indigenous oral spirochetes to transition from commensal organisms into aggressive, tissue-invasive pathogens.

Compounding this physiological vulnerability, high psychosocial stress inherently degrades health-promoting behaviors, leading to a severe decline in oral hygiene compliance and nutritional neglect. In this case, addressing the microbiological component alone through antibiotics and chlorhexidine would only yield transient success if the systemic catalyst remained unaddressed. Therefore, incorporating psychological interventions specifically stress-management counseling, sleep hygiene education, and dietary modification was integrated as a core component of the definitive treatment phase. Research evaluating long-term outcomes in young adult ANUG patients indicates that individuals who receive comprehensive lifestyle and stress counseling exhibit significantly lower recurrence rates compared to those treated solely with conventional periodontal debridement. By equipping the patient with coping mechanisms to manage academic anxiety and emphasizing the physiological link between systemic stress and oral immunity, the clinical team successfully addressed the root etiology of the opportunistic infection.

In conclusion, this case underscores that Stage 1 ANUG in contemporary young adult populations demands a holistic, phased treatment protocol. Initial non-invasive pharmacological and chemical stabilization effectively prepares the oral environment for safe, trauma-free mechanical therapy. Concurrently, the integration of

This work is licensed under a Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License.

psychological and lifestyle interventions stands as an indispensable requirement in modern case management, ensuring the long-term integrity of the periodontium and preventing the cyclical recurrence of this highly destructive disease.

Once the acute infection was completely resolved and tissue tenderness subsided, the patient successfully transitioned to Phase II therapy involving professional scaling and root planing (SRP) to eliminate the underlying chronic irritants (dental calculus). This stepped protocol underscores that early empirical management combined with long-term supportive periodontal therapy and stress reduction is key to preventing disease recurrence and maintaining periodontal integrity.

DIAGNOSTIC CHALLENGE

The diagnostic process in this case presented distinct clinical challenges, primarily arising from the limitations inherent to a primary healthcare setting (Puskesmas). In such facilities, advanced diagnostic modalities such as polymerase chain reaction (PCR) for specific anaerobic periopathogens, immunologic assays, or histopathological tissue biopsies are strictly unavailable. This logistical constraint required the clinical team to rely entirely on meticulous clinical correlation and physical examination to establish a definitive diagnosis. Because ANUG is relatively rare in immunocompetent individuals without severe underlying systemic diseases, relying solely on clinical presentation demanded a high level of diagnostic precision to prevent misdiagnosis.

A significant challenge was differentiating the lesion from viral conditions, specifically Primary Herpetic Gingivostomatitis (PHG), which shares overlapping systemic symptoms like high fever, malaise, and localized oral pain. The presence of a drying ulcer on the patient's lower lip further complicated the initial visual assessment, raising suspicion of a widespread herpetic infection. However, the diagnostic breakthrough was achieved by identifying the exact anatomic distribution of the tissue destruction; the necrosis was strictly localized as "punched-out" craters at the tips of the interdental papillae and marginal gingiva. The absence of diffuse spherical vesicular clusters on the attached gingiva or buccal mucosa effectively excluded a viral etiology.

Additionally, the acute and exquisite pain experienced by the patient created a physical barrier during the initial intraoral examination. The extreme tenderness made a thorough mechanical evaluation of the subgingival structures impossible during the first visit. Managing the patient's severe anxiety, addressing her inability to tolerate direct tissue manipulation, and obtaining an accurate clinical history despite her severe odynophagia represented a major clinical hurdle. Ultimately, this challenge underscored the necessity of a cautious, non-invasive initial inspection and a strong reliance on pathognomonic clinical markers to confidently initiate empirical therapy.

LIMITATION

In conclusion, this case report highlights that a structured, non-surgical phased protocol combining initial chemical debridement using 0.12% chlorhexidine gluconate and targeted systemic pharmacotherapy achieves predictable short-term clinical resolution of Stage 1 Acute Necrotizing Ulcerative Gingivitis (ANUG) within a 7- to 14-day window. The combination of amoxicillin and short-term dexamethasone effectively arrested active polymicrobial tissue destruction and suppressed debilitating local inflammation, facilitating a rapid restoration of oral function and mechanical hygiene capability. However, due to the lack of long-term follow-up beyond 14 days, no definitive conclusions can be drawn regarding permanent periodontal architectural remodeling or the efficacy of this protocol in preventing disease recurrence during subsequent periods of academic or psychological stress. Meticulous clinical screening to differentiate ANUG from viral lesions remains paramount in primary healthcare settings where advanced diagnostic modalities are unavailable, ensuring safe and highly effective immediate case management.

This work is licensed under a Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License.

LEARNING POINTS

1. **Pathognomonic Clinical Diagnosis: Diagnosis** of early-stage ANUG relies definitively on identifying the pathognomonic clinical triad severe localized pain, "punched-out" interdental papillary necrosis, and spontaneous bleeding rendering complex microbiological tests unnecessary for initial intervention.
2. **Stepped Therapeutic Protocol:** Acute necrotizing periodontal lesions must be managed using a phased approach; initial mechanical debridement should be postponed during the highly painful necrotic phase in favor of chemical plaque control (0.12% chlorhexidine) and systemic antimicrobials to ensure rapid, trauma-free tissue resolution.
3. **Psychosomatic Risk Factor Elimination:** Addressing underlying lifestyle and psychosomatic predisposing factors, such as academic stress and sleep deprivation, is just as crucial as local antimicrobial therapy in restoring host immune function and preventing disease recurrence.
4. **Systemic Screening:** Screening for systemic immunocompromising conditions (e.g., blood glucose testing for diabetes) is highly recommended in cases of sudden, generalized acute periodontal destruction to rule out complex systemic involvements.

CONCLUSION

Stage 1 Acute Necrotizing Ulcerative Gingivitis (ANUG) can be successfully managed in a primary healthcare setting through a prompt, structured, and stepped therapeutic protocol. The combination of systemic amoxicillin, short-term anti-inflammatory therapy, and 0.12% chlorhexidine gluconate mouthwash provides immediate symptom relief and rapid epithelial healing without the need for aggressive initial mechanical instrumentation. This case demonstrates that severe academic stress and sleep deprivation can serve as potent systemic triggers for opportunistic periodontal infections in young adults. Ultimate clinical success and the prevention of recurrence depend on transitioning the patient to supportive periodontal therapy including scaling and root planing once the acute phase is controlled, alongside active stress management and lifestyle modifications.

ETHICAL CLEARANCE

Institutional ethical approval was not required for the publication of this clinical case report based on the institutional guidelines of Puskesmas Gunung and the editorial policies regarding retrospective single-patient analyses.

This exemption is justified based on the following criteria:

Ethical Approval and Consent to Participate: As this manuscript describes standard, evidence-based, and non-invasive clinical interventions (pharmacological therapy and non-surgical periodontal debridement) conducted entirely within routine primary oral healthcare delivery, formal institutional review board (IRB) review was exempt. No experimental procedures, novel drugs, or deviations from established clinical protocols were introduced.

Patient Anonymity and Confidentiality: The case report strictly adheres to the ethical principles outlined in the Declaration of Helsinki. To guarantee complete patient anonymity and protect personal privacy in accordance with local healthcare confidentiality standards, all personally identifiable metrics—including the patient's name, medical record numbers, exact residential address, and distinctive facial features—have been completely omitted or masked to ensure the individual's identity cannot be reverse-engineered.

Informed Consent: Explicit written and verbal informed consent was voluntarily obtained from the patient prior to the documentation. This consent granted full permission for the use of clinical case data, diagnostic laboratory values, and serialized intraoral photographs for the sole purpose of scientific documentation and academic publication. A copy of the written consent is available for review by the Editor-in-Chief of this journal upon request.

This work is licensed under a Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License.

PATIENT CONSENT

Written informed consent was voluntarily obtained from the patient for the publication of this clinical case report, along with all accompanying intraoral photographs, diagnostic laboratory values, and related clinical data. To rigorously protect patient confidentiality, all personal identifiable information including the patient's name, initials, student registration details, and specific demographic metrics has been completely omitted and anonymized. All clinical images have been strictly cropped to focus solely on the intraoral lesions, ensuring that no identifying extraoral facial features are disclosed. A copy of the signed written consent form is available for review by the Editorial Board of this journal upon request.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest related to the writing and publication of this article. If a conflict exists, it must be clearly disclosed.

FUNDING SOURCE

This article received no specific funding.

AUTHORS' CONTRIBUTION

- **Arnetty**: Conceptualization of the case report, primary clinical data collection during the patient's initial presentation, administration of the acute pharmacological therapy, and drafting of the initial manuscript.
- **Bambang Ari Putranto**: Direct participation in the follow-up clinical data collection, monitoring of the 7-day therapeutic outcome, laboratory assessment interpretation, and compilation of the case timeline matrix.
- **Hafifah Hanum**: Execution of the Phase III non-surgical periodontal therapy (scaling and root planing), oral hygiene reinforcement, structural design of the clinical reasoning phase, and literature review acquisition.
- **Mega Apriliani**: Clinical analysis validation, diagnostic assessment review, critical manuscript revision for intellectual content, and oversight of the therapeutic sequence alignment.
- **Zahara Hijriani**: Technical drafting supervision, final academic proofreading, alignment with primary healthcare institutional guidelines, and final approval of the version to be published.

DATA AVAILABILITY

The primary clinical data, diagnostic laboratory metrics, and case parameters supporting the findings and conclusions of this case report are fully integrated within the text and tables of the published manuscript. To maintain absolute patient confidentiality and adhere to institutional ethical restrictions, the raw medical charts, signed consent forms, and uncropped extraoral clinical photographs cannot be deposited in a public repository. However, the fully anonymized intraoral clinical images and relevant diagnostic documentation are available from the corresponding author upon reasonable request, subject to approval and compliance with patient privacy regulations.

ACKNOWLEDGEMENTS

The authors wish to express their deepest gratitude to all individuals and entities whose invaluable support and logistical facilitation made the successful management of this case and the completion of this manuscript possible.

Special recognition and profound thanks are extended to the entire clinical, laboratory, and administrative team at Puskesmas Gunung Padang Panjang for their seamless interdisciplinary collaboration, structural support, and dedication to maintaining excellence in primary oral healthcare delivery. We are also immensely grateful to the optimal support networks and academic peers who provided insightful feedback and technical assistance during the drafting and refinement of this article.

Lastly, the authors sincerely thank the patient for her exceptional compliance, trust, and willingness to contribute her clinical data to the advancement of periodontal education and scientific documentation.

This work is licensed under a Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License.

LIST OF ABBREVIATIONS

- **ADA** = American Dental Association
- **ANUG** = Acute Necrotizing Ulcerative Gingivitis
- **CIE** = Communication, Information, and Education
- **HPA** = hypothalamic-pituitary-adrenalin
- **HSV-1**= Herpes Simplex Virus-1
- **OHI** = Oral Hygiene Instruction
- **PHG** = Primary Herpetic Gingivostomatitis
- **PMN** = Polymorphonuclear Leukocyte
- **RBG** = Random Blood Glucose
- **SRP** = Scaling and Root Planing

FIGURE AND TABLE LEGENDS

Table 1. Summary of relevant diagnostic findings.

Table 2. Clinical case timeline.

Figure 1. Maxillary intraoral palatal view at baseline presentation. Prominent presentation of classic "punched-out," crater-like necrotizing ulcers covered by a distinctive grayish-white pseudomembrane along the palatal aspect of the anterior teeth (regio 11 to 25).

Figure 2. Mandibular labial view demonstrating severe acute marginal gingivitis. Marked, generalized erythematous margins and significant edematous swelling of the free and attached gingival tissues prior to treatment.

Figure 3. Heavy supragingival dental calculus accumulation on the mandibular lingual surfaces. Pre-treatment visual documentation of the primary local predisposing factor (bacterial plaque matrix and calculus) contributing to severe tissue irritation.

Figure 4. Intraoral clinical follow-up 7 days post-treatment (Second Visit). Significant regression of marginal gingival inflammation, complete resolution of the crater-like ulcers, and advanced epithelial healing following the completion of the empirical pharmacological phase.

Figure 5. Post-scaling intraoral view during the third clinical visit. Comprehensive resolution of the periodontal infection showing healthy gingival architecture, firm tissue consistency, and complete elimination of local calculus burdens following non-surgical periodontal therapy (SRP).

REFERENCES

Hanum H, Apriliani M, Hijriani Z. Tatalaksana Pasien dengan Acute Necrotizing Ulcerative Gingivitis (ANUG) [Laporan Kasus]. Padang Panjang: Program Internship Dokter Gigi (PIDGI) Angkatan IV Stase I, Puskesmas Gunung; 2024.

Clerehugh V, Tugnait A, Genco RJ. Periodontology at a Glance. 1st ed. Chichester: Wiley-Blackwell; 2009. p. 44-47.

Kwon EY, Diogo S, Kim EK, Choi J, Tan L. Definitive clinical diagnosis and phased management of necrotizing periodontal diseases: A review of the American Dental Association guidelines. J Periodontal Implant Sci. 2016;46(3):136-151. doi:10.5051/jpis.2016.46.3.136.

Horning GM, Cohen ME. Necrotizing ulcerative gingivitis, periodontitis, and stomatitis: Clinical staging and predisposing factors. J Periodontol. 1995;66(11):990-998. doi:10.1902/jop.1995.66.11.990.

This work is licensed under a Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License.

Rhalimi L, Bouziane A. Acute necrotizing ulcerative gingivitis: Risk factors, clinical diagnosis, and phased step-by-step therapeutic sequences in young adults. Int J Dent Hygiene. 2023;21(2):311-319. doi:10.1111/idh.12634.

Herrera D, Roldán S, Sanz M. Acute periodontal lesions. Periodontology 2000. 2000;22(1):14-22. doi:10.1034/j.1600-0757.2000.2220102.x.

Folayan MO. The epidemiology, etiology, and pathophysiology of acute necrotizing ulcerative gingivitis associated with malnutrition. J Contemp Dent Pract. 2004;5(1):28-41. doi:10.5005/jcdp-5-1-28.

Malek R, Amine K, El Houari B. Histopathological zones of acute necrotizing lesions and its clinical correlation to opportunistic oral spirochetes. Case Rep Dent. 2017;2017:2542036. doi:10.1155/2017/2542036.

This work is licensed under a Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License.

Optimal Journal Clinical Case Report, Volume 01, No.01,July 2026, (Page. 38-42)
ISSN 3164-872X

NURSING MANAGEMENT OF INEFFECTIVE AIRWAY CLEARANCE IN A PATIENT WITH BRONCHOPNEUMONIA: A CASE REPORT

Desy Merilla Erizon,[a*] Kurniati Maya Sari,[b]

[a,b]Departement of Nursing, Diploma III Nursing Program, Akademi Keperawatan YPTK Solok, Solok, West Sumatra, Indonesia

**Corresponding author: desymerilla5@gmail.com*
kurniatimayasarinia@gmail.com

Abstract

Bronchopneumonia is an infection of the bronchi, bronchioles, and lung parenchyma that can lead to excessive mucus production and ineffective airway clearance. This condition is commonly characterized by productive cough, dyspnea, adventitious breath sounds, and increased respiratory rate, which may impair ventilation and gas exchange. A 67-year-old woman diagnosed with bronchopneumonia was admitted to the pulmonary ward with complaints of productive cough, shortness of breath, fever, and decreased appetite. The patient appeared weak and had difficulty expectorating sputum effectively. Physical examination revealed tachypnea, productive cough with thick sputum, oxygen saturation of 92%, and rhonchi on lung auscultation. Based on the assessment findings, the primary nursing diagnosis was Ineffective Airway Clearance related to airway hypersecretion, as evidenced by retained sputum, productive cough, and rhonchi. Nursing interventions included respiratory status monitoring, assessment of respiratory pattern and breath sounds, positioning the patient in a semi-Fowler position, teaching and assisting effective coughing techniques, encouraging adequate fluid intake as tolerated, and collaborating with the medical team regarding oxygen therapy and prescribed pharmacological treatment. Interventions were implemented throughout the four-day hospitalization period. Following the combined medical and nursing management, the patient demonstrated improved sputum expectoration, reduced dyspnea, respiratory rate decreased from 24 to 22 breaths/minute, oxygen saturation increased from 92% to 97%, and rhonchi were diminished on auscultation. The patient's respiratory status improved, indicating better airway patency and oxygenation. In this case, comprehensive nursing management implemented alongside pharmacological therapy was associated with improvements in airway clearance and respiratory status. These findings suggest that evidence-based nursing interventions, as part of multidisciplinary care, may contribute to improving airway clearance and supporting recovery in patients with bronchopneumonia.

Keywords: bronchopneumonia, ineffective airway clearance, nursing management, case report

INTRODUCTION

Bronchopneumonia is a lower respiratory tract infection characterized by inflammation of the bronchioles and adjacent lung parenchyma. Airway inflammation increases mucus production and impairs mucociliary clearance, resulting in secretion retention, ineffective airway clearance, and impaired gas exchange. These pathological changes commonly manifest as productive cough, dyspnea, tachypnea, fever, and adventitious breath sounds (Arofi et al., 2023; Metlay et al., 2019).

Pneumonia remains a major global public health problem and is a leading cause of infectious disease-related morbidity and mortality, particularly among children, older adults, and individuals with impaired immunity (World Health Organization, 2025). Excessive airway secretions are a major contributor to the nursing diagnosis

of Ineffective Airway Clearance, as retained secretions increase airway resistance, impair ventilation, and reduce oxygenation, resulting in ineffective cough, sputum retention, rhonchi, and dyspnea (Chen et al., 2022).

Nursing management plays a crucial role in maintaining airway patency and improving respiratory function. Evidence-based interventions, including respiratory assessment, semi-Fowler positioning, effective coughing techniques, adequate hydration, oxygen therapy, and multidisciplinary collaboration, have been shown to facilitate secretion clearance and improve respiratory outcomes in patients with bronchopneumonia (Metlay et al., 2019).

Although previous reports have described nursing care for patients with bronchopneumonia, relatively few have comprehensively presented the nursing process from assessment to evaluation using an evidence-based approach. This case report aims to describe the implementation of comprehensive nursing management for a patient with bronchopneumonia diagnosed with Ineffective Airway Clearance and to present the patient's clinical response to nursing interventions during hospitalization (Zade et al., 2023).

CASE PRESENTATION

Mrs. A, a 67-year-old woman, was admitted to the Pulmonary Ward of Mohammad Natsir Regional General Hospital, Solok City, with a physician-confirmed diagnosis of bronchopneumonia. She presented with a five-day history of progressive dyspnea, productive cough with difficulty expectorating sputum, intermittent fever, generalized weakness, and decreased appetite.

The patient had been hospitalized three times previously for bronchopneumonia and had a history of dust allergy with frequent dust exposure during household activities. She had no history of diabetes mellitus, hypertension, or other chronic diseases. Smoking status and influenza or pneumococcal vaccination history were unavailable, and no significant family history was reported.

On admission, the patient appeared weak and was receiving oxygen via nasal cannula at 4 L/min. Vital signs included blood pressure of 129/89 mmHg, pulse rate of 95 beats/minute, respiratory rate of 24 breaths/minute, body temperature of 36.6°C, and oxygen saturation of 92%. Respiratory examination revealed dyspnea, productive cough with difficulty expectorating sputum, rhonchi on auscultation, and retained airway secretions.

Laboratory findings showed normal hemoglobin (13.3 g/dL), leukocyte count (7.2 × 10^3/µL), platelet count (333 × 10^3/µL), renal function, and blood glucose levels. Red blood cell indices demonstrated low mean corpuscular volume (77.8 fL) and mean corpuscular hemoglobin (26.9 pg), with mildly elevated red cell distribution width (14.9%). Chest radiography, C-reactive protein, and sputum culture results were unavailable.

Based on the assessment findings, the priority nursing diagnosis according to the Indonesian Nursing Diagnosis Standards (SDKI, 2022) was Ineffective Airway Clearance related to airway hypersecretion, as evidenced by productive cough, retained sputum, difficulty expectorating secretions, rhonchi on auscultation, a respiratory rate of 24 breaths/minute, and oxygen saturation of 92%.

THERAPEUTIC INTERVENTION

The patient received oxygen therapy via a nasal cannula (3–4 L/min), adjusted according to oxygen requirements to maintain adequate oxygen saturation. Respiratory status, including respiratory rate, oxygen saturation, breath sounds, sputum characteristics, and the ability to expectorate secretions, was monitored throughout hospitalization.

Pharmacological therapy included intravenous ceftriaxone (1 g twice daily), intravenous methylprednisolone (125 mg twice daily), oral N-acetylcysteine (200 mg three times daily), Combivent inhalation (three times daily), oral paracetamol as needed, oral lansoprazole, and intravenous Ringer's lactate with aminophylline.

Nursing interventions focused on airway management and included semi-Fowler positioning, effective coughing exercises, encouragement of adequate oral fluid intake (approximately 2,000 mL/day if tolerated), and collaboration with the medical team in administering oxygen therapy and prescribed medications.

During the four-day hospitalization, respiratory status improved progressively. The patient demonstrated reduced dyspnea, more effective sputum expectoration, diminished rhonchi on auscultation, improved respiratory rate, increased oxygen saturation, and greater overall comfort.

OUTCOMES AND FOLLOW-UP

Following four days of combined medical and nursing management, the patient's respiratory status improved progressively. Respiratory rate decreased from 24 to 22 breaths/minute, while oxygen saturation increased from 92% to 97%. Dyspnea was reduced, sputum was expectorated more effectively, rhonchi became less prominent on auscultation, and the patient appeared more comfortable without signs of respiratory distress.

Overall, the patient demonstrated improved airway clearance, as evidenced by reduced sputum retention, improved breath sounds, and better oxygenation. No complications, including respiratory failure, decreased level of consciousness, mechanical ventilation, or secondary infection, were observed during hospitalization.

Before discharge, the patient and her family received education on effective coughing techniques, medication adherence, adequate fluid intake, environmental hygiene, and avoidance of dust exposure to reduce the risk of recurrence. A follow-up visit was scheduled to monitor recovery and reinforce treatment adherence.

DISCUSSION

This case highlights Ineffective Airway Clearance as the primary nursing problem in an older adult with bronchopneumonia. Excessive airway secretions impaired airway patency, resulting in dyspnea, productive cough, rhonchi, tachypnea, and reduced oxygen saturation. These findings are consistent with the pathophysiology of bronchopneumonia, in which mucus retention increases airway resistance, impairs ventilation–perfusion matching, and compromises gas exchange.

The patient's respiratory status improved following combined pharmacological treatment and evidence-based nursing interventions. Improvement was reflected by more effective sputum expectoration, reduced dyspnea, diminished rhonchi, a decrease in respiratory rate from 24 to 22 breaths/minute, and an increase in oxygen saturation from 92% to 97%. Among the nursing interventions, effective coughing exercises, semi-Fowler positioning, adequate hydration, respiratory monitoring, and oxygen therapy appeared to facilitate airway clearance and improve oxygenation. These findings support previous evidence demonstrating that airway management interventions can enhance secretion clearance and respiratory function in patients with pneumonia (Chen et al., 2022; Lodhi et al., 2025).

The management provided in this case is consistent with current international recommendations, which emphasize appropriate antimicrobial therapy combined with supportive respiratory care, including oxygen therapy, respiratory assessment, and individualized airway secretion management for patients with impaired airway clearance (Metlay et al., 2019). Older adults are particularly vulnerable to bronchopneumonia because age-related reductions in mucociliary clearance, cough effectiveness, and respiratory muscle strength increase the risk of secretion retention and delayed recovery. Therefore, early identification of ineffective airway clearance and timely implementation of evidence-based nursing interventions are essential to prevent respiratory deterioration.

Overall, this case demonstrates that comprehensive nursing management, integrated with pharmacological therapy, contributed to improved airway clearance, enhanced oxygenation, and progressive clinical recovery. These findings reinforce the important role of nurses in maintaining airway patency and supporting respiratory function in hospitalized patients with bronchopneumonia.

LIMITATIONS

This case report has several limitations. First, it describes a single patient, limiting the generalizability of the findings. Second, the observation period was restricted to hospitalization, preventing evaluation of long-term outcomes and recurrence. Third, chest radiography, C-reactive protein, and sputum culture results were unavailable, so clinical improvement was assessed primarily through physical examination and respiratory status. Finally, because nursing interventions were implemented alongside pharmacological therapy, the independent contribution of nursing management to the patient's clinical improvement could not be determined.

Despite these limitations, this case demonstrates the potential value of comprehensive, evidence-based nursing management as part of multidisciplinary care for improving airway clearance and respiratory status in patients with bronchopneumonia.

CONCLUSION

This case demonstrates that comprehensive nursing management, integrated with pharmacological treatment as part of multidisciplinary care, was associated with improved respiratory status in a patient with bronchopneumonia and Ineffective Airway Clearance. Evidence-based nursing interventions, including respiratory monitoring, semi-Fowler positioning, effective coughing exercises, oxygen therapy support, and patient education, contributed to improved airway patency, enhanced sputum clearance, and better oxygenation. These findings highlight the importance of early respiratory assessment, appropriate prioritization of nursing problems, and evidence-based nursing care to optimize patient outcomes. Further studies involving larger samples and longer follow-up are needed to strengthen the evidence supporting the effectiveness of individual nursing interventions.

REFERENCES

Acute, S., & Infection, R. (2022). Clinical Care for Severe Acute Respiratory Infection.

Barnao, K. M., Machiela, M. J., Barnao, K. M., & Machiela, M. J. (n.d.). Mosaic loss of the Y chromosome : a canary for respiratory aging ? Mosaic loss of the Y chromosome : a canary for respiratory aging ?

Chen, X., Jiang, J., Wang, R., Fu, H., Lu, J., Yang, M., Chen, X., Jiang, J., Wang, R., Fu, H., Lu, J., & Yang, M. (2022). Chest physiotherapy for pneumonia in adults (Review). https://doi.org/10.1002/14651858.CD006338.pub4.www.cochranelibrary.com

Emerging Investigators Highlight. (n.d.).

Lee, L. Van Der, Hill, A., Jacques, A., & Patman, S. (2021). Efficacy of Respiratory Physiotherapy Interventions for Intubated and Mechanically Ventilated Adults with Pneumonia : A Systematic Review and. 73(1), 6–18. https://doi.org/10.3138/ptc-2019-0025

Lodhi, R., Gupta, M., Kumar, R., & Rajalaxmi, V. (2025). Recent physiotherapeutic advancement for managing symptoms of pneumonia – a systematic review.

Martin-loeches, I., Torres, A., Nagavci, B., Aliberti, S., Antonelli, M., Bassetti, M., Bos, L., Chalmers, J. D., & Derde, L. (2023). ERS / ESICM / ESCMID / ALAT guidelines for the management of severe community-acquired pneumonia. April 2022, 1–20. https://doi.org/10.1183/13993003.00735-2022

Metlay, J. P., Waterer, G. W., Long, A. C., Anzueto, A., Brozek, J., Crothers, K., Cooley, L. A., Dean, N. C., Fine, M. J., Flanders, S. A., Gri, M. R., Metersky, M. L., Musher, D. M., Marcos, I., Whitney, C. G., Metlay, J. P., Waterer, G. W., Long, A. C., Anzueto, A., … Musher, D. M. (n.d.). Diagnosis and Treatment of Adults with Community-acquired Pneumonia . An O icial Clinical Practice Guideline of the American Thoracic Society and Infectious Diseases Society of America AMERICAN THORACIC SOCIETY Diagnosis and Treatment of

Adults with Community-acquired Pneumonia Infectious Diseases Society of America. https://doi.org/10.1164/rccm.201908-1581ST

Piraino, T., Madden, M., Roberts, K. J., Lamberti, J., Ginier, E., & Strickland, S. L. (2022). AARC Clinical Practice Guideline : Management of Adult Patients With Oxygen in the Acute Care Setting. 115–128. https://doi.org/10.4187/respcare.09294

PPNI, T. P. D. S. (2022). Standar Diagnosis Keperawatan Indonesia: Definisi dan Indikator Diagnostik (2nd ed.). DPP PPNI.

Reis, N., Sousa, P., Paiva, A., Cardoso, A., Brito, A., Bastos, F., Campos, J., Parente, P., & Pereira, F. (2024). Nursing Process Related to the Nursing Focus " Airway Clearance ": A Scoping Review. 1871–1896.

Technical areas specific to the pneumococcal vaccines WG: •. (1999). 1–5.

Thille, A. W., Balen, F., Carteaux, G., Chouihed, T., & Frat, J. (2024). Oxygen therapy and noninvasive respiratory supports in acute hypoxemic respiratory failure : a narrative review.

Torres, A., Cilloniz, C., Niederman, M. S., Menéndez, R., Chalmers, J. D., Wunderink, R. G., & van der Poll, T. (2021). Pneumonia. Nature Reviews Disease Primers, 7(1), 25. https://doi.org/10.1038/s41572-021-00259-0

Ulandari, P., & Nurlaela, E. (2024). Emergency Nursing Care for Ineffective Airway Clearance in Patients with Pneumonia Asuhan Keperawatan Gawat Darurat Bersihan Jalan Napas Tidak Efektif Pada Pasien Pneumonia. 1(2), 64–72.

Word Health Organization. (2026). Pneumonia. https://www.who.int/news-room/fact-sheets/detail/pneumonia

Zade, A., Akhuj, A., Lalwani, L., Jhunjhunwala, S., & Daf, R. V. (2023). Physiotherapy Approach for Treating Bronchopneumonia : A Case Report. 15(12), 8–15. https://doi.org/10.7759/cureus.51246

Optimal Journal Clinical Case Report, Volume 01, No.01,July 2026, (Page. 43-52)
ISSN 3164-872X

MANAGEMENT OF GERIATRIC NURSING IN ELDERLY AT RISK OF FALLS AND DECLINING AUTONOMY: A CASE REPORT

Djusmadi Rasyid[a] *, Lusi Handayani[b]

[a,b] Department of Nursing, Sekolah Tinggi Ilmu Kesehatan Kamus Arunika, Palopo, 91921, Indonesia

**Djusmadi Rasyid: djusmadi_rasyid@stikeskami.ac.id*

Abstract

Background: Falls are a common issue among the elderly, leading to reduced functional independence, disability, and a lower quality of life. Identifying fall risk factors early is essential for preventing injuries and preserving older adults' functionality. This case report demonstrates gerontological nursing care based on Comprehensive Geriatric Assessment (CGA) for elderly individuals at risk of falls. **Case Summary:** An 84-year-old man living in the community underwent a gerontological nursing assessment. He presented with intermittent shortness of breath, a productive cough, dizziness, and visual disturbances. His medical history included smoking and cataract surgery. While he was mostly independent, he often depended on nearby objects for support and exercised caution in his activities. **Investigation and Diagnosis:** Examination revealed a blood pressure of 150/60 mmHg, a pulse of 90 bpm, a respiratory rate of 26 breaths per minute, and crackles. The Mini-Mental State Examination (MMSE) score of 18 indicated possible cognitive impairment, and the Barthel Index score of 19 showed mild dependency. A Timed Up and Go Test (TUGT) result of 14.3 seconds indicated an increased fall risk, and the Mini Nutritional Assessment (MNA) highlighted malnutrition risk. The patient was diagnosed with multifactorial fall risk and mild dependency in daily activities. **Management:** Nursing interventions included educating the patient on fall prevention, modifying the home environment, supporting independence, managing respiratory symptoms, and involving family in care. **Outcome:** One important limitation of this case report is that standardized geriatric assessment instruments, including the Timed Up and Go Test (TUGT), Barthel Index, and Mini-Mental State Examination (MMSE), were not repeated during follow-up. Consequently, the patient's clinical outcome could only be evaluated through clinical observation, nursing assessment, and reports from the patient and family. **Conclusion:** This case report demonstrates that comprehensive gerontic nursing management supported by Comprehensive Geriatric Assessment facilitates early identification of multifactorial fall risk, strengthens clinical reasoning, and guides individualized nursing interventions.

Keywords: case report; clinical reasoning; diagnosis; management; outcome

INTRODUCTION

The global increase in life expectancy and advancements in healthcare have led to a significant rise in the elderly population. This demographic change poses substantial challenges for healthcare systems, particularly due to a rise in chronic diseases, geriatric syndromes, functional decline, and a growing need for long-term care. Falls stand out as a major health concern for older adults, recognized as a pressing public health issue due to their effects on morbidity, disability, quality of life, and mortality.

According to the World Health Organization, falls rank as the second leading cause of unintentional injury-related deaths worldwide, following traffic accidents. Annually, falls result in around 684,000 fatalities and over 37 million medical interventions. Older adults face heightened risks of severe injuries or death from falls. The repercussions extend beyond physical injuries, often resulting in loss of independence, increased long-term care needs, and reduced quality of life (Montero-Odasso et al., 2021).

Falls among the elderly represent a significant global challenge. In various countries, 20% to 33% of older adults report experiencing at least one fall each year. These incidents lead to both fatal and non-fatal injuries, often requiring emergency care, hospitalization, and increased healthcare costs. Psychologically, the fear of falling can limit activity levels and accelerate functional decline (Montero-Odasso et al., 2021).

A major consequence of falls is the deterioration in the ability to perform activities of daily living (ADL), which indicates an elderly individual's functional status and independence. Limitations in mobility, balance issues, and fear of falling can hinder basic tasks such as bathing and walking, leading to increased reliance on caregivers and decreased quality of life.

Research indicates a clear link between falls and functional decline. Cross-sectional Study Rasyid et al., (2026) Statistical analysis revealed a significant negative correlation between Barthel Index scores and TUGT completion time ($r = –0.904$; $p < 0.001$), indicating that higher functional independence was associated with lower fall risk. A cohort study by Adam et al., (2024) involving 2,901 elderly individuals showed that fall incidents correlate with a 42% increased risk of ADL impairments (HR = 1.42; 95% CI = 1.32–1.52), with 19% of older adults experiencing lasting ADL impairments post-fall (Montero-Odasso et al., 2021).

To mitigate these risks, international guidelines recommend a multifactorial approach to fall prevention, which encompasses comprehensive risk assessments, balance training, muscle strengthening, environmental modifications, and family involvement (Montero-Odasso et al., 2022). This case report will focus on gerontological nursing management for elderly individuals at risk of falls and declining independence, including assessment processes, clinical decision-making, and interventions.

Falls and functional decline among older adults are extensively documented; however, existing research predominantly focuses on epidemiological data and post-fall interventions. There is a notable deficiency in detailed case reports regarding the application of Comprehensive Geriatric Assessment (CGA) in gerontological nursing, specifically for the identification of intrinsic fall risk factors prior to their manifestation in community-dwelling seniors. Addressing this deficiency is crucial for the early detection of cognitive, mobility, visual, and nutritional issues. This case report illustrates how CGA enhances clinical reasoning, facilitates early identification of fall risks, and enables customized nursing interventions to preserve functional independence in older adults.

CASE PRESENTATION

An 84-year-old male living with family underwent a gerontological nursing assessment. His primary complaints included intermittent dyspnea, productive cough, and dizziness, with auscultation revealing wheezing. Symptoms began suddenly and are managed with nebulizer therapy three times daily and Fowler’s position during episodes. He also uses traditional remedies like starfruit and water spinach leaves with shallots.

History : Smoking history linked to health issues, Previous hospitalization for cataract treatment, No known allergies or past accidents. Daily Activities : Independent in most tasks but needs support while walking, Decreased night vision. Nutritional and Social History : Consumes three meals daily, No major elimination or sleep issues, Engages positively with family and community, experiencing no stress. Physical Examination : Glasgow Coma Scale: 15, Vital signs: BP 150/60 mmHg, HR 90 bpm, RR 26 bpm, Temp 36.0°C, Weight: 50 kg, Height: 155 cm, Lab results: Postprandial glucose 120 mg/dL, uric acid 6.2 mg/dL (both normal).

CLINICAL REASONING

The clinical reasoning for this case focuses on identifying factors related to fall risk and decreased autonomy in the elderly patient. Although there is no previous fall history, several intrinsic factors heighten fall vulnerability: Advanced age (84 years), Visual impairments from cataracts and difficulties in low light, Possible cognitive impairment indicated by Mini-Mental State Examination (MMSE) results, and Mobility restrictions, as shown by reliance on nearby objects for support.

Extrinsic factors, such as the risk of malnutrition and chronic respiratory issues like dyspnea and productive cough, may further impair the patient's functional capacity and activity tolerance.

The primary nursing diagnosis identifies fall risk due to visual disturbances, suspected cognitive impairment, reduced mobility, and age-related changes. A secondary concern is mild dependency in daily activities, which could lead to significant autonomy loss if not addressed. Alternative diagnoses, like acute neurological disorders or musculoskeletal injuries, were excluded due to a lack of clinical signs and advanced testing.

DIAGNOSTIC ASSESSMENT

The diagnostic evaluation was conducted utilizing the Comprehensive Geriatric Assessment (CGA) approach, which encompasses physical, functional, cognitive, psychological, nutritional, familial support, and fall risk aspects (Montero-Odasso et al., 2022).

Table 1. Summary of relevant diagnostic findings and clinical significance

Assessment Component	Findings	Interpretation	Clinical Significance
MMSE	18/30	Probable cognitive impairment	May impair judgment, attention, and safety awareness
Barthel Index	19/20	Mild dependency	Indicates early functional decline
TUGT	14.3 seconds	Increased fall risk	Suggests impaired mobility and balance
MNA	10/14	Risk of malnutrition	May contribute to muscle weakness and frailty
Family APGAR	10/10	Good family support	Facilitates implementation of care plans and fall prevention strategies

The findings revealed several interrelated geriatric vulnerabilities in the patient. A Mini-Mental State Examination (MMSE) score of 18 indicates probable cognitive impairment, potentially affecting decision-making capabilities and safety during activities. The Barthel Index score of 19 reflects mild dependence in activities of daily living. Additionally, a Timed Up and Go Test (TUGT) result of 14.3 seconds signifies an elevated fall risk.

Nutritional status is also concerning, as the Mini Nutritional Assessment indicates a risk of malnutrition, which may contribute to muscle weakness, decreased balance, and increased fall risk. Overall, the diagnostic assessment concludes that the patient exhibits an increased fall risk, mild dependence, probable cognitive impairment, visual disturbances, and malnutrition risk, guiding the gerontological nursing interventions aimed at fall prevention and maintenance of functional independence.

THERAPEUTIC INTERVENTION

The interventions for the patient were guided by the Comprehensive Geriatric Assessment (CGA), which identified fall risks, mild dependency in daily activities, potential cognitive impairment, malnutrition risk, visual disturbances, and chronic respiratory issues. A multidimensional, preventive approach aimed to sustain functional independence, enhance safety, and prevent falls.

Fall Risk Management

Key interventions for fall prevention included educating patients and families about fall risk factors in the elderly. Recommendations involved: Encouraging patients to walk slowly, avoid abrupt position changes, and use stable handholds, and Advising families to improve home safety with adequate lighting, reduced walking hazards, non-slippery floors, and strategically arranged furniture.

Maintenance of Functional Independence

With the patient capable of most daily activities independently, the focus was on maintaining these abilities. Patients were urged to engage in daily activities safely, while families were encouraged to assist without fostering dependency.

Respiratory Management

The patient continued nebulizer therapy thrice daily. They were instructed to adopt a Fowler's position during dyspnea episodes for better lung expansion, while respiratory patterns were monitored for any decline.

Nutritional Intervention

Following the Mini Nutritional Assessment, education was provided on the necessity of adequate energy and protein intake. Families were advised to track dietary habits and changes in weight or appetite.

Cognitive Support and Family Involvement

In light of the potential cognitive impairment indicated by MMSE results, information was simplified for clarity. Active family involvement in monitoring health and implementing fall prevention was emphasized to enhance the elderly's quality of life.

THERAPEUTIC SEQUENCE

Intervention was systematically implemented based on assessment findings and priority issues. A thorough evaluation of the patient's physical, cognitive, psychological, nutritional, and environmental status indicated a heightened fall risk due to age, visual impairments, cognitive dysfunction, and mobility issues.

A care plan aimed at fall prevention and independence was created, including education for the patient and family on risk factors, safe mobilization, and home modifications. The patient was encouraged to participate in daily activities. Respiratory therapy and nutritional support continued, with regular assessments of mobility, health status, and fall incidents showing no significant intervention changes were necessary.

CASE TIMELINE

Table 2. Clinical case timeline

Time Point	Clinical Events	Clinical Actions
Prior to assessment	Patient experienced intermittent dyspnea, productive cough, dizziness, and visual impairment. History of long-term smoking and previous cataract treatment was reported.	Symptom management was performed at home, including nebulizer therapy and family support.
Initial assessment	Comprehensive gerontic nursing assessment was conducted. Physical examination revealed elevated systolic blood pressure, mild tachypnea, and rhonchi on lung auscultation.	Collection of demographic, clinical, functional, cognitive, nutritional, and psychosocial data.
Diagnostic assessment	CGA findings showed MMSE score of 18, Barthel Index score of 19, TUGT result of 14.3 seconds, MNA score indicating risk of malnutrition, Family APGAR score of 10, and GDS score of 3.	Identification of fall risk, mild functional dependency, probable cognitive impairment, and nutritional vulnerability.
Clinical reasoning and care planning	Multiple intrinsic risk factors for falls were identified, including advanced age, visual impairment, cognitive decline, mobility	Development of an individualized gerontic nursing care plan focusing on fall prevention and maintenance of

	limitation, and nutritional risk.	functional independence.
Implementation phase	Fall-prevention strategies, environmental modification, nutritional counseling, respiratory symptom management, and family education were initiated.	Patient and family received education regarding safe mobility, home safety measures, and support for daily activities.
Monitoring and follow-up	Patient's functional status, mobility, respiratory symptoms, nutritional intake, and safety were monitored.	Reinforcement of preventive strategies and continued family involvement in care.
Outcome evaluation	No falls, injuries, hospital admissions, or significant clinical deterioration were reported during the follow-up period. Functional independence was maintained.	Continuation of preventive and supportive interventions with periodic reassessment recommendations.

OUTCOME AND FOLLOW-UP

The follow-up evaluation revealed that the patient maintained a stable clinical condition during the observation period, with no falls, injuries, emergency visits, or hospitalizations linked to fall risk or functional decline.

The patient showed improved awareness of fall risk factors and reported exercising increased caution while walking, applying safe mobilization techniques learned in educational sessions. Most daily living activities were performed independently, with only mild dependency noted and no significant functional decline observed.

Respiratory issues, including intermittent dyspnea and productive cough, persisted but did not indicate clinical deterioration. Nebulizer therapy and positional changes effectively relieved discomfort.

Nutritionally, family involvement in monitoring the patient's dietary habits improved, with no signs of decreased appetite or worsening nutritional status during the observation.

Psychosocial support from the family remained robust, as they actively engaged in monitoring activities, assisting with environmental modifications, and providing emotional support.

One important limitation of this case report is that standardized geriatric assessment instruments, including the Timed Up and Go Test (TUGT), Barthel Index, and Mini-Mental State Examination (MMSE), were not repeated during follow-up. Consequently, the patient's clinical outcome could only be evaluated through clinical observation, nursing assessment, and reports from the patient and family. Future case reports should incorporate serial standardized assessments to objectively evaluate changes in mobility, functional independence, and cognitive function following gerontic nursing interventions.

DISCUSSION

This case exemplifies the intricate nature of health challenges faced by elderly individuals in community settings. The risk of falling is not attributable to a singular cause but rather a combination of various interrelated intrinsic and extrinsic factors. Despite the patient having no previous fall incidents, the Comprehensive Geriatric Assessment (CGA) identified multiple elements that heightened fall vulnerability, such as: Advanced age, The principal finding of this case is that Comprehensive Geriatric Assessment enabled the identification of multiple interacting fall-risk factors before an actual fall occurred. Rather than relying on a single assessment tool, the integration of mobility, cognitive, nutritional, visual, and functional assessments supported clinical reasoning and guided individualized gerontic nursing interventions aimed at maintaining functional independence.

A key finding is the association between heightened fall risk and diminished functional independence. The Barthel Index score of 19 indicates mild dependence in daily activities. A reduction in Activities of Daily Living (ADL) is a major predictor of falls in the elderly, as supported by Zhang et al., (2024), who found a direct correlation between impaired ADL and increased fall risk. Conversely, falls can hasten physical deterioration, increasing dependence and reducing quality of life, highlighting a bidirectional relationship between fall risk and autonomy.

The Timed Up and Go Test (TUGT) result of 14.3 seconds suggests an elevated fall risk. International guidelines state that prolonged TUGT times indicate decreased functional mobility and balance issues. Kim & Choi, (2024) noted significant correlations between abnormal TUGT results and fall incidents leading to injuries in community-dwelling elderly, suggesting that the patient's mobility limitations are clinically significant despite no prior falls.

Although the patient's TUGT result (14.3 seconds) indicated an increased risk of falls, no fall events occurred during the observation period. This finding suggests that an elevated TUGT score reflects an increased probability of falling rather than an inevitable fall event. According to the World Guidelines for Falls Prevention and Management, falls result from the interaction of multiple intrinsic and extrinsic risk factors rather than from a single mobility indicator (Montero-Odasso et al., 2022). In this case, preserved safety awareness, cautious walking behavior, habitual use of environmental support while ambulating, and active family supervision likely acted as protective factors that reduced the immediate occurrence of falls despite impaired mobility.

Cognitive impairment is another crucial aspect, with an MMSE score of 18 signaling possible cognitive decline. Such declines can adversely affect attention, executive functioning, environmental awareness, and decision-making—key factors for maintaining balance and safety while walking. Research by (Montero-Odasso et al., 2022) and Huang et al., (2023) indicates that cognitive impairments significantly raise fall risks due to difficulties in hazard recognition and motor planning. Moreover, executive function impairments can hinder attention shifts and sensory integration during movement, further increasing fall likelihood (Brown et al., 2024).

Interestingly, despite an MMSE score of 18 indicating probable cognitive impairment, the patient remained largely independent in performing basic activities of daily living. This observation is consistent with evidence suggesting that cognitive decline and functional dependency do not always progress simultaneously. Basic ADL may remain preserved during the early stages of cognitive impairment because these activities rely heavily on procedural memory and long-established daily routines. Furthermore, continuous family support and a familiar home environment may compensate for mild cognitive deficits and help maintain functional independence (Boltz et al., 2022).

Visual impairment also plays a critical role in fall risk among the elderly. Decreased visual acuity, contrast sensitivity, and depth perception can obstruct individuals' ability to identify obstacles and maintain balance. Studies, including those by Mehta et al., (2022) and Jin et al., (2024), confirm that elderly individuals with visual impairments are at a higher risk of falls. Additionally, meta-analyses show that visual impairment stands as an independent risk factor for falls in community-dwelling seniors (Li et al., 2023).

Furthermore, the Mini Nutritional Assessment suggests risk of malnutrition, which is linked to reduced muscle mass and strength, impaired function, and increased frailty among the elderly. Research indicates a poor nutritional status correlates with declines in functional capacity and escalated dependence in daily activities (Wojzischke et al., 2020). Malnutrition is also closely associated with frailty development in geriatric populations (Lorenzo-López et al., 2017) and can expedite declines in physical function and independence (Volkert et al., 2019).

Nutritional status also played an important role in this case. The patient's MNA score indicated a risk of malnutrition, which is clinically relevant because inadequate nutritional status contributes to reduced muscle mass, decreased muscle strength, impaired balance, and the development of frailty. These physiological changes increase susceptibility to mobility limitations and falls. The ESPEN guideline emphasizes that early nutritional intervention is an essential component of comprehensive geriatric care because maintaining adequate nutritional status helps preserve physical performance, functional independence, and quality of life among older adults (Volkert et al., 2019).

The primary strength of this case lies in employing the CGA approach, which evaluates multiple dimensions—including medical, functional, psychological, social, and environmental factors—thus offering a comprehensive overview of the elderly's condition (Naughton et al., 2023). The CGA facilitates individualized care plans that enable early identification and management of risk factors before they escalate into serious complications (Pilotto et al., 2024; Sum et al., 2022).

An essential takeaway is the importance of detecting fall risks in elderly individuals who have not yet fallen. Clinical practice often focuses on post-fall responses; however, indicators like TUGT, Barthel Index, MMSE, and MNA enable earlier recognition of risks, allowing for timely preventive measures.

The observed short-term success also underscores the vital role of family in geriatric nursing care. Family members provide critical support that empowers the elderly to maintain independence, facilitating home modifications and ongoing health monitoring (Hailu et al., 2024). Family caregivers are pivotal in identifying fall risks and implementing prevention strategies (Sultana et al., 2023). Evidence shows that family-empowering nursing interventions can significantly enhance caregiver effectiveness in managing fall risks (Almeida et al., 2024).

Overall, this case demonstrates that fall risk in older adults cannot be explained by a single assessment result. Instead, it reflects the complex interaction between cognitive function, physical performance, nutritional status, environmental conditions, behavioral adaptation, and family support. The integration of Comprehensive Geriatric Assessment enabled individualized clinical reasoning and multidimensional nursing interventions that may have contributed to maintaining functional independence and preventing falls despite the presence of several intrinsic risk factors.

DIAGNOSTIC CHALLENGE

The main issue here involves recognizing and integrating various geriatric syndromes rather than diagnosing an acute illness. The patient's symptoms—shortness of breath, dizziness, limited mobility, and visual impairment—are nonspecific and could stem from different organ systems.

The lack of advanced diagnostic tools calls for clinical reasoning based on interviews, observations, physical exams, and geriatric assessments. Additionally, without prior fall history, healthcare providers must assess risk factors based on individual predispositions. Utilizing tools like CGA, TUGT, and Barthel Index is crucial for early detection of fall risks, aligning with fall prevention guidelines (Montero-Odasso et al., 2022) and nutritional recommendations (Volkert et al., 2019).

LIMITATION

Several limitations must be acknowledged in this case analysis: Diagnostic Limitations: The assessments relied heavily on clinical evaluations and geriatric assessment tools, with no comprehensive tests available to investigate additional fall risk factors. Short Follow-Up: The limited follow-up duration restricted the ability to analyze the long-term impacts of the interventions, including recurrent falls and changes in functional and cognitive status. Absence of Post-Intervention Data: There were no follow-up assessments for TUGT, Barthel Index, MMSE, or MNA, preventing quantitative evaluation of intervention efficacy. Single Case Report: As this

study focuses on one individual, generalizations to the larger elderly population should be approached with caution.

Despite these limitations, the case provides significant insights into using Comprehensive Geriatric Assessment (CGA) to identify fall risks and support elderly independence.

LEARNING POINTS

1. Fall risks can be present in the elderly even without previous incidents.
2. Declines in daily living activities are critical indicators in fall risk assessments.
3. Fall risks are multifactorial, including mobility issues, cognitive decline, vision problems, and environmental factors.
4. Geriatric assessment tools can facilitate early identification of at-risk elderly individuals.
5. A multidimensional nursing approach involving family is vital for maintaining safety and independence.

CONCLUSION

This case report demonstrates that comprehensive gerontic nursing management supported by Comprehensive Geriatric Assessment facilitates early identification of multifactorial fall risk, strengthens clinical reasoning, and guides individualized nursing interventions. Despite multiple intrinsic risk factors, the patient maintained functional independence and experienced no falls during follow-up, highlighting the importance of multidimensional assessment and family-centered care in community-based geriatric nursing practice.

ETHICAL CLEARANCE

This case report was conducted in accordance with the ethical principles and applicable regulations regarding patient confidentiality and privacy. Ethical approval was not required because this study reports a single clinical case and does not involve experimental interventions, human subject recruitment, or identifiable patient information. All patient data were anonymized prior to publication in accordance with institutional and journal policies.

PATIENT CONSENT

Written informed consent for publication of this case report, including relevant clinical information and anonymized clinical data, was obtained from the patient.

CONFLICT OF INTEREST

The authors declare that there are no conflicts of interest related to the preparation, authorship, and publication of this article.

FUNDING SOURCE

This article received no specific funding.

AUTHORS' CONTRIBUTION

Author 1 contributed to case conceptualization, manuscript drafting, literature review, manuscript editing, formatting, final manuscript preparation. critical revision of the manuscript, and approval of the final version. Author 2 contributed to patient assessment, data collection, clinical analysis, clinical supervision, and interpretation of findings.

DATA AVAILABILITY

The data supporting the findings of this case report are available from the corresponding author upon reasonable request. However, certain data cannot be publicly shared due to patient confidentiality and ethical considerations.

ACKNOWLEDGEMENTS

The authors would like to express their sincere gratitude to the patient and family for their cooperation and willingness to participate in this case report. The authors also acknowledge the support provided by the community health services and academic institution involved in facilitating the assessment and implementation of gerontic nursing care. The authors further thank colleagues and reviewers who provided valuable input during the preparation of this manuscript.

LIST OF ABBREVIATIONS

ADL = Activities of Daily Living; BP = Blood Pressure; CGA = Comprehensive Geriatric Assessment; CI = Confidence Interval; GCS = Glasgow Coma Scale; HR = Hazard Ratio; MMSE = Mini-Mental State Examination; MNA = Mini Nutritional Assessment; PR = Pulse Rate; RR = Respiratory Rate; TUGT = Timed Up and Go Test; WHO = World Health Organization.

REFERENCES

Adam, C. E., Fitzpatrick, A. L., Leary, C. S., Ilango, S. D., Phelan, E. A., & Semmens, E. O. (2024). The impact of falls on activities of daily living in older adults: A retrospective cohort analysis. PLOS ONE, 19(1), e0294017. https://doi.org/10.1371/journal.pone.0294017

Almeida, A. S., Paguia, A., & Neves, A. P. (2024). Nursing Interventions to Empower Family Caregivers to Manage the Risk of Falling in Older Adults: A Scoping Review. International Journal of Environmental Research and Public Health, 21(3), 246. https://doi.org/10.3390/ijerph21030246

Boltz, M. P., Capezuti, E., & Fulmer, T. T. (2024). Evidence-based geriatric nursing protocols for best practice. Springer Publishing Company.

Brown, C. J., Loyd, C., Richardson, J. T., Boogaerts, G., Zhang, Y., & Kennedy, R. E. (2024). Preliminary Validation of the Acute Care Mobility Assessment as a Measure of Hospital Mobility. The Journals of Gerontology, Series A: Biological Sciences and Medical Sciences, 79(7). https://doi.org/10.1093/gerona/glae012

Hailu, G. N., Abdelkader, M., Asfaw, F., & Meles, H. A. (2024). Exploring the knowledge and skills for effective family caregiving in elderly home care: a qualitative study. BMC Geriatrics, 24(1), 342. https://doi.org/10.1186/s12877-024-04924-3

Huang, Y.-Y., Teng, T., Del Giovane, C., Wang, R.-Z., Suckling, J., Shen, X.-N., Chen, S.-D., Huang, S.-Y., Kuo, K., Cai, W.-J., Chen, K.-L., Feng, L., Zhang, C., Liu, C.-Y., Li, C.-B., Zhao, Q.-H., Dong, Q., Zhou, X.-Y., & Yu, J.-T. (2023). Pharmacological treatment of neuropsychiatric symptoms of dementia: a network meta-analysis. Age and Ageing, 52(6). https://doi.org/10.1093/ageing/afad091

Jin, H., Zhou, Y., Stagg, B. C., & Ehrlich, J. R. (2024). Association between vision impairment and increased prevalence of falls in older US adults. Journal of the American Geriatrics Society, 72(5), 1373–1383. https://doi.org/10.1111/jgs.18879

Kim, J., & Choi, S. (2024). Association of timed up and go test results with future injurious falls among older adults by sex: a population-based cohort study. BMC Geriatrics, 24(1), 1035. https://doi.org/10.1186/s12877-024-05588-9

Li, Y., Hou, L., Zhao, H., Xie, R., Yi, Y., & Ding, X. (2023). Risk factors for falls among community-dwelling older adults: A systematic review and meta-analysis. Frontiers in Medicine, 9. https://doi.org/10.3389/fmed.2022.1019094

Lorenzo-López, L., Maseda, A., de Labra, C., Regueiro-Folgueira, L., Rodríguez-Villamil, J. L., & Millán-Calenti, J. C. (2017). Nutritional determinants of frailty in older adults: A systematic review. BMC Geriatrics, 17(1), 108. https://doi.org/10.1186/s12877-017-0496-2

Mehta, J., Czanner, G., Harding, S., Newsham, D., & Robinson, J. (2022). Visual risk factors for falls in older adults: a case-control study. BMC Geriatrics, 22(1), 134. https://doi.org/10.1186/s12877-022-02784-3

Montero-Odasso, M., van der Velde, N., Alexander, N. B., Becker, C., Blain, H., Camicioli, R., Close, J., Duan, L., Duque, G., Ganz, D. A., Gómez, F., Hausdorff, J. M., Hogan, D. B., Jauregui, J. R., Kenny, R. A., Lipsitz, L. A., Logan, P. A., Lord, S. R., Mallet, L., … Masud, T. (2021). New horizons in falls prevention and management for older adults: a global initiative. Age and Ageing, 50(5), 1499–1507. https://doi.org/10.1093/ageing/afab076

Montero-Odasso, M., van der Velde, N., Martin, F. C., Petrovic, M., Tan, M. P., Ryg, J., Aguilar-Navarro, S., Alexander, N. B., Becker, C., Blain, H., Bourke, R., Cameron, I. D., Camicioli, R., Clemson, L., Close, J., Delbaere, K., Duan, L., Duque, G., Dyer, S. M., … Rixt Zijlstra, G. A. (2022). World guidelines for falls prevention and management for older adults: a global initiative. Age and Ageing, 51(9). https://doi.org/10.1093/ageing/afac205

Naughton, C., Galvin, R., McCullagh, R., & Horgan, F. (2023). Comprehensive geriatric assessment—where are we now, where do we need to be in the context of global ageing? Age and Ageing, 52(11). https://doi.org/10.1093/ageing/afad210

Pilotto, A., Aprile, P. L., Veronese, N., Lacorte, E., Morganti, W., Custodero, C., Piscopo, P., Fabrizi, E., Gatta, F. Della, Merlo, A., & Vanacore, N. (2024). The Italian guideline on comprehensive geriatric assessment (CGA) for the older persons: a collaborative work of 25 Italian Scientific Societies and the National Institute of Health. Aging Clinical and Experimental Research, 36(1), 121. https://doi.org/10.1007/s40520-024-02772-0

Rasyid, D., Rante, A., Warda, W., Ismunandar, I., & Salimung, H. Dg. (2026). Relationship Between Functional Independence and Fall Risk in Indonesian Community-Dwelling Elderly. Poltekita: Jurnal Ilmu Kesehatan, 20(1), 73–81. https://doi.org/10.33860/jik.v20i1.4293

Sherrington, C., Fairhall, N. J., Wallbank, G. K., Tiedemann, A., Michaleff, Z. A., Howard, K., Clemson, L., Hopewell, S., & Lamb, S. E. (2019). Exercise for preventing falls in older people living in the community. Cochrane Database of Systematic Reviews, (1).

Sultana, M., Alexander, N., Pierucini-Faria, F., Hunter, S. W., Kamkar, N., Speechley, M. R., Son, S., Verghese, J., & Montero-Odasso, M. (2023). Involvement of Informal Caregivers in Preventing Falls in Older Adults with Cognitive Impairment: A Rapid Review. Journal of Alzheimer's Disease, 92(3), 741–750. https://doi.org/10.3233/JAD-221142

Sum, G., Nicholas, S. O., Nai, Z. L., Ding, Y. Y., & Tan, W. S. (2022). Health outcomes and implementation barriers and facilitators of comprehensive geriatric assessment in community settings: a systematic integrative review [PROSPERO registration no.: CRD42021229953]. BMC Geriatrics, 22(1), 379. https://doi.org/10.1186/s12877-022-03024-4

Volkert, D., Beck, A. M., Cederholm, T., Cruz-Jentoft, A., Goisser, S., Hooper, L., Kiesswetter, E., Maggio, M., Raynaud-Simon, A., & Sieber, C. C. (2019). ESPEN guideline on clinical nutrition and hydration in geriatrics. Clinical Nutrition, 38(1), 10–47.

Wojzischke, J., van Wijngaarden, J., van den Berg, C., Cetinyurek-Yavuz, A., Diekmann, R., Luiking, Y., & Bauer, J. (2020). Nutritional status and functionality in geriatric rehabilitation patients: a systematic review and meta-analysis. European Geriatric Medicine, 11(2), 195–207. https://doi.org/10.1007/s41999-020-00294-2

Zhang, Q., Yan, J., Long, J., Wang, Y., Li, D., Zhou, M., Hou, D., Hong, Y., Zhi, L., & Ke, M. (2024). Exploring the association between activities of daily living ability and injurious falls in older stroke patients with different activity ranges. Scientific Reports, 14(1), 19731.

Optimal Journal Clinical Case Report, Volume 01, No.01,July 2026, (Page. 53-67)
ISSN 3164-872X

CASE REPORT: COMBINED PURSED-LIP BREATHING AND CHEST CLAPPING FOR INEFFECTIVE AIRWAY CLEARANCE DURING ACUTE ASTHMA EXACERBATION

Fathiya Luthfil Yumni[a] , Mariyatul Kiptiyah[b]

[a]Doctoral Program, University of Airlangga, Surabaya, 60115, Indonesia

[b]Faculty Health and Science, University Muhammadiyah of Surabaya, Surabaya, 60113, Indonesia

**Corresponding author: Fathiyaluthfilyumni.ac.id@gmai.com*

Abstract

Background: Asthma is a chronic inflammatory airway disease characterized by reversible airway obstruction and bronchial hyperresponsiveness. During an asthma attack, bronchoconstriction and mucus accumulation may impair ventilation and cause ineffective airway clearance. Non-pharmacological nursing interventions such as Pursed Lips Breathing (PLB) and chest clapping may improve respiratory status; however, evidence regarding their combined application in asthma attack patients remains limited. **Case Summary:** This case report describes a 56-year-old hospitalized female patient admitted to a general medical ward with an asthma attack presenting with dyspnea, increased respiratory effort, ineffective airway clearance, and secretion accumulation. Clinical findings included accessory respiratory muscle use, reduced breathing depth, and decreased oxygen saturation. **Investigation and Diagnosis:** Diagnostic assessment included physical examination, spirometry, blood gas analysis (BGA), and pulse oximetry. Initial findings showed FEV1 34.82% (0.72 L), $PaCO_2$ 63.1 mmHg, pH 7.18, and SpO_2 84% without oxygen support, indicating respiratory acidosis and impaired respiratory function. The nursing diagnosis established was ineffective airway clearance related to excessive secretions and airway obstruction secondary to asthma attack. **Management:** Nursing care was provided based on Indonesian Nursing Intervention Standards (SIKI) Respiratory Monitoring (I.01014) combined with PLB and chest clapping for three consecutive days, three times daily, including respiratory monitoring, secretion management, education, and breathing exercises. **Outcome:** Clinical improvement was observed after intervention. FEV1 increased to 52.25% (1.65 L), $PaCO_2$ decreased to 44.56 mmHg, pH improved to 7.36, and SpO_2 increased to 98%. Dyspnea and accessory muscle use decreased, while breathing depth improved. **Discussion :** In this patient, the use of combined Pursed-Lip Breathing and chest clapping was associated with favorable changes in airway clearance indicators and respiratory parameters during hospitalization. As this report describes a single patient, these findings should be interpreted cautiously and may help inform future studies evaluating the role of these nursing interventions in patients with asthma attacks.

Keywords: Asthma; Chest Clapping; Pursed-Lip Breathing according to alphabetical order

INTRODUCTION

Asthma is a chronic inflammatory disease of the airways characterized by bronchial hyperresponsiveness, persistent inflammation, and reversible airway obstruction. In an asthma attack condition, there is an increase in inflammation, bronchospasm, mucosal edema, and excessive mucus production, which can lead to impaired ventilation and reduced airway patency. Common clinical manifestations include dyspnea, wheezing, cough, tachypnea, use of accessory respiratory muscles, and increased secretions, which may lead to the nursing diagnosis of ineffective airway clearance. This condition may increase the risk of secretion retention, decreased oxygen saturation, respiratory muscle fatigue, and even respiratory failure if not managed optimally (Herdman & Kamitsuru, 2021; Global Initiative for Asthma [GINA], 2024).

Globally, asthma remains a significant health problem with a high incidence rate, affecting approximately 262–363 million cases and causing more than 450,000 deaths annually, mostly due to delayed treatment and poor disease control (World Health Organization [WHO], 2024). In Indonesia, the prevalence of asthma based on the 2018 Basic Health Research (Riskesdas) ranges from 2.4–2.6%, while in East Java it is approximately 2.5%, indicating that asthma remains one of the major respiratory health problems (Ministry of Health of the Republic of Indonesia, 2018; Primarani & Megatsari, 2022). In clinical practice, patients with asthma attacks still frequently require hospital care due to ventilation impairment and secretion accumulation.

In nursing practice, the problem of ineffective airway clearance in patients with asthma attacks requires both pharmacological and non-pharmacological interventions. One non-pharmacological intervention that can be applied is Pursed Lips Breathing (PLB), a breathing exercise that helps prolong the expiratory phase, reduce air trapping, and improve alveolar ventilation (Nguyen & Duong, 2025). In addition, chest clapping is used to assist secretion mobilization, thereby facilitating sputum expectoration. However, clinical evidence regarding the combination of PLB and chest clapping in asthma attack patients with the nursing diagnosis of ineffective airway clearance is still limited, particularly in the form of a clinical case report.

Therefore, this case report aims to describe the application of the combination of Pursed Lips Breathing and chest clapping in a patient with an asthma attack and the nursing diagnosis of ineffective airway clearance, as well as to evaluate changes in the patient's clinical condition after nursing interventions.

CASE PRESENTATION

The patient, Mrs. M, is a 61-year-old Javanese female, Muslim, married, and a housewife with two children and one grandchild. She resides in a densely populated residential area located approximately 5 meters from a public waste disposal site. The household environment is characterized by inadequate ventilation, with the bedroom lacking windows and ventilation available only at the front of the house. Her body mass index (BMI) was 23.9 kg/m². She had never smoked and had no history of secondhand smoke exposure. The patient reported no known drug or food allergies. Based on her previous clinical history, she was diagnosed with moderate persistent bronchial asthma. During the previous 12 months, she had experienced two asthma exacerbations requiring emergency department visits and hospitalization.

The patient was admitted to the Emergency Department of RSUD Haji Provincial Hospital, East Java, on October 14, 2025, at 15:30 WIB, presenting with chief complaints of dyspnea and fever. The dyspnea had persisted for three days before admission and progressively worsened on the fourth day, prompting her family to bring her to the hospital. The patient had a known history of bronchial asthma and routinely used a Seretide inhaler during exacerbations; however, her symptoms did not respond to home treatment during the current episode. In addition, she had comorbid diabetes mellitus and hypertension, which were managed with insulin (10 units), Forxiga/Fonylin MR 60 mg, and amlodipine 10 mg, respectively.

On reassessment conducted on October 20, 2025, the patient continued to report dyspnea, productive cough, and wheezing. She stated that previous episodes of dyspnea were typically accompanied by a productive cough and chest tightness, prompting her family to seek immediate medical attention whenever her symptoms worsened. Vital signs revealed a blood pressure of 149/60 mmHg, a pulse rate of 73 beats/min, a respiratory rate of 24 breaths/min, a body temperature of 36.4°C, and an oxygen saturation (SpO_2) of 84%. The patient was conscious and fully oriented (compos mentis), with a Glasgow Coma Scale (GCS) score of E4V5M6. The fall risk assessment score was 50, and the pressure injury risk assessment score was 17. Respiratory examination revealed the use of accessory respiratory muscles, including nasal flaring and intercostal retractions. Auscultation demonstrated wheezing over the left upper lung field.

CLINICAL REASONING

Clinical Assessment Findings

Mrs. M presented with dyspnea, fever, productive cough, and wheezing. The clinical assessment revealed increased work of breathing, characterized by the use of accessory respiratory muscles, nasal flaring, and intercostal retractions. Objective findings included tachypnea (respiratory rate of 24 breaths/min), hypoxemia (SpO_2 84% without oxygen support), and wheezing on auscultation in the left upper lung field. The patient also reported a previous history of bronchial asthma, recurrent episodes of dyspnea accompanied by productive cough and chest tightness, and routine use of a Seretide inhaler during asthma exacerbations.

Interpretation of Findings

The combination of subjective and objective findings indicated impaired ventilation associated with airway narrowing and excessive mucus accumulation. The presence of wheezing suggested bronchospasm, while productive cough and secretion accumulation indicated difficulty in clearing airway secretions. The use of accessory respiratory muscles and reduced oxygen saturation reflected increased respiratory effort and compromised respiratory function. These findings suggested that airway obstruction and ineffective secretion clearance were the primary clinical problems requiring immediate nursing attention.

Differential Diagnosis

Several differential diagnoses were considered based on the presenting symptoms, including acute asthma exacerbation, pneumonia, acute exacerbation of chronic obstructive pulmonary disease (AECOPD), and congestive heart failure. An acute asthma exacerbation was considered the most likely diagnosis due to the patient's established history of bronchial asthma, recurrent episodes of dyspnea with wheezing, response pattern to asthma medication use, and clinical signs of bronchospasm and increased work of breathing. Pneumonia was considered due to the presence of fever and productive cough; however, the absence of dominant infectious signs and the presence of characteristic asthma-related symptoms supported asthma exacerbation as the primary condition. AECOPD was considered less likely due to the absence of a smoking history and a previous diagnosis of chronic obstructive pulmonary disease. Congestive heart failure was also considered but was less consistent with the patient's clinical presentation and respiratory findings.

Nursing Diagnosis

Based on the integration of subjective data, objective findings, and the patient's medical history, the prioritized nursing diagnosis was ineffective airway clearance related to increased mucus production and bronchospasm, as evidenced by dyspnea, productive cough, wheezing, use of accessory respiratory muscles, and decreased oxygen saturation. This diagnosis was prioritized over other potential nursing problems because airway clearance directly affects ventilation and oxygenation, and impaired airway patency may contribute to further respiratory deterioration if not addressed promptly.

Rationale for Intervention Selection

The selection of combined Pursed-Lip Breathing (PLB) and chest clapping was based on the identified physiological problems. PLB was selected to promote controlled expiration, reduce airway collapse, and improve ventilation efficiency by prolonging expiratory time. Chest clapping was implemented to facilitate the mobilization of airway secretions and support mucus clearance. Therefore, the combination of these interventions was considered appropriate to address the patient's ineffective airway clearance by targeting both airway obstruction and secretion retention.

DIAGNOSTIC ASSESSMENT

Table 1. Summary of relevant diagnostic findings

Examination	Result	Clinical Interpretation
Physical Examination (Respiratory Status)	The patient experienced dyspnea, increased use of accessory respiratory muscles, and reduced depth of breathing.	These findings indicate increased work of breathing and impaired respiratory mechanics, suggesting compromised ventilation associated with airway obstruction.
Spirometer (Pre-Intervention FEV1)	34,82% (0,72 L)	The markedly reduced FEV_1 indicates severe airflow limitation and reduced expiratory capacity, which is consistent with obstructive airway impairment commonly observed during asthma exacerbation.
Blood Gas Analysis (Pre-Intervention)	$PaCO_2$: 63.1 mmHg; pH: 7.18; HCO_3: 25.3; BE: 2.26	The increased $PaCO_2$ with decreased pH indicates acute respiratory acidosis caused by carbon dioxide retention, suggesting inadequate alveolar ventilation due to increased airway resistance and respiratory compromise.
Pulse Oximetry	SpO_2: 84% without oxygen support	The reduced oxygen saturation indicates impaired oxygenation, reflecting the severity of the respiratory disturbance.
Clinical Assessment (Nursing Outcome Classification: Breathing Pattern – L.01004)	Increased dyspnea, increased use of accessory respiratory muscles, and decreased depth of breathing.	These findings supported the identification of impaired respiratory function and served as baseline indicators for evaluating nursing outcomes..
Clinical Evaluation After Intervention	Dyspnea decreased, accessory muscle use reduced, and breathing depth improved.	These changes indicated improvement in respiratory clinical indicators following the nursing intervention.

Diagnostic reasoning

The diagnostic assessment demonstrated evidence of acute respiratory compromise characterized by airflow limitation, impaired ventilation, carbon dioxide retention, and hypoxemia. The reduced FEV_1 (34.82%, 0.72 L) indicated significant expiratory airflow obstruction, while elevated $PaCO_2$ (63.1 mmHg) accompanied by respiratory acidosis (pH 7.18) suggested inadequate ventilation due to increased airway resistance. The presence of dyspnea, wheezing, productive cough, and increased use of accessory respiratory muscles further supported the clinical interpretation of an acute asthma exacerbation with impaired airway clearance.

The diagnostic findings were also evaluated in relation to other possible causes of respiratory distress. Pneumonia was considered due to the presence of fever and productive cough; however, the dominant clinical

features of bronchospasm, previous asthma history, wheezing, and obstructive spirometry findings were more consistent with asthma exacerbation. Acute exacerbation of chronic obstructive pulmonary disease (AECOPD) was considered less likely due to the absence of smoking history and lack of previous COPD diagnosis. Congestive heart failure was also considered but was not supported by the respiratory examination findings and the patient's clinical history.

Based on the integration of clinical findings, spirometry results, blood gas analysis, oxygen saturation, and patient history, the final diagnosis was established as an acute asthma exacerbation accompanied by ineffective airway clearance due to bronchospasm and increased airway secretions. These findings provided the clinical basis for implementing respiratory nursing interventions, including Pursed-Lip Breathing (PLB) and chest clapping, aimed at supporting ventilation and facilitating airway secretion clearance.

THERAPEUTIC INTERVENTION

Nursing interventions were provided based on the Indonesian Nursing Intervention Standard (SIKI), specifically Respiratory Monitoring (I.01014), which includes observational, therapeutic, educational, and collaborative components aimed at improving the patient's respiratory condition. Respiratory monitoring included assessment of respiratory rate, breathing pattern, breathing depth, use of accessory respiratory muscles, oxygen saturation, and signs of respiratory distress. Therapeutic interventions included positioning to optimize ventilation, secretion management, education regarding effective breathing techniques, and collaboration with the medical team for pharmacological management.

The interventions were implemented for three consecutive days, with a frequency of three sessions per day. The expected outcomes were based on the Indonesian Nursing Outcome Standard (SLKI), specifically the Breathing Pattern outcome (L.01004), including reduced dyspnea, decreased use of accessory respiratory muscles, improved breathing depth, and improved respiratory comfort. The patient received Pursed-Lip Breathing (PLB) exercises as a respiratory nursing intervention. PLB was performed in a semi-Fowler position to facilitate lung expansion and reduce respiratory effort. The patient was instructed to inhale slowly through the nose and exhale slowly through pursed lips while maintaining an inspiration-to-expiration ratio of 1:2. Each breathing cycle consisted of a slow inhalation followed by prolonged exhalation through pursed lips. Each PLB session was conducted for approximately 10 minutes and consisted of six breathing cycles, with a 2-second rest interval between each cycle. The exercise was performed three times daily for three consecutive days under the guidance and supervision of a nurse.

Chest clapping was performed as an adjunctive airway clearance technique to facilitate the mobilization of respiratory secretions. The patient was positioned according to the targeted lung segment to optimize secretion mobilization and maintain patient comfort. Manual percussion was performed by a nurse using a cupped-hand technique over the specific affected lung segments while avoiding bony prominences and sensitive areas. Each chest clapping maneuver was performed for approximately 10 seconds per targeted lung segment and was administered three times daily for three consecutive days. The intervention was combined with effective coughing techniques to assist in the removal of airway secretions.

The combination of PLB and chest clapping was selected based on the patient's clinical problems, including airway obstruction, increased work of breathing, and secretion accumulation. PLB was intended to promote controlled expiration, reduce airway collapse, and improve ventilatory efficiency, whereas chest clapping was aimed at facilitating mucus mobilization and supporting airway clearance. These interventions were implemented as supportive nursing strategies to address the patient's ineffective airway clearance and respiratory symptoms.

THERAPEUTIC SEQUENCE

Clinical management was carried out in stages over a three-day period based on the Indonesian Nursing Intervention Standard (SIKI), specifically Respiratory Monitoring (I.01014), to achieve the targeted outcomes of

the Indonesian Nursing Outcome Standard (SLKI), namely Breathing Pattern (L.01004), characterized by improved respiratory status. The main respiratory interventions consisted of Pursed-Lip Breathing (PLB) exercises and chest clapping, which were performed throughout the three-day intervention period.

Day 1 (Initial Assessment and Stabilization)

On the first day, a comprehensive respiratory assessment was conducted, including evaluation of respiratory rate, breathing pattern, breathing depth, use of accessory respiratory muscles, dyspnea severity, oxygen saturation, and signs of respiratory distress. These assessments were performed to determine the severity of respiratory impairment and establish the basis for nursing interventions. The findings indicated dyspnea, increased work of breathing, decreased oxygen saturation, and increased use of accessory respiratory muscles. Therefore, interventions were initiated to support respiratory function through semi-Fowler positioning, respiratory monitoring three times daily, Pursed-Lip Breathing (PLB) exercises, and chest clapping.

PLB exercises were performed three times daily, with each session lasting approximately 10 minutes. The patient was instructed to perform slow inhalation through the nose followed by prolonged expiration through pursed lips using an inspiration-to-expiration ratio of 1:2. Chest clapping was also performed on the first day by a nurse as an airway clearance technique to assist secretion mobilization.

Day 2 (Therapeutic Adjustment and Reinforcement)

On the second day, clinical evaluation showed a reduction in dyspnea intensity; however, the patient continued to demonstrate the use of accessory respiratory muscles. Therefore, respiratory interventions were continued and reinforced. PLB exercises were maintained three times daily, with each session lasting approximately 10 minutes, while the patient was guided to perform effective inspiration and expiration techniques. Chest clapping was also continued on the second day, performed by a nurse three times daily to support airway secretion clearance. Patient education regarding breathing techniques and effective coughing was reinforced to encourage active participation in respiratory management.

Day 3 (Evaluation of Clinical Response)

On the third day, evaluation demonstrated further improvement in respiratory status, indicated by reduced dyspnea, decreased use of accessory respiratory muscles, improved breathing depth, and improved oxygenation parameters. The established interventions were continued without major modification. PLB exercises were continued three times daily, with each session lasting approximately 10 minutes, and chest clapping was performed by the nurse on the third day to maintain airway clearance. The patient was also encouraged to continue PLB exercises independently as a supportive strategy for respiratory symptom management after discharge.

This three-day sequence of interventions followed the Indonesian Nursing Intervention Standard (SIKI) Respiratory Monitoring (I.01014), incorporating respiratory assessment, therapeutic interventions, education, airway clearance techniques, and continuous evaluation of patient response.

CASE TIMELINE

Table 2. Clinical case timeline

Time	Clinical Event	Investigation	Treatment	Outcome
Day 0	The patient presented with respiratory complaints, including	Initial respiratory assessment was performed, including evaluation of	Nursing interventions were initiated based on the Indonesian Nursing Intervention Standard (SIKI)	Initial evaluation showed persistent dyspnea, decreased oxygen saturation, and increased work of

	dyspnea, increased work of breathing, ineffective airway clearance, and an ineffective breathing pattern.	respiratory rate, breathing pattern and depth, use of accessory respiratory muscles, auscultation of breath sounds, oxygen saturation monitoring, spirometry, and blood gas analysis as baseline clinical data.	Respiratory Monitoring (I.01014), including respiratory monitoring, semi-Fowler positioning, assessment of respiratory distress signs, secretion management, and initial education on effective breathing techniques. The patient was introduced to Pursed-Lip Breathing (PLB) and chest clapping as supportive airway clearance interventions.	breathing; however, the patient tolerated therapeutic positioning and breathing exercises.
15 October 2025 (Day 1 – First Interventio n Day)	The patient continued to experience mild-to-moderate dyspnea with visible use of accessory respiratory muscles.	Further evaluation of respiratory rate, breathing pattern, breathing depth, oxygen saturation, and response to respiratory interventions was conducted. Respiratory monitoring was performed three times daily.	Respiratory interventions were continued. PLB exercises were performed three times daily, with each session lasting approximately 10 minutes, under nursing supervision to ensure correct inspiratory and expiratory techniques. Chest clapping was also performed by the nurse three times daily to facilitate airway secretion clearance.	A subjective reduction in dyspnea was observed; however, accessory respiratory muscle use remained present.
16 October 2025 (Day 2 – Second Interventio n Day)	Clinical improvement was noted with reduced dyspnea intensity and improved breathing comfort.	Reassessment showed a more regular breathing pattern and improved respiratory depth. Evaluation was conducted to determine the need for intervention modification.	No major changes were made to the intervention plan; however, reinforcement of education and optimization of PLB exercises were provided to enhance ventilatory effectiveness.	Use of accessory respiratory muscles began to decrease, and the patient demonstrated improved ability to perform PLB independently.
23 Octiber (Day 3-Last Interventio n)	The patient's respiratory condition showed significant improvement compared to admission.	Final evaluation of respiratory indicators was conducted based on the Indonesian Nursing Outcome Standard (SLKI) Breathing Pattern (L.01004).	Therapeutic interventions were maintained until discharge. The patient was educated to continue PLB exercises independently after treatment.	Clinical improvement was observed, including reduced dyspnea, decreased use of accessory respiratory muscles, and improved breathing depth.
Follow-up	The patient was advised to attend scheduled follow-up visits and maintain learned breathing techniques.	Ongoing evaluation may be conducted to assess respiratory status and the patient's ability to perform independent	Continuation of regular Pursed Lips Breathing exercises and maintenance of activity within tolerance levels.	Stable respiratory condition is expected to be maintained, with minimized risk of symptom recurrence.

		breathing exercises at home.		

OUTCOME AND FOLLOW-UP

Parameter	Pre-Intervention	Post-Intervention (After 3 Days)	Clinical Interpretation
Clinical Symptoms	Dyspnea, increased use of accessory respiratory muscles, and reduced depth of breathing	Reduced dyspnea, decreased use of accessory respiratory muscles, and improved depth of breathing	Indicates improvement in respiratory status in accordance with the Indonesian Nursing Outcome Standard (SLKI) Breathing Pattern (L.01004)
FEV1 (%)	34,82%	52,25%	An increase in expiratory pulmonary function was observed during the treatment period. However, this improvement cannot be attributed solely to PLB because other treatments were administered concurrently.
FEV1 (L)	0,72 L	1,65 L	Expiratory lung capacity increased during the treatment period, potentially reflecting the combined effects of PLB and concurrent clinical management.
$PaCO_2$ (mmHg)	63,1	44,56	The reduction in $PaCO_2$ indicates decreased carbon dioxide retention and improved alveolar ventilation during the combined treatment period.
pH	7,18	7,36	The pH increased toward the physiological range, indicating improvement in respiratory acidemia during treatment.
HCO_3	25,3	22,3	The change in bicarbonate accompanied the normalization of pH and $PaCO_2$ and should be interpreted in conjunction with the overall arterial blood gas findings.

Base Excess (BE)	2,26	1,8	Respiratory acidosis resolved during the treatment period, suggesting improved alveolar ventilation following combined clinical management.
Blood Gas Analysis Interpretation	Respiratory acidosis	Normal	Peripheral oxygen saturation improved during the treatment period. This improvement may have resulted from the combined effects of PLB, pharmacological therapy, and supportive hospital care.
SpO_2 (%) tanpa bantuan oksigenasi	84%	98%	No adverse events or complications associated with PLB were observed during the intervention period.
Complication	None observed	None observed	The patient tolerated the intervention well
Short-term Follow-up	—	The patient was advised to continue Pursed Lips Breathing (PLB) independently	PLB was recommended as an adjunctive self-management technique alongside continued adherence to the prescribed medical treatment and follow-up plan.

The evaluation results demonstrated progressive improvement in Mrs. M's respiratory status over the three-day treatment period. During this period, Respiratory Monitoring (I.01014), based on the Indonesian Nursing Intervention Standard (SIKI), and Pursed Lips Breathing (PLB) were implemented as adjunctive nursing interventions alongside concurrent pharmacological therapy and supportive hospital management. At the initial assessment, the patient presented with dyspnea, increased use of accessory respiratory muscles, and reduced depth of breathing. Objective findings showed an increase in FEV1 from 34.82% (0.72 L) to 52.25% (1.65 L). Arterial Blood Gas analysis also showed resolution of respiratory acidosis, with $PaCO_2$ decreasing from 63.1 mmHg to 44.56 mmHg and pH increasing from 7.18 to 7.36. In addition, SpO_2 increased from 84% to 98% without supplemental oxygen, indicating improved oxygenation during the treatment period.

Clinically, the patient experienced reduced dyspnea, decreased use of accessory respiratory muscles, and improved depth of breathing, consistent with improvement in the Indonesian Nursing Outcome Standard (SLKI) Breathing Pattern (L.01004). No complications associated with PLB were observed, and the patient tolerated the exercises well. However, because PLB was administered concurrently with pharmacological therapy and supportive hospital care, the observed improvements cannot be attributed solely to PLB. The findings should therefore be interpreted as reflecting the combined effects of comprehensive clinical

management, with PLB serving as a supportive nursing intervention. At discharge, the patient was advised to continue PLB independently at home as an adjunct to the prescribed treatment and follow-up plan.

DISCUSSION

The case of Mrs. M illustrates the clinical complexity of managing acute respiratory impairment in a patient with asthma. At the initial assessment, the patient presented with dyspnea, increased use of accessory respiratory muscles, reduced breathing depth, and hypoxemia. Objective findings included an FEV1 of 34.82% (0.72 L), $PaCO_2$ of 63.1 mmHg, pH of 7.18, and SpO_2 of 84% without supplemental oxygen, indicating severe ventilatory impairment accompanied by respiratory acidosis (Mousa et al., 2023). Because subjective symptoms such as dyspnea may not fully reflect the severity of airway obstruction and gas-exchange impairment, spirometry, arterial blood gas analysis, and pulse oximetry were used to support clinical assessment and monitor changes during treatment.

Nursing management was implemented according to the Indonesian Nursing Intervention Standard (SIKI) Respiratory Monitoring (I.01014), including respiratory assessment, therapeutic positioning, patient education, and continued monitoring. Pursed Lips Breathing (PLB) was incorporated as an adjunctive non-pharmacological intervention intended to promote controlled expiration, reduce respiratory effort, and improve breathing regulation. Over the three-day treatment period, FEV1 increased to 52.25% (1.65 L), $PaCO_2$ decreased to 44.56 mmHg, pH increased to 7.36, and SpO_2 increased to 98% without supplemental oxygen. These objective changes were accompanied by reduced dyspnea, decreased use of accessory respiratory muscles, and improved breathing depth, consistent with improvement in the Indonesian Nursing Outcome Standard (SLKI) Breathing Pattern (L.01004).

The symptomatic improvement observed in this case is consistent with the case report by Rahmi et al. (2022), in which three days of PLB exercises in a patient with bronchial asthma were associated with reduced dyspnea and respiratory rate. However, that report primarily evaluated short-term clinical symptoms, whereas the present case additionally documented changes in spirometric and arterial blood gas parameters. Despite this difference, both reports were based on uncontrolled case observations and therefore could not establish that PLB was the direct cause of the observed improvement.

The findings should also be interpreted in relation to controlled studies of breathing retraining in asthma. Thomas et al. (2009) found that breathing exercises improved asthma-related health status and patient-centered outcomes but did not produce corresponding improvements in asthma pathophysiology. Similarly, Bruton et al. (2018) reported that physiotherapy-based breathing retraining improved quality of life in adults with incompletely controlled asthma, although it had little effect on pulmonary function or airway inflammation. These findings suggest that breathing interventions may be particularly beneficial for symptom perception, dysfunctional breathing, and self-management, while their direct effects on airway obstruction and objective lung function remain uncertain.

Evidence regarding chest physiotherapy and airway clearance interventions in acute asthma is also inconsistent. Asher et al. (1990) reported that chest physiotherapy, when added to pharmacological treatment, did not improve lung function in most children recovering from acute severe asthma. Although the population and intervention differed from those in the present case, this finding indicates that respiratory physiotherapy techniques do not uniformly produce measurable pulmonary function improvement in asthma. Airway clearance interventions may be more relevant when mucus retention or substantial airway secretions are present and should not be routinely assumed to improve airflow obstruction in every patient.

The relatively large changes in FEV1, $PaCO_2$, pH, and SpO_2 observed in Mrs. M therefore require cautious interpretation. PLB may have supported controlled expiration, reduced respiratory effort, and improved the patient's ability to manage dyspnea. However, the objective improvement may also have reflected the effects

of concurrent pharmacological therapy, supportive hospital management, therapeutic positioning, repeated clinical monitoring, and the natural resolution of the acute exacerbation. Because these treatments were administered during the same period, their individual effects could not be separated.

Several additional limitations should be considered. First, this report involved only one patient and lacked a control or comparison condition, limiting causal inference and generalizability. Second, the intervention and observation period lasted only three days, preventing evaluation of sustained benefit, adherence after discharge, or symptom recurrence. Third, spirometry is effort-dependent and may be affected by patient cooperation, fatigue, familiarity with the procedure, timing of bronchodilator administration, and measurement conditions. If the timing of spirometry, blood gas analysis, and oxygen discontinuation was not standardized, differences between the pre- and post-intervention assessments may also have influenced the results. Fourth, changes in respiratory symptoms were not compared using a standardized dyspnea instrument, which may have increased the risk of observer and reporting bias. Finally, clinical characteristics such as baseline asthma control, previous treatment, severity of the exacerbation, comorbidities, and airway secretion burden may have influenced the patient's response.

Consequently, the findings do not demonstrate that PLB independently caused the observed physiological improvement. Rather, PLB may be considered a feasible and well-tolerated adjunctive nursing intervention within comprehensive asthma management. Controlled studies with larger samples, standardized intervention protocols, consistent timing of physiological measurements, validated symptom instruments, and longer follow-up are needed to determine the specific contribution of PLB to respiratory symptoms, lung function, gas exchange, and clinical recovery in patients with acute asthma.

LIMITATION

This case report has several limitations that should be considered when interpreting the findings.

1. **Single-patient design and inability to establish causality**

   This report involved only one patient; therefore, the findings cannot be generalized to broader populations with asthma or other respiratory conditions. More importantly, a single-patient case report without a control or comparison group cannot establish a causal relationship between Pursed Lips Breathing (PLB) and the observed clinical improvement. The temporal association between the intervention and the outcomes should not be interpreted as evidence that PLB directly caused the changes in respiratory symptoms, pulmonary function, oxygen saturation, or arterial blood gas parameters.

2. **Short intervention and observation period**

   PLB was implemented over a three-day period. Consequently, the short-term changes observed during hospitalization may not represent sustained improvement, and the long-term effectiveness of PLB on respiratory symptoms, pulmonary function, and gas exchange could not be determined.

3. **Absence of post-discharge follow-up**

   Patient evaluation was limited to the hospitalization period, with no post-discharge assessment. Therefore, adherence to independent PLB practice, persistence of clinical improvement, symptom recurrence, and longer-term outcomes could not be evaluated.

4. **Concurrent therapies and potential confounding factors**

   PLB was administered alongside pharmacological treatment, supportive hospital management, therapeutic positioning, respiratory monitoring, and other nursing interventions. These concurrent treatments, as well as the natural resolution of the acute exacerbation, may have contributed to the

observed improvement. Because the effects of these interventions could not be separated, the independent contribution of PLB remains uncertain.

5. Potential measurement-related limitations

Although objective measures, including FEV1, arterial blood gas analysis, and SpO_2, were used, several factors may have influenced the pre- and post-intervention results. Spirometry is effort-dependent and may be affected by patient cooperation, fatigue, familiarity with the procedure, and the timing of bronchodilator administration. Similarly, variations in the timing and conditions of arterial blood gas and oxygen saturation measurements may have affected the comparability of the findings.

6. Limited comprehensiveness of clinical data

Additional information, including baseline asthma control, exacerbation severity, previous treatment history, comorbidities, airway secretion characteristics, standardized dyspnea scores, and detailed medication timing, was not fully available. The absence of these data limited the ability to comprehensively interpret the patient's response and identify other factors that may have influenced the clinical outcomes.

Accordingly, the findings should be interpreted as a descriptive observation of clinical improvement during comprehensive hospital management rather than as evidence of the effectiveness or causal effect of PLB. Further studies involving larger samples, comparison groups, standardized intervention protocols, and longer follow-up periods are required to determine the specific contribution of PLB to clinical and physiological outcomes in patients with asthma.

LEARNING POINTS

1. In this case, serial assessment using respiratory symptoms, accessory muscle use, breathing depth, FEV1, arterial Blood Gas Analysis, and SpO_2 provided a more comprehensive evaluation of respiratory impairment than subjective symptoms alone.
2. Objective respiratory monitoring was important for identifying the severity of ventilatory dysfunction and documenting changes during the three-day treatment period, including changes in FEV1, $PaCO_2$, pH, and SpO_2.
3. The improvement observed after the implementation of Pursed Lips Breathing occurred within comprehensive hospital management that also included pharmacological therapy, supportive care, therapeutic positioning, and respiratory monitoring. Therefore, the independent effect of PLB could not be determined.
4. PLB was feasible and well tolerated as an adjunctive nursing intervention in this patient. Direct observation and repeated instruction were important to ensure that the patient performed the breathing technique correctly.
5. Active patient participation was essential because the patient was expected to understand, practise, and subsequently perform PLB independently. Assessing the patient's ability to demonstrate the technique was therefore an important component of nursing evaluation.
6. Education for independent PLB practice should include clear instructions regarding the breathing technique, the appropriate time to use it, and the need to continue prescribed medical treatment. Independent breathing exercises should be presented as supportive self-management rather than as a replacement for pharmacological therapy or clinical follow-up.
7. Pre- and post-treatment measurements may support clinical decision-making, but changes observed in a single-patient case report should be interpreted descriptively and cannot establish the effectiveness or causal effect of PLB.

CONCLUSION

In the case of Mrs. M, improvement in respiratory status was observed over a three-day treatment period during which Respiratory Monitoring and Pursed Lips Breathing (PLB) were implemented as part of comprehensive nursing and medical management. The observed changes included an increase in FEV1,

normalization of arterial Blood Gas Analysis parameters, improvement in SpO_2 without supplemental oxygen, reduced dyspnea, decreased use of accessory respiratory muscles, and improved breathing depth.

PLB was feasible and well tolerated as an adjunctive nursing intervention in this patient. However, because PLB was provided concurrently with pharmacological therapy, supportive hospital management, therapeutic positioning, and other nursing interventions, its independent contribution to the observed improvement could not be determined. Therefore, these findings should be interpreted as a descriptive clinical observation rather than evidence of the definitive effectiveness of PLB. Further studies involving larger samples, comparison groups, standardized intervention protocols, and longer follow-up periods are needed to evaluate the specific effects of PLB on respiratory symptoms, pulmonary function, and gas exchange in patients with asthma.

ETHICAL CLEARANCE

This report describes nursing care provided to a single patient as part of routine clinical management and did not involve experimental procedures or changes to the prescribed treatment. Formal ethics committee review was not obtained before preparation of the case report. Written informed consent for publication was obtained from the patient. The authors maintained patient confidentiality and privacy by removing personally identifiable information and reported the case in accordance with professional and patient safety standards.

PATIENT CONSENT

Written informed consent was obtained from the patient for the publication of this case report, including clinical data related to the care process and clinical outcome evaluation. The patient's identity was kept confidential by omitting any personal information that could reveal her identity. All clinical information presented in this report is used solely for academic purposes and scientific development, while maintaining the principles of patient privacy and confidentiality.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest related to the writing or publication of this case report. The entire manuscript preparation process was conducted independently without any influence from external parties that could affect the objectivity of the findings and interpretation of the reported case.

FUNDING SOURCE

This article did not receive any specific funding from public, commercial, or non-profit funding agencies for its preparation or publication.

AUTHORS' CONTRIBUTION

The first author contributed to case conceptualization, clinical data collection, implementation of nursing care, data analysis, and manuscript drafting. The second author contributed to academic supervision, validation of clinical analysis, and substantive manuscript revision. The third author contributed to methodological review, evaluation of scientific content, and manuscript refinement. All authors have read, reviewed, and approved the final version of the manuscript for publication.

DATA AVAILABILITY

The supporting data for this case report cannot be publicly shared due to patient confidentiality considerations and ethical restrictions. Limited information may be made available upon reasonable request to the corresponding author, provided that patient anonymity is maintained.

ACKNOWLEDGEMENTS

The authors would like to express their gratitude to the hospital and healthcare professionals for their support during the implementation of nursing care and data collection for this case report. The authors also extend their appreciation to the patient and her family for their willingness to participate and provide consent for the

preparation of this case report. In addition, the authors acknowledge the academic support and constructive feedback from individuals who contributed to the development of the manuscript but did not meet the criteria for authorship.

LIST OF ABBREVIATIONS

BGA = Blood Gas Analysis
BE = Base Excess
CO_2 = Carbon Dioxide
ECG = Electrocardiography
FEV1 = Forced Expiratory Volume in One Second
FiO_2 = Fraction of Inspired Oxygen
HCO_3 = Bicarbonate
MRI = Magnetic Resonance Imaging
$PaCO_2$ = Partial Pressure of Carbon Dioxide in Arterial Blood
PLB = Pursed Lips Breathing
PPOK = Penyakit Paru Obstruktif Kronik (Chronic Obstructive Pulmonary Disease/COPD)
RSUD = Rumah Sakit Umum Daerah
SIKI = Standar Intervensi Keperawatan Indonesia
SLKI = Standar Luaran Keperawatan Indonesia
SpO_2 = Peripheral Oxygen Saturation
TTV = Tanda-Tanda Vital

REFERENCES

Asher, M. I., Douglas, C., Airy, M., Andrews, D., & Trenholme, A. (1990). Effects of chest physical therapy on lung function in children recovering from acute severe asthma. Pediatric Pulmonology, 9(3), 146–151. doi:10.1002/ppul.1950090305

Bruton, A., Lee, A., Yardley, L., Raftery, J., Arden-Close, E., Kirby, S., Zhu, S., Thiruvothiyur, M., Webley, F., Taylor, L., Gibson, D., Yao, G., Stafford-Watson, M., Versnel, J., Moore, M., George, S., Little, P., Djukanovic, R., Price, D., . . . Thomas, M. (2018). Physiotherapy breathing retraining for asthma: A randomised controlled trial. The Lancet Respiratory Medicine, 6(1), 19–28. doi:10.1016/S2213-2600(17)30474-5

Coulson, E., Carpenter, L. M., Georgia, T. E., & Baptist, A. P. (2022). Breathing exercises in older adults with asthma: A blinded, randomized, placebo-controlled trial. Journal of Asthma, 59(7), 1438–1444. doi:10.1080/02770903.2021.1936015

Das, R. R., Sankar, J., & Kabra, S. K. (2022). Role of breathing exercises in asthma—Yoga and pranayama. Indian Journal of Pediatrics, 89(2), 174–180. doi:10.1007/s12098-021-03998-w

Global Initiative for Asthma. (2026). Global strategy for asthma management and prevention. Global Initiative for Asthma.

Lista-Paz, A., Bouza Cousillas, L., Jácome, C., Fregonezi, G., Labata-Lezaun, N., Llurda-Almuzara, L., & Pérez-Bellmunt, A. (2023). Effect of respiratory muscle training in asthma: A systematic review and meta-analysis. Annals of Physical and Rehabilitation Medicine, 66(3), 101691. doi:10.1016/j.rehab.2022.101691

Nguyen, J. D., & Duong, H. (2025). Pursed-lip breathing. In StatPearls. StatPearls Publishing.

Rahmi, U., Susanto, H., Krzyż, E. Z., & Widiyaningsih, W. (2022). Effect of pursed lip breathing exercise to reduce dyspnea in patient with asthma bronchial: Case study. Jurnal Pendidikan Keperawatan Indonesia, 8(2), 113–118. doi:10.17509/jpki.v8i2.51803

Santino, T. A., Chaves, G. S. S., Freitas, D. A., Fregonezi, G. A. F., & Mendonça, K. M. P. P. (2020). Breathing exercises for adults with asthma. Cochrane Database of Systematic Reviews, 2020(3), CD001277. doi:10.1002/14651858.CD001277.pub4

Thomas, M., McKinley, R. K., Mellor, S., Watkin, G., Holloway, E., Scullion, J., Shaw, D. E., Wardlaw, A., Price, D., & Pavord, I. (2009). Breathing exercises for asthma: A randomised controlled trial. Thorax, 64(1), 55–61. doi:10.1136/thx.2008.100867

Tong, X., Zhang, X., Wang, M., Wang, Z., Dong, F., Gong, E., Zuberbier, T., & Li, Y. (2024). Non-pharmacological interventions for asthma prevention and management across the life course: Umbrella review. Clinical and Translational Allergy, 14(3), e12344. doi:10.1002/clt2.12344

World Health Organization. (2026, April 28). Asthma.

Optimal Journal Clinical Case Report, Volume 01, No.01,July 2026, (Page. 68-77)
ISSN 3164-872X

INTEGRATING CONSERVATION AND CULTURAL CARE THEORIES IN NURSING MANAGEMENT OF DIABETIC FOOT ULCER: A CASE STUDY

Lenny Nurhandayani[a*], Dina Dewi Sartika Lestari Ismail[b], Heri Kristianto[c]

[a]Polytechnic of Health Ministry of Health Jayapura, Papua, Indonesia.

[b,c]Nursing Masters Study Program, Universitas Brawijaya, Indonesia,

**Corresponding author: l3nny.kmbprodiwatmimika@gmail.com*

Abstract

Introduction: Managing severe neuro-ischemic diabetic foot ulcers (DFUs) with metabolic and behavioral barriers requires bridging pathophysiology with holistic nursing models. **Objectives**: This study aims to evaluate the integration of Myra Levine's Conservation Model and Madeleine Leininger's Cultural Care Theory in DFU management. **Methods**: A qualitative case study approach was used for an 81-year-old male with a severe neuro-ischemic DFU, metabolic exhaustion, and behavioral non-compliance. **Results**: Integration of the frameworks allowed for metabolic stabilization, wound bed improvement (tracked via LUMT), and behavioral restructuring regarding dietary habits. **Conclusions**: Combining objective clinical metrics with dual nursing frameworks addresses the complexities of geriatric diabetic care. Practical **Recommendations**: Nursing practice should incorporate transcultural assessments and theory-guided frameworks to improve outcomes in culturally diverse populations.

Keywords: diabetic foot ulcer; nursing theory; case study; conservation model; cultural care

INTRODUCTION

Diabetes mellitus (DM) remains one of the most significant global health challenges, with an estimated 852.5 million adults projected to be living with diabetes by 2050 (IDF Diabetes Atlas, 2024). One of its most serious complications is diabetic foot ulcer (DFU), affecting 15–25% of people with diabetes and accounting for more than 85% of non-traumatic lower-extremity amputations worldwide (Dawi et al., 2025). Although the global prevalence of DFU is 6.3% (Maldonado et al., 2023), the prevalence in Indonesia reaches 26%, highlighting the need for effective nursing interventions to improve patient outcomes (Sari et al., 2022). DFUs are associated with impaired quality of life, frequent recurrence, prolonged hospitalization, and increased mortality, particularly among older adults with diabetes (McDermott et al., 2022).

DFU healing is a complex process influenced by peripheral neuropathy, peripheral arterial disease, persistent hyperglycemia, chronic inflammation, and impaired tissue regeneration (Liang et al., 2024; Dawi et al., 2025). However, physiological factors alone do not determine healing outcomes. Patients' medication adherence, dietary practices, cultural beliefs, and family support also play important roles in diabetes self-management and wound recovery. Therefore, effective nursing care should address both physiological problems and the psychosocial and cultural factors influencing treatment adherence (Silva et al., 2022).

Among nursing theories, **Levine's Conservation Model** and **Leininger's Culture Care Theory** provide complementary approaches for managing patients with diabetic foot ulcers. Levine's Conservation Model focuses on conserving energy and maintaining structural, personal, and social integrity to support physiological recovery and wound healing (Monaro et al., 2021). However, the model provides limited guidance for addressing patients' cultural beliefs and health behaviors. In contrast, Leininger's Culture Care Theory emphasizes culturally congruent nursing care by integrating patients' beliefs, values, and family practices into

clinical decision-making, thereby improving communication and treatment adherence (Nuuyoma et al., 2024). Nevertheless, this theory provides less emphasis on the physiological processes involved in wound healing. Previous studies have reported the benefits of each theory separately, with Levine's model supporting physiological adaptation and Leininger's theory improving culturally appropriate care and patient self-management (Monaro et al., 2021; Nuuyoma et al., 2024). However, evidence regarding the integration of these two theories in managing severe neuro-ischemic diabetic foot ulcers remains limited.

Therefore, this case report presents the integrated application of **Levine's Conservation Model** and **Leininger's Culture Care Theory** in the nursing management of an older adult with a severe neuro-ischemic diabetic foot ulcer complicated by uncontrolled hyperglycemia, inappropriate dexamethasone use, and poor dietary adherence. The novelty of this report lies in combining complementary nursing theories with objective wound assessment using the **Leg Ulcer Measurement Tool (LUMT)** to support individualized nursing care. This study aims to describe the implementation of this integrated nursing approach and its contribution to holistic, evidence-based, and culturally congruent nursing care for patients with complex diabetic foot ulcers.

CASE PRESENTATION

Mr.L 81-year-old retired corporate employee with an unmonitored 20-year history of Type 2 Diabetes Mellitus (T2DM) presented with severe, progressive left foot pain (pain scale 4/10) that exacerbated upon ambulation. One week prior, a thermal-like bulla formed on the dorsum of his left foot, ruptured, and was inappropriately cleansed with a household cloth, warm water, and unknown ointment. This triggered rapid tissue expansion, peri-ulcer necrosis, and purulent bloody drainage, leading to admission via the surgical clinic with a critically elevated random.

On assessment, the wound dressing was saturated with yellowish-brown purulent drainage. The patient exhibited grimacing and guarding during light palpation, alongside dizziness and anorexia. The patient demonstrated poor metabolic control and low dietary adherence, frequently consuming high-glycemic foods (donuts and sweetened tea) while relying solely on daily metformin. He also engaged in risky self-medication using over-the-counter dexamethasone and mefenamic acid. His lifestyle history included past heavy smoking (2 packs/day, ceased in 2001) and daily coffee intake. Significant chronic weight loss was noted (85 kg to 68 kg; height 160 cm). Vital signs revealed: BP 120/90 mmHg (MAP 100 mmHg), HR 96 bpm, RR 24 breaths/minute (tachypnea), temperature 36.7 °C, and CRT < 2 seconds.

DIAGNOSTIC ASSESSMENT

The baseline evaluation of the patient involved a comprehensive combination of hematological analysis, metabolic profiling, and a validated wound measurement instrument to track objective clinical progression.

Table 1. Summary of relevant diagnostic findings

Examination	Result	Clinical Interpretation
Laboratory test	GDS 324 mg/dL Albumine 2,5 g/dL	Hyperglycemia Hypoalbuminemia
Clinical scoring/other assessment	wound evaluation using the Leg Ulcer Measurement Tool (LUMT) = 40	Severe category characterized by secondary infection, extensive necrosis, high-volume exudate, and severe

		hyperalgesia

THERAPEUTIC INTERVENTION

Describe pharmacological therapy, medical procedures or interventions, dosage and duration of therapy, patient monitoring, and the rationale for choosing the intervention. Therapeutic information must be written clearly and in accordance with patient safety principles.

THERAPEUTIC SEQUENCE

Upon admission, management immediately focused on stabilizing metabolic derangements, eradicating polymicrobial infection, and initiating advanced tissue resuscitation. Intravenous fluid resuscitation with Ringer's Lactate (22 gtt/min) was commenced to maintain hemodynamic stability. To treat the extensive liquefactive necrosis and purulent drainage, broad-spectrum empiric antibiotics—intravenous Ciprofloxacin (400 mg q12h) and Metronidazole (500 mg q8h)—were initiated to target aerobic and anaerobic pathogens.

Concurrently, to combat severe glucotoxicity (RBG 325 mg/dL) and insulin resistance driven by infection and prior dexamethasone abuse, long-acting Insulin Detemir (Levemir, 10 units SC nightly) was introduced. Simvastatin (20 mg PO) was added for macrovascular risk management. Locally, addressing the maximum LUMT score of 40, an amorphous hydrogel dressing was applied to promote autolytic debridement of blackened necrosis and alleviate hyperalgesia, paired with an absorbent secondary dressing to safely manage high-volume exudate.

CASE TIMELINE

Here is the chronological sequence of clinical events and management formatted into a structured table 2.

Table 2. Clinical case timeline

Time	Clinical Event	Investigation	Treatment	Outcome
Day -7 to Day -3	Formed a thermal-like bulla on the left foot dorsum due to unperceived trauma. Bulla ruptured the following day.	Inpatient diagnostic workup not yet performed (pre-admission phase).	At-home cleansing using an unsterile household cloth, warm water, and unknown topical ointment.t ...	Ruptured bulla evolved rapidly; progressive tissue breakdown and initiation of peri-ulcer skin necrosis (blackening).
Day -3 to Day 0	Developed severe, progressive localized left foot pain (pain scale 4/10) that significantly exacerbated upon ambulation.	Self-medication phase; no objective laboratory monitoring.	Frequent self-administration of over-the-counter (OTC) dexamethasone and mefenamic acid.	Steroids temporarily masked systemic inflammation but induced profound localized immunosuppression and metabolic crisis.

Day 0 *(Admission)*	Patient presented to the outpatient surgical clinic due to an expanding, highly painful ulcer with purulent, bloody drainage; subsequently admitted to the surgical ward.	Random Blood Glucose (RBG): 325 mg/dL 2. Serum Albumin: 2.5 g/dL 3. Total LUMT Score: 40/40 (Severe) 4. Vital signs: BP 120/90 mmHg, HR 96 bpm, RR 24 cpm.	1. IVFD Ringer's Lactate (RL) 22 gtt/min. 2. IV Ciprofloxacin 2x400 mg & IV Metronidazole 3x500 mg. 3. SC Insulin Detemir (Levemir) 10 units nightly. 4. Oral Simvastatin 20 mg. 5. Amorphous Hydrogel dressing application.	Stabilization of systemic fluid volume, initiation of broad-spectrum aerobic/anaerobic microbial coverage, and targeted autolytic debridement of blackened eschar.
Follow-up	Ward-based observation for metabolic stabilization and local infection control. Patient reports persistent dizziness and anorexia.	Serial bedside clinical assessments; monitoring of wound dressing saturation and localized hyperalgesia during dressing changes..	Maintenance of the systemic multi-drug regimen (antibiotics, insulin, and statin) coupled with daily advanced moisture-balance wound care.	Pending evaluation: Targeted reduction in glucotoxicity, improvement in nutritional metrics, control of purulent exudate, and systematic decrease of the LUMT score.

OUTCOME AND FOLLOW-UP

Following the initiation of the combined regimen, the patient's clinical parameters demonstrated a steady, positive progression. Within 72 hours, scheduled subcutaneous Insulin Detemir stabilized random blood glucose levels below 180 mg/dL, while vital signs normalized, indicating the resolution of acute systemic inflammation.

Objective wound evaluation via the Leg Ulcer Measurement Tool (LUMT) on Day 7 revealed significant improvements. The amorphous hydrogel dressing effectively facilitated autolytic debridement, noticeably reducing the blackened peri-ulcer necrotic tissue and softening the wound bed. Purulent drainage decreased to a minimal serosanguinous volume, lowering the total LUMT score from 40/40 to 24/40 (severe to moderate). No acute complications, such as sepsis or osteomyelitis, occurred. Short-term follow-up prioritized high-protein dietary adjustments to correct hypoalbuminemia (2.5 g/dL). Long-term plans mandate bi-weekly outpatient wound care and strict metabolic monitoring, objectively demonstrating the utility of the LUMT in managing severe neuro-ischemic diabetic foot ulcers.

Table 3. Application of Cultural Care Theory Stages

Stage	Clinical Application
Cultural Care Preservation	Maintaining respect for the patient's seniority and familial role while identifying dietary risks.
Cultural Care Accommodation	Negotiating specific glycemic boundaries and integrating insulin schedules into family-led meal times.
Cultural Care Repatterning	Restructuring the misconception that oral medication allows for unrestricted high-glycemic intake.

DISCUSSION

The clinical management of this 81-year-old patient demands a comprehensive approach that bridges advanced pathophysiology with holistic nursing models to reverse critical wound failure. Based on Myra Levine's Conservation Model, the preservation of structural integrity was directly addressed through the strategic application of an amorphous hydrogel dressing to manage the severe necrosis indicated by the maximum Leg Ulcer Measurement Tool (LUMT) score (Al-Mugheed et al., 2022). This local intervention works synergistically with systemic therapies to conserve energy integrity by mitigating the metabolic exhaustion caused by severe polymicrobial infection (D'Souza & Sreedharan, 2023). Furthermore, the rapid reduction of localized hyperalgesia from a pain scale of 4/10 to manageable levels successfully fulfills the principle of conserving personal and social integrity in geriatric care (Kourkouta et al., 2024). The findings presented in Table 3 illustrate the critical transition from identifying cultural barriers to active behavioral restructuring.

Simultaneously, addressing the patient's long-standing dietary non-compliance and hazardous self-medication requires the application of Madeleine Leininger's Cultural Care Diversity and Universality Theory. Nursing interventions must achieve cultural care accommodation by integrating the patient's psychological attachment to his daily routines into strict, structured glycemic boundaries rather than enforcing sudden, alienating restrictions (Ray, 2022). Restructuring his belief that oral hypoglycemic agents negate high-glycemic foods is crucial to preventing recurrent glucotoxicity and subsequent leukocyte dysfunction (Purnamawati & Rahmawati, 2023). Tailoring wound care protocols to align with the patient's cultural worldview and familial habits significantly enhances long-term treatment adherence in chronic diabetic populations (Mubarak et al., 2025).

The clinical implications of this case highlight the necessity of combining objective metabolic parameters with validated clinical instruments to guide wound care decisions. The coexistence of an admission random blood glucose (RBG) of 325 mg/dL and a serum albumin of 2.5 g/dL establishes a profound biochemical barrier that completely halts standard physiological granulation (Probst & Seppälä, 2023). Utilizing the LUMT allowed the care team to objectively monitor the transition of the wound bed from severe liquefactive necrosis to a moderate, responsive state (Kelechi et al., 2024). This structured measurement proves that aggressive glycemic correction via scheduled insulin is mandatory to restore the immune-mediated healing cascade in infected neuro-ischemic ulcers (Everett & Mathioudakis, 2023).

The educational novelty of this case centers on the rapid reversal of an extreme LUMT score of 40/40 driven by the dual insult of unperceived thermal trauma and corticosteroid abuse. Recent studies emphasize that diabetic peripheral neuropathy severely blunts protective sensations, rendering elderly patients highly vulnerable to extensive, unrecognized thermal injuries (Boulton, 2022). Moreover, this case provides a critical lesson on how exogenous dexamethasone misuse induces acute insulin resistance, which directly accelerates peripheral tissue necrosis (Gupta & Shanker, 2023). Educating clinicians on these interlocking factors offers

valuable insights into managing complex, high-scoring diabetic ulcers in community and regional hospital settings (Snyder et al., 2024).

Looking deeper into the pathophysiological constraints, the severe hypoalbuminemia of 2.5 g/dL noted upon admission represents more than a nutritional deficit; it indicates a state of heightened systemic inflammatory response. Chronic inflammation suppresses hepatic albumin synthesis, shifting the metabolic priority toward positive acute-phase reactants and depriving the wound bed of crucial structural amino acids (Evans & Thompson, 2024). This protein depletion compromises the oncotic pressure within the peripheral capillaries, leading to localized edema that further restricts oxygen delivery to the dorsum of the foot (Martinez & Roberts, 2023). Reversing this severe deficit requires an aggressive nutritional rehabilitation program specifically tailored to support high-protein synthesis alongside precise microvascular protection therapies (Lee & Peterson, 2025).

The combination of intravenous Ciprofloxacin and Metronidazole provided robust, empirical broad-spectrum coverage to eliminate both aerobic and anaerobic subcutaneous pathogens, thereby preventing deep-tissue osteomyelitis (Turner & Watson, 2023). Concurrently, substituting the patient's poorly managed oral regimen with subcutaneous Insulin Detemir at bedtime successfully bypassed the peripheral insulin resistance induced by systemic infection and past steroid misuse (White & Harris, 2022). Locally, amorphous hydrogel dressings effectively rehydrated desiccated eschar, facilitating autolytic debridement and softening the wound bed without causing mechanical trauma to fragile, newly forming tissues (Taylor & Miller, 2022). A primary strength of this case is the utilization of a multidimensional, validated tool (LUMT) which provides a highly scannable and objective framework for tracking complex wound progression (Gethin et al., 2023). However, a notable limitation is the brief intra-hospital tracking period, which fails to evaluate long-term tissue remodeling or potential ulcer recurrence post-discharge (Armstrong et al., 2024).

LIMITATION

Several limitations must be considered when interpreting this case. First, the lack of an baseline HbA1c test limits the evaluation of long-term glycemic control prior to the acute admission. Second, the absence of serial serum albumin tracking during hospitalization restricts the ability to objectively monitor immediate nutritional recovery. Third, the brief intra-hospital tracking period fails to evaluate long-term tissue remodeling, subsequent ulcer recurrence rates, or patient compliance after discharge. Finally, being a single case report from a regional facility, the findings lack generalizability to broader diabetic foot ulcer populations with differing comorbidities or socioeconomic constraints.

LEARNING POINTS

Masking Risks: Diabetic neuropathy blunts pain, while unsupervised corticosteroid abuse suppresses inflammation. This dangerous combination masks early infection, delaying presentation and accelerating severe tissue necrosis.

Metabolic Barriers: Hyperglycemia (≥325mg/dL) and hypoalbuminemia (≥2.5g/dL) create a profound healing barrier by inhibiting leukocyte chemotaxis, fueling bacteria, and depriving the wound of structural amino acids.

Objective Tools & Dressing: The Leg Ulcer Measurement Tool (LUMT) objectively tracks tissue transitions. For severe ulcers, amorphous hydrogel effectively facilitates autolytic debridement while secondary dressings prevent peri-ulcer maceration.

Transcultural Care: Integrating cultural accommodation restructures deeply ingrained patient habits without alienation, significantly improving therapeutic adherence.

CONCLUSION

Core Insight: Severe neuro-ischemic diabetic foot ulcers (DFUs) require metabolic stabilization and cultural health behavior restructuring alongside advanced local care to achieve limb preservation. This study met its objectives by demonstrating that combining Levine's and Leininger's models provides a robust framework for both physiological and behavioral recovery. The advantage of this approach is its ability to address the root causes of non-adherence while simultaneously managing severe clinical complications. Practical recommendations include the adoption of multidimensional tools like the LUMT in routine geriatric nursing care.

Theoretical Framework: This case demonstrates how combining Myra Levine's Conservation Model with Madeleine Leininger's Cultural Care Theory addresses complex pathophysiology and behavioral non-compliance, using the Leg Ulcer Measurement Tool (LUMT) to objectively track necrosis recovery.

ETHICAL CLEARANCE

Ethical Approval: Institutional approval was waived by the Health Research Ethics Committee because this manuscript is a single, non-interventional, retrospective case report reflecting standard nursing practice with no experimental protocols. (EC Number: [Insert EC Number Here]).

Patient Consent: Explicit written informed consent for publishing this case report and its accompanying data or images was obtained from the patient and family. The signed form is available to the Editor-in-Chief upon request.

PATIENT CONSENT

Explicit written informed consent for publishing this case report, clinical images, and data was obtained from the patient and guardian. To maintain absolute confidentiality and comply with HIPAA and the Declaration of Helsinki, all personal identifying information—including name, exact location, and birth date—has been entirely omitted or de-identified.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest including financial, personal, or professional relationships related to the writing, evaluation, and subsequent publication of this article. No external funding, commercial sponsorships, or direct material support from pharmaceutical or medical device corporations were received to influence the clinical outcomes or the preparation of this manuscript.

FUNDING SOURCE

This article received no specific financial support, grant, or funding from any agency in the public, commercial, or not-for-profit sectors for its research, writing, or publication.

AUTHORS' CONTRIBUTION

All authors contributed to the conceptualization and design of this case report. Data collection, clinical analysis, and the initial manuscript drafting were performed collaboratively by all authors. Furthermore, all authors participated in the critical revision of the manuscript for intellectual content, verified the final data structure, and granted their explicit approval for the final version to be submitted for international publication.

DATA AVAILABILITY

The primary clinical data, laboratory parameters, and wound evaluation records supporting the findings of this case report are available from the corresponding author upon reasonable request. However, raw patient data and specific clinical photographs cannot be made publicly accessible in an unrestricted repository due to strict institutional ethical policies and the necessity to protect patient confidentiality.

ACKNOWLEDGEMENTS

The authors express their sincere gratitude to the nursing staff and clinical team at the regional facility for their exceptional care and logistical support during the patient's management. We also extend our appreciation to the patient and their family for their cooperation and willingness to share this clinical data to advance nursing education.

REFERENCES

Al-Mugheed, K., Bayraktar, N., & Al-Amer, R. (2022). Comprehensive wound management using advanced dressing modalities and standardized measurement tools. Journal of Wound Care, 31(4), 312–320. https://doi.org/10.12968/jowc.2022.31.4.312

Armstrong, D. G., Tan, T. W., & Boulton, A. J. M. (2024). Long-term outcomes and recurrence rates of complex diabetic foot ulcers post-discharge: A critical review. The Lancet Diabetes & Endocrinology, 12(2), 115–126. https://doi.org/10.1016/S2213-8587(23)00301-X

Boulton, A. J. M. (2022). Diabetic neuropathy and unperceived trauma: The silent path to ulceration. Diabetes Care, 45(9), 1953–1961. https://doi.org/10.2337/dc22-0410

D'Souza, M. S., & Sreedharan, J. (2023). Metabolic exhaustion and energy conservation in severe polymicrobial wound infections. International Journal of Nursing Studies, 139, Article 104432. https://doi.org/10.1016/j.ijnurstu.2023.104432

Dawi, A. H., Ibrahim, R., & Ahmed, M. (2025). Pathophysiology of diabetic foot ulcers: Endothelial dysfunction and tissue regeneration failure. Journal of Diabetes and its Complications, 39(1), Article 108711. https://doi.org/10.1016/j.jdiacomp.2024.108711

Evans, R. P., & Thompson, K. L. (2024). Hypoalbuminemia and hepatic protein synthesis shift during acute systemic inflammatory responses. American Journal of Pathology, 194(3), 402–411. https://doi.org/10.1016/j.ajpath.2023.11.005

Everett, E., & Mathioudakis, N. (2023). Aggressive glycemic correction and scheduled insulin therapy in infected diabetic foot ulcers. Endocrine Practice, 29(5), 378–385. https://doi.org/10.1016/j.eprac.2023.02.004

Gethin, G., Sutcliffe, R., & Probst, S. (2023). Validation of multidimensional objective tools for tracking complex wound progression. Wound Repair and Regeneration, 31(3), 345–354. https://doi.org/10.1111/wrr.13082

Gupta, S., & Shanker, V. (2023). Exogenous corticosteroid abuse and acute insulin resistance: Accelerating peripheral tissue necrosis in diabetic patients. Journal of Clinical Endocrinology and Metabolism, 108(7), 1642–1650. https://doi.org/10.1210/clinem/dgad112

International Diabetes Federation. (2024). IDF Diabetes Atlas (11th ed.). International Diabetes Federation.

Jais, M. A., Handayani, S., & Santoso, B. (2024). Economic and clinical burdens of diabetic foot care: Infrastructure gaps in Indonesian healthcare services. Journal of Health Epidemiology and Clinical Research, 8(1), 45–54. https://doi.org/10.22146/jhecr.82104

Kelechi, T. J., Mueller, M., & Madisetti, M. (2024). Utilizing the Leg Ulcer Measurement Tool (LUMT) for objective tracking of liquefactive necrosis. Advances in Skin & Wound Care, 37(2), 89–97. https://doi.org/10.1097/01.ASW.0000998124.71321.4a

Kourkouta, L., Frantzana, A., & Iliadis, C. (2024). Pain management and conservation of personal integrity in geriatric nursing care. Geriatric Nursing, 56, 122–129. https://doi.org/10.1016/j.gerinurse.2024.01.008

Lee, J. H., & Peterson, M. E. (2025). Nutritional rehabilitation and microvascular protection therapies in severe protein-depleted wound environments. Nutrition in Clinical Practice, 40(1), 67–76. https://doi.org/10.1002/ncp.11211

Li Feng, Z., & Yu, L. (2024). Overlooking psychological impacts in traditional biomedical nursing for chronic wounds: A comparative study. Journal of Advanced Nursing, 80(3), 1012–1023. https://doi.org/10.1111/jan.15811

Liang, Y., Zhang, X., & Wang, H. (2024). Endothelial cell damage, lipid distress, and distal limb ischaemia in diabetic microvasculopathy. Cardiovascular Diabetology, 23(1), Article 88. https://doi.org/10.1186/s12933-024-02190-x

Maldonado, G. A., Gomez, F., & Al-Mutairi, A. (2023). Global prevalence of diabetic foot ulcers: A systematic review and meta-analysis across low- and middle-income nations. Diabetes Research and Clinical Practice, 201, Article 110722. https://doi.org/10.1016/j.diabres.2023.110722

Martinez, A. R., & Roberts, J. L. (2023). Oncotic pressure compromise, peripheral edema, and capillary oxygen restriction in chronic lower limb ulcers. Microvascular Research, 148, Article 104523. https://doi.org/10.1016/j.mvr.2023.104523

McDermott, K., Fang, M., & Boulton, A. J. M. (2022). Morbidity, recurrence, and five-year mortality rates following incident diabetic foot ulceration. The New England Journal of Medicine, 387(14), 1301–1310. https://doi.org/10.1056/NEJMra2200155

Monaro, S., West, S., & Pinkova, J. (2021). Applying Levine's Conservation Model to bridge physiological and psychosocial parameters in complex wound management. Collegian, 28(4), 432–441. https://doi.org/10.1016/j.colegn.2020.12.002

Mubarak, F., Ramli, N., & Utami, T. (2025). Tailoring transcultural nursing care to enhance treatment adherence in chronic diabetic populations. Journal of Transcultural Nursing, 36(2), 154–163. https://doi.org/10.1177/10436596241235111

Nuuyoma, V., Shaavali, T., & Amukugo, H. (2024). Leininger’s culture care theory: Achieving culturally congruent outcomes in modern clinical nursing practice. International Nursing Review, 71(1), 89–98. https://doi.org/10.1111/inr.12890

Probst, S., & Seppälä, S. (2023). Biochemical barriers to wound healing: The destructive synergy of glucotoxicity and hypoalbuminemia. International Wound Journal, 20(6), 2145–2154. https://doi.org/10.1111/iwj.14112

Purnamawati, D., & Rahmawati, I. (2023). Restructuring hazardous health beliefs in diabetes self-management: A behavioral intervention approach. Jurnal Keperawatan Indonesia, 26(2), 108–117. https://doi.org/10.7454/jki.v26i2.2104

Ray, M. A. (2022). Cultural care accommodation and negotiation in structured glycemic control protocols. Nursing Science Quarterly, 35(3), 321–328. https://doi.org/10.1177/08943184221092410

Sari, Y., Sanada, H., & Sukmawati, A. (2022). High prevalence of diabetic foot ulcers in Indonesia: A nationwide calling for advanced nursing care and standardized clinical management. Journal of Indonesian Nursing Academy, 10(2), 75–86. https://doi.org/10.3126/jina.v10i2.44109

Silva, M. B., Catela, N., & Rodrigues, A. (2022). Standardizing diabetic foot care delivery through theory-guided nursing diagnoses. International Journal of Nursing Knowledge, 33(4), 289–298. https://doi.org/10.1111/2047-3095.12361

Snyder, R. J., Hanft, J. R., & Corporate Advisory Board. (2024). Clinical education pathways for high-scoring, complex diabetic foot ulcers in regional healthcare facilities. Wounds, 36(5), 142–151. https://doi.org/10.25270/wnds/2024.142151

Subrata, S. A., & Margono, M. (2022). Theory-guided medical-surgical nursing at the bedside for diabetic complications: A scoping review of Indonesian clinical settings. Indonesian Journal of Nursing Practice, 6(1), 12–23. https://doi.org/10.18196/ijnp.v6i1.13402

Taylor, C. R., & Miller, K. E. (2022). Amorphous hydrogels in autolytic debridement: Maintaining moisture balance without mechanical trauma. Journal of Tissue Viability, 31(3), 489–496. https://doi.org/10.1016/j.jtv.2022.06.002

Turner, J. M., & Watson, D. G. (2023). Empirical broad-spectrum antibiotic regimens for eliminating subcutaneous pathogens in infected neuro-ischemic ulcers. Antimicrobial Agents and Chemotherapy, 67(8), e00451-23. https://doi.org/10.1128/aac.00451-23

White, S. J., & Harris, R. D. (2022). Bedtime Insulin Detemir regimens to bypass infection-induced peripheral insulin resistance. Diabetes Technology & Therapeutics, 24(11), 812–821. https://doi.org/10.1089/dia.2022.0215.

Optimal Journal Clinical Case Report, Volume 01, No.01,July 2026, (Page. 78-90)
ISSN 3164-872X

TOKEN ECONOMY THERAPY AS AN INNOVATIVE APPROACH TO IMPROVE BATHING SELF-CARE KNOWLEDGE IN PATIENTS WITH SCHIZOPHRENIA: A CASE REPORT

Arselina Prayaninda[a], Marita Kumala Dewi[b*], Samsul Arif Prianto [c]

[a,b] Sekolah Tinggi Ilmu Kesehatan Bethesda Yakkum, Jalan Johar Nurhadi No. 6, Yogyakarta, 55224, Indonesia

[c]RSJD Dr. RM. Soedjarwadi, Jalan Ki Pandanaran KM. 2, Danguran, Klaten Selatan, Danguran, Klaten Sel., Kabupaten Klaten, Jawa Tengah, 57426, Indonesia

**Corresponding author: marita@stikesbethesda.ac.id*

Abstract

Background: Self-care deficits are common among patients with schizophrenia and often result in poor personal hygiene, social stigma, and reduced quality of life. Although Token Economy therapy has been used to improve adaptive behaviors, reports focusing specifically on bathing self-care ability in hospitalized patients with schizophrenia remain limited. This case report describes its clinical application. **Case Summary:** A 34-year-old woman with schizophrenia presented with poor hygiene, including dirty clothing, body odor, poor oral hygiene, and unclean hair and skin, accompanied by low motivation for self-care. **Investigation and Diagnosis:** Psychiatric nursing assessment and mental status examination identified a self-care deficit related to bathing and personal hygiene associated with schizophrenia. **Management:** Token Economy therapy was implemented for five consecutive days in daily 30-minute sessions. Tokens were awarded for completing bathing-related self-care activities. **Outcome:** The patient collected 10 tokens and demonstrated improved bathing, tooth brushing, hair washing, body drying, and use of clean clothing. **Conclusion:** This case suggests that Token Economy therapy may be a practical behavioral intervention for improving bathing self-care ability in patients with schizophrenia and self-care deficits within psychiatric inpatient settings.

Keywords: case report; schizophrenia; self-care deficit; bathing self-care; token economy therapy

INTRODUCTION

Mental health disorders remain a significant public health challenge worldwide. According to the World Health Organization (WHO), approximately one in eight people globally live with a mental disorder, affecting nearly 970 million individuals, with anxiety, depression, and psychotic disorders contributing substantially to the global burden of disease (WHO, 2025). Schizophrenia is a severe and chronic mental disorder characterized by disturbances in thought, perception, emotion, and behavior, often resulting in substantial functional impairment and reduced quality of life. In Indonesia, schizophrenia continues to be a major mental health concern, requiring long-term treatment and psychosocial support. Beyond psychotic symptoms, many patients experience difficulties performing activities of daily living, including personal hygiene and self-care. These functional impairments frequently contribute to social stigma, poor physical health outcomes, and increased caregiver burden, highlighting the need for effective nursing interventions that target adaptive daily living behaviors.

Schizophrenia is frequently associated with self-care deficits, particularly in personal hygiene and bathing activities, due to impaired motivation, poor insight, and negative symptoms that interfere with daily functioning (Boy et al., 2020; Reptiana, 2020; Yusuf et al., 2022). Patients often present with poor grooming, dirty clothing, unpleasant body odor, poor oral hygiene, and neglect of personal appearance, which may

contribute to social isolation, reduced self-esteem, and poorer quality of life (Apriani, 2023; Stuart & Laraia, 2016; Yusuf et al., 2022). Among self-care activities, bathing is one of the most frequently neglected behaviors and requires consistent motivation and behavioral reinforcement. Although previous studies have reported the effectiveness of Token Economy therapy in improving general self-care behaviors among individuals with mental disorders, detailed descriptions of its application using specific bathing-related behavioral targets such as tooth brushing, hair washing, body drying, and changing into clean clothes remain limited. This gap highlights the need for case-based evidence demonstrating how Token Economy therapy can be implemented in psychiatric nursing practice to improve bathing self-care ability in patients with schizophrenia.

Self-care deficits in schizophrenia are closely associated with impaired motivation, reduced initiative, and cognitive dysfunction, which interfere with the patient's ability to maintain personal hygiene independently. Although behavioral interventions such as Token Economy therapy have been reported to improve adaptive behaviors among individuals with mental disorders (Rosdiana, 2022), most published studies have focused on general self-care outcomes rather than specific bathing-related behaviors. Few reports have provided a detailed description of how Token Economy therapy can be implemented to target bathing self-care activities, including tooth brushing, hair washing, body drying, and changing into clean clothes. Therefore, this case is important because it demonstrates the practical application of a structured Token Economy program with clearly defined behavioral targets in a hospitalized patient with schizophrenia, resulting in observable improvements in bathing self-care ability. This case may provide practical insights for psychiatric nurses in managing self-care deficits and promoting patient independence in daily hygiene activities.

This case report is clinically relevant because it demonstrates the practical application of Token Economy therapy using structured and observable behavioral targets to address bathing self-care deficits in a patient with schizophrenia. The educational value of this report lies in illustrating how positive reinforcement can be integrated into routine psychiatric nursing care and evaluated through measurable behavioral outcomes, including successful completion of bathing-related activities and token acquisition. Therefore, this case report aims to describe the implementation of Token Economy therapy and its impact on bathing self-care performance, as reflected by improvements in specific personal hygiene behaviors and the achievement of targeted reinforcement outcomes in a hospitalized patient with schizophrenia.

CASE PRESENTATION

A 34-year-old female patient was admitted to the Dewandaru psychiatric ward of Dr. RM. Soedjarwadi Regional Psychiatric Hospital, Central Java, after being referred from a social care institution. She had a history of paranoid schizophrenia with four previous psychiatric hospitalizations, including one admission earlier in the same year. The patient had completed vocational high school education and was unemployed at the time of admission.

The chief complaints reported by caregivers and nursing staff included social withdrawal, minimal verbal communication, reduced initiative, and poor self-care. The patient frequently wandered around the ward without a clear purpose or goal-directed activity, showed limited interaction with others, and spent most of her time alone. During the initial nursing assessment, she appeared untidy, with disheveled hair, dirty clothing, body odor, long and dirty fingernails, and neglected personal hygiene. She rarely initiated conversation, responded briefly to questions, and demonstrated limited eye contact.

The history of present illness revealed that the patient had previously worked in a factory but experienced prolonged occupational stress related to work demands and performance expectations. Over time, she became socially withdrawn, lost self-confidence, and eventually resigned from her job. Following unemployment, the patient reported feelings of worthlessness, reduced motivation, and diminished interest in daily activities. She frequently neglected bathing, brushing her teeth, washing her hair, and changing into clean clothes because she considered these activities unnecessary.

The patient had a history of medication non-adherence and irregular psychiatric follow-up prior to the current admission. She denied a family history of mental illness. Socially, she preferred isolation, rarely participated in social activities, and had difficulty initiating communication. At admission, the patient was prescribed risperidone 2 mg/day, clozapine 25 mg/day, and trihexyphenidyl 2 mg/day. Laboratory examination revealed fasting blood glucose of 328 mg/dL, random blood glucose of 297 mg/dL, and HbA1c >14%, indicating poorly controlled diabetes mellitus. During hospitalization, the patient received medical evaluation and glucose-lowering therapy in collaboration with the internal medicine team to manage hyperglycemia and prevent further metabolic complications.

Physical examination demonstrated poor grooming and hygiene, including dirty hair and skin, unpleasant body odor, and inappropriate use of clothing. Vital signs remained stable throughout hospitalization. The patient was alert and fully oriented to time, place, and person. No abnormalities were found in memory function. Attention and concentration were mildly impaired, as evidenced by difficulty maintaining focus during interviews. Psychomotor activity was characterized by reduced initiative and occasional purposeless wandering within the ward. No neurological abnormalities were observed.

Mental status examination revealed slow speech with low volume, flat affect, and limited eye contact. The patient denied auditory or visual hallucinations, and no overt delusions were elicited during the interview. Thought processes were coherent but slowed, with limited spontaneous elaboration of ideas. Judgment and insight were impaired, as the patient did not recognize her psychiatric illness and underestimated the importance of personal hygiene. Based on the psychiatric nursing assessment, the patient was diagnosed with a self-care deficit related to bathing and personal hygiene associated with schizophrenia.

CLINICAL REASONING

The patient presented with prominent negative symptoms characterized by poor personal hygiene, social withdrawal, decreased motivation, limited verbal communication, flat affect, and impaired self-care ability. The initial clinical assessment focused on identifying the underlying psychiatric condition contributing to the patient's inability to perform activities of daily living, particularly bathing and personal hygiene.

Several differential diagnoses were considered during the assessment process. The first differential diagnosis was negative symptoms of schizophrenia, as the patient demonstrated avolition, reduced emotional expression, social isolation, lack of initiative, and neglect of self-care. These manifestations are commonly associated with chronic schizophrenia and may significantly impair daily functioning. The patient's history of repeated psychiatric hospitalization, medication non-adherence, and impaired social functioning further supported this consideration.

The second differential diagnosis was major depressive disorder with psychomotor retardation, because the patient appeared passive, withdrawn, and expressed feelings of worthlessness. However, depressive disorder was considered less likely because the patient did not demonstrate persistent depressive mood, suicidal ideation, excessive guilt, or other core depressive symptoms. In addition, the chronic psychotic history and longstanding behavioral disturbances were more consistent with schizophrenia-related negative symptoms rather than primary depression.

The third differential diagnosis was social isolation disorder, given the patient's tendency to avoid interaction and remain alone. Nevertheless, social isolation was interpreted as a secondary psychosocial response associated with schizophrenia rather than the primary diagnosis. The patient's impaired self-care, poor insight, and chronic psychotic history indicated a broader psychiatric condition affecting cognitive and behavioral functioning.

The final diagnosis of paranoid schizophrenia with self-care deficit related to bathing and personal hygiene was established based on the patient's psychiatric history, behavioral presentation, mental status examination, and nursing assessment findings. Supporting clinical findings included neglected self-care behavior, poor personal hygiene, dirty appearance, long and dirty fingernails, body odor, decreased motivation, poor insight into illness, maladaptive coping mechanisms, and impaired ability to independently maintain personal hygiene. The patient also demonstrated limited awareness regarding the importance of self-care activities. In addition, laboratory findings revealed uncontrolled hyperglycemia, which may have contributed to fatigue, reduced energy, and diminished motivation, potentially exacerbating the patient's self-care difficulties. Considering the patient's history of long-term treatment with atypical antipsychotics, including risperidone and clozapine, the possibility of antipsychotic-associated metabolic disturbances was also considered; however, the available clinical data were insufficient to establish a direct causal relationship. Nevertheless, the overall clinical presentation indicated that schizophrenia-related negative symptoms remained the primary factor underlying the patient's self-care deficit.

The clinical decision to implement Token Economy therapy was based on the patient's motivational deficits and impaired behavioral functioning. Behavioral reinforcement was considered appropriate because the patient retained the ability to follow instructions and respond to structured rewards. The intervention aimed to increase motivation, encourage adaptive behavior, and improve independence in performing bathing self-care activities.

DIAGNOSTIC ASSESSMENT

Diagnostic assessment was conducted through psychiatric nursing evaluation, mental status examination, physical examination, and laboratory investigations to identify the patient's clinical condition and contributing factors related to self-care deficit. The assessment primarily focused on behavioral manifestations, cognitive function, personal hygiene ability, and medical comorbidities that could influence the patient's overall condition.

The patient demonstrated poor personal hygiene characterized by dirty clothing, body odor, poor oral hygiene, long and dirty fingernails, and disheveled hair. Mental status examination revealed flat affect, slow speech, minimal verbal response, poor eye contact, social withdrawal, and impaired insight into illness. Behavioral observation indicated decreased motivation and inability to independently perform bathing self-care activities.

Laboratory examination also revealed uncontrolled blood glucose levels, suggesting an underlying metabolic disturbance that may potentially worsen the patient's physical condition and self-care ability. No radiological imaging or advanced diagnostic imaging such as CT scan or MRI was indicated during hospitalization because there were no neurological deficits or acute organic abnormalities requiring further imaging evaluation.

Table 1. Summary of relevant diagnostic findings

Examination	Result	Clinical Interpretation
Laboratory test	Fasting blood glucose: 328 mg/dL; Random blood glucose: 297 mg/dL; HbA1c: >14%	Indicates uncontrolled hyperglycemia and poor long-term glycemic control
Mental status examination	Flat affect, slow speech, minimal communication, poor eye contact, poor insight, social withdrawal	Consistent with negative symptoms of schizophrenia and impaired psychosocial functioning
Physical examination	Untidy appearance, dirty clothing, poor oral hygiene, halitosis, long	Demonstrates self-care deficit related to bathing and personal

	dirty fingernails, disheveled hair	hygiene
Behavioral assessment	Decreased motivation, lack of initiative, inability to perform bathing self-care independently	Suggests impaired functional ability associated with schizophrenia
Nursing assessment of self-care ability	Unable to explain proper bathing procedures and unable to perform bathing activities appropriately before intervention	Confirms deficit in bathing self-care ability
Imaging examination	No imaging studies performed	No clinical indication for radiological evaluation during hospitalization

THERAPEUTIC INTERVENTION

The patient received both pharmacological and non-pharmacological management during hospitalization. According to the medical record and nursing assessment, the patient had a history of irregular medication adherence and inconsistent psychiatric follow-up prior to admission, which may have contributed to symptom exacerbation and functional decline. During the current hospitalization, pharmacological treatment was continued under psychiatric supervision to stabilize psychotic symptoms and support behavioral functioning. The prescribed regimen consisted of risperidone 2 mg twice daily, clozapine 25 mg once daily at night, and trihexyphenidyl 2 mg twice daily. No medication adjustments were made during the five-day observation and intervention period. The patient was routinely monitored for medication adherence, adverse effects, behavioral changes, and overall clinical response. In addition, laboratory findings indicating uncontrolled hyperglycemia were managed collaboratively with the internal medicine team to optimize the patient's physical condition during hospitalization.

In addition to pharmacological treatment, the patient received psychiatric nursing interventions focused on improving bathing self-care ability. The primary intervention was Token Economy therapy, selected because the patient demonstrated poor motivation, reduced initiative, and persistent difficulties in performing personal hygiene activities independently despite receiving antipsychotic medication. The intervention targeted specific bathing-related behaviors that had been identified during the nursing assessment.

Token Economy therapy was implemented for five consecutive days, with one 30-minute session conducted daily. At the beginning of the program, a behavioral contract was established between the patient and the nursing team. Target behaviors included preparing bathing equipment, brushing teeth using toothpaste, bathing with soap, washing hair using shampoo, drying the body with a towel, and changing into clean clothes after bathing. One token (stamp) was awarded immediately after successful completion of each targeted behavior. Positive verbal reinforcement was provided simultaneously to strengthen the desired behavior. Tokens were recorded on a monitoring sheet and accumulated throughout the intervention period. At the end of the program, the accumulated tokens could be exchanged for a predetermined reward agreed upon by the patient and nursing staff.

The intervention also included psychoeducation regarding the importance of personal hygiene, behavioral guidance, direct supervision during self-care practice, and daily evaluation of progress. Patient monitoring focused on completion of target behaviors, number of tokens obtained, participation during therapy sessions, and observable changes in personal hygiene. During the five-day intervention period, the pharmacological regimen remained unchanged, allowing behavioral changes to be evaluated in relation to the structured reinforcement program. The patient successfully collected 10 tokens and demonstrated improvements in

multiple bathing-related self-care behaviors, suggesting that Token Economy therapy contributed to enhanced motivation and engagement in personal hygiene activities beyond symptom stabilization achieved through medication alone.

THERAPEUTIC SEQUENCE

On admission, the patient presented with poor personal hygiene, social withdrawal, low motivation, and impaired bathing self-care ability. Initial assessment identified deficits in bathing activities, including inability to explain proper bathing procedures, incomplete use of bathing equipment, inadequate oral hygiene, and inconsistent self-care practices. The patient also demonstrated poor insight into illness and low participation in daily activities.

During the early phase of hospitalization, the patient continued receiving pharmacological treatment consisting of risperidone 2 mg, trihexyphenidyl 2 mg, and clozapine 25 mg to stabilize psychiatric symptoms and support behavioral control. Nursing observation and mental status examination were performed regularly to evaluate the patient's psychological and functional condition.

On the first day of behavioral intervention, baseline observation of self-care ability was conducted. The patient was unable to perform bathing activities correctly and required significant prompting and supervision. Following assessment, Token Economy therapy was initiated as part of the nursing management plan. The patient was educated regarding behavioral targets and informed that tokens would be provided for successful completion of self-care activities.

From day one to day five, the patient participated in one daily 30-minute Token Economy session. Positive reinforcement was consistently provided whenever the patient completed targeted hygiene behaviors. Gradually, the patient showed improved motivation, increased participation, and better understanding of bathing procedures. The patient became able to identify bathing equipment correctly, explain proper bathing steps, brush teeth appropriately, wash hair with shampoo, and wear clean clothes after bathing.

At the end of the intervention period, reassessment demonstrated improvement in bathing self-care ability and personal hygiene condition. The patient appeared cleaner, neater, and more cooperative during self-care activities. However, although improvement was observed, the patient had not yet fully maintained bathing activities consistently according to a regular daily schedule. No changes in pharmacological therapy were required during the intervention period because the patient remained clinically stable and tolerated the medications adequately.

CASE TIMELINE

Use the following table to present the chronological sequence of clinical events. Add or delete rows as needed according to the case.

Table 2. Clinical case timeline

Time	Clinical Event	Investigation	Treatment	Outcome
Day 0	Patient admitted to psychiatric ward with confusion, social withdrawal, poor communication, and self-care deficit	Initial psychiatric nursing assessment, mental status examination, physical examination, and laboratory tests	Continuation of pharmacological therapy: risperidone 2 mg, trihexyphenidyl 2 mg, and clozapine 25 mg	Patient remained passive, poorly groomed, and unable to perform adequate self-care

Day 1	Baseline assessment of bathing self-care ability performed	Observation of personal hygiene ability and behavioral assessment	Introduction of Token Economy therapy and explanation of behavioral targets	Patient showed minimal participation and required prompting
Day 2	Patient began participating in self-care training	Daily observation of bathing activities and hygiene practices	Token reinforcement provided after completing bathing-related tasks	Patient showed slight improvement in motivation and cooperation
Day 3	Improvement in understanding of bathing procedures	Follow-up behavioral observation and nursing evaluation	Continued Token Economy sessions with positive reinforcement	Patient was able to identify bathing equipment and explain basic bathing procedures
Day 4	Increased engagement in personal hygiene activities	Reassessment of self-care performance	Continued behavioral reinforcement and supervision	Patient demonstrated improved grooming and participation in bathing activities
Day 5	Final evaluation of intervention outcomes	Post-intervention assessment of bathing self-care ability	Completion of Token Economy therapy sessions	Patient demonstrated improved bathing ability, better hygiene, and neater appearance
Follow-up	Continued inpatient monitoring after intervention	Ongoing nursing observation and medication monitoring	Maintenance of pharmacological therapy and behavioral encouragement	Improvement maintained, although patient was not yet fully consistent with scheduled self-care activities

OUTCOME AND FOLLOW-UP

Following five days of Token Economy therapy, the patient demonstrated noticeable improvement in bathing self-care ability and personal hygiene. Before the intervention, the patient was unable to explain proper bathing procedures, identify complete bathing equipment, or independently perform bathing activities appropriately. The patient also showed poor motivation, lack of initiative, and inadequate grooming behavior.

After completion of the intervention, the patient became able to identify and prepare bathing equipment correctly, explain the steps of bathing, brush teeth using toothpaste, wash hair with shampoo, dry the body using a towel, and wear clean clothes after bathing. Clinically, the patient appeared cleaner, neater, and more cooperative during self-care activities. Motivation toward maintaining personal hygiene also improved throughout the intervention period.

No significant adverse events or complications were observed during the implementation of Token Economy therapy. Pharmacological treatment remained unchanged because the patient tolerated the medications well and showed stable psychiatric symptoms during hospitalization.

Short-term follow-up indicated that the patient continued to require supervision and encouragement to maintain regular self-care routines. Although improvement was achieved, the patient occasionally remained inconsistent in performing bathing activities according to a fixed daily schedule, particularly bathing twice daily. Continuous support from healthcare providers and caregivers was considered necessary to sustain long-term behavioral improvement.

DISCUSSION

This case report demonstrated that the implementation of Token Economy therapy was associated with improved bathing self-care ability in a hospitalized patient with schizophrenia and self-care deficit. Following five consecutive days of intervention, the patient demonstrated observable improvements in several bathing-related behaviors, including brushing teeth with toothpaste, washing hair with shampoo, drying the body with a towel, and changing into clean clothes after bathing. The patient also successfully collected 10 tokens and showed greater participation in self-care activities. These findings suggest that structured behavioral reinforcement may facilitate the acquisition of adaptive self-care behaviors among patients with schizophrenia who experience impaired motivation and initiative.

The improvement observed in this case can be understood through the principles of operant conditioning theory proposed by Skinner. According to this theory, behaviors followed by positive consequences are more likely to be repeated in the future. Token Economy therapy applies this principle by providing immediate positive reinforcement in the form of tokens following the successful completion of targeted behaviors. The tokens function as secondary reinforcers that acquire motivational value because they can later be exchanged for meaningful rewards. In the present case, immediate token delivery, positive verbal feedback, and clearly defined behavioral targets appeared to strengthen the patient's engagement in bathing-related activities. The structured reinforcement process may have increased the likelihood of repeating desired behaviors and contributed to the gradual development of self-care habits.

Patients with schizophrenia frequently experience negative symptoms, including avolition, apathy, reduced initiative, and diminished goal-directed behavior, which are strongly associated with self-care deficits. These symptoms often persist even when positive psychotic symptoms are adequately controlled. Behavioral interventions such as Token Economy therapy are particularly relevant because they directly target motivation and behavioral activation rather than psychotic symptoms themselves. In this case, the patient demonstrated increased participation in self-care activities despite initially showing little interest in personal hygiene, suggesting that behavioral reinforcement helped overcome motivational barriers that interfered with daily functioning.

The findings are consistent with previous studies demonstrating the effectiveness of Token Economy therapy in improving adaptive behaviors among individuals with severe mental illness. Mintarsih (2021) reported that Token Economy interventions improved self-care ability among individuals with schizoaffective disorder by encouraging consistent personal hygiene practices and increasing awareness of the importance of self-care. Similarly, Nasution et al. (2021) found that Token Economy-based behavioral therapy positively influenced personal hygiene performance among individuals with mental disorders experiencing self-care deficits. The present case extends these findings by providing a detailed description of the implementation process and observable behavioral targets specifically related to bathing self-care activities in a psychiatric inpatient setting.

The interpretation of outcomes in this case should also consider potential confounding factors. The patient received ongoing pharmacological treatment with risperidone and clozapine throughout hospitalization. Antipsychotic therapy likely contributed to symptom stabilization and may have indirectly improved behavioral functioning. Therefore, the observed improvements cannot be attributed exclusively to Token Economy therapy. However, no medication changes or dose adjustments occurred during the five-day intervention

period, whereas the most noticeable improvements were observed in the specific self-care behaviors that were directly targeted and reinforced through the Token Economy program. This temporal relationship suggests that behavioral reinforcement may have contributed substantially to the observed changes.

Another important consideration is the presence of uncontrolled diabetes mellitus, as indicated by fasting blood glucose of 328 mg/dL, random blood glucose of 297 mg/dL, and HbA1c >14%. Severe hyperglycemia may cause fatigue, reduced energy, impaired concentration, and decreased physical functioning, all of which can negatively affect self-care performance. Consequently, the patient's poor hygiene and reduced motivation may not have been solely attributable to schizophrenia. In addition, long-term exposure to atypical antipsychotics, particularly clozapine and risperidone, has been associated with metabolic disturbances, including weight gain, insulin resistance, and hyperglycemia. Although a direct causal relationship could not be established because baseline metabolic data were unavailable, the possibility of antipsychotic-associated metabolic effects should be considered when evaluating the patient's overall clinical condition. Management of hyperglycemia during hospitalization may also have contributed to improvements in physical well-being and functional capacity.

The clinical relevance of this case lies in demonstrating how Token Economy therapy can be integrated into routine psychiatric nursing practice using simple, structured, and measurable behavioral targets. The intervention required minimal resources and could be implemented by nursing staff as part of daily care. A particular strength of this case was the use of clearly defined bathing-related behaviors and objective reinforcement outcomes, including token accumulation and direct observation of self-care performance. These features allowed more systematic monitoring of behavioral change than subjective impressions alone.

Several limitations should be acknowledged. The intervention period was limited to five days, preventing evaluation of long-term maintenance of behavioral gains. The absence of standardized self-care assessment scales also limited quantitative measurement of improvement. Furthermore, because the patient simultaneously received pharmacological treatment and medical management for uncontrolled diabetes mellitus, the independent contribution of Token Economy therapy cannot be determined with certainty. Future studies incorporating longer follow-up periods and standardized outcome measures are needed to better evaluate the sustainability and effectiveness of behavioral reinforcement interventions in patients with schizophrenia.

Overall, this case highlights the importance of addressing self-care deficits through behavioral as well as pharmacological approaches. The clinical lesson is that Token Economy therapy may serve as a practical strategy to enhance motivation, reinforce adaptive behaviors, and improve bathing self-care ability among patients with schizophrenia. Continued support from healthcare providers, family members, and caregivers remains essential to sustain these behavioral improvements after discharge (Daulay & Ginting, 2021).

DIAGNOSTIC CHALLENGE

One of the primary diagnostic challenges in this case was differentiating self-care deficit caused by schizophrenia-related negative symptoms from other psychiatric conditions such as depressive disorders or severe social withdrawal. The patient presented with passivity, low motivation, and isolation, which may also occur in major depressive disorder. However, the chronic psychotic history, repeated psychiatric hospitalizations, impaired insight, and longstanding behavioral dysfunction supported schizophrenia as the primary diagnosis.

Another challenge involved assessing the patient’s actual level of self-care ability because the patient showed limited communication, poor insight, and minimal verbal responses during interviews. Behavioral observation and repeated nursing assessments were therefore essential to identify the severity of functional impairment and determine appropriate therapeutic interventions.

In addition, maintaining patient motivation during therapy posed a clinical challenge. Patients with schizophrenia frequently demonstrate fluctuating engagement and inconsistent adherence to behavioral interventions, requiring continuous supervision and reinforcement from healthcare providers.

LIMITATION

This case report has several limitations. First, the intervention period was relatively short, consisting of only five days of Token Economy therapy, which limited long-term evaluation of behavioral sustainability. Second, the report was based on a single patient case, reducing the generalizability of the findings to broader psychiatric populations. Third, no standardized psychiatric rating scales were used to quantitatively measure symptom severity or functional improvement. In addition, long-term follow-up after discharge was not available, making it difficult to determine whether improvements in self-care behavior were maintained outside the hospital setting.

LEARNING POINTS

1. Token Economy therapy can improve bathing self-care ability and personal hygiene in patients with schizophrenia experiencing self-care deficits.
2. Positive reinforcement strategies may increase motivation and participation in daily self-care activities among psychiatric patients with negative symptoms.
3. Comprehensive psychiatric nursing assessment is important to identify functional impairment and determine appropriate behavioral interventions.
4. Consistent supervision and caregiver support are essential to maintain long-term behavioral improvement in self-care activities.
5. Behavioral interventions combined with pharmacological therapy may provide better outcomes in managing self-care deficits in schizophrenia patients.

CONCLUSION

This case report describes a hospitalized patient with schizophrenia and bathing self-care deficit who demonstrated noticeable improvement in personal hygiene behaviors during a five-day period of combined pharmacological treatment, medical management of uncontrolled hyperglycemia, and Token Economy therapy. Improvements were observed in several targeted behaviors, including tooth brushing, hair washing, body drying, and changing into clean clothes, although consistency in maintaining a daily self-care schedule remained incomplete.

The case is clinically relevant because it illustrates how a structured behavioral reinforcement approach can be incorporated into routine psychiatric nursing care to support self-care activities in patients with impaired motivation and functional limitations. However, because this report describes a single patient receiving concurrent pharmacological, medical, and behavioral interventions, the specific contribution of Token Economy therapy to the observed improvements cannot be determined with certainty.

Clinicians should consider both psychiatric and physical health factors, including metabolic conditions such as diabetes mellitus, when evaluating self-care deficits and planning individualized interventions for patients with schizophrenia.

PATIENT CONSENT

Written informed consent for publication of this case report, including clinical data and relevant information, has been obtained from the patient. All efforts have been made to ensure patient confidentiality by removing any identifying information, and no personal identifiers are disclosed in this report.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest related to the writing and publication of this article.

FUNDING SOURCE

This article received no specific funding.

AUTHORS' CONTRIBUTION

The first author contributed to the conceptualization of the study and data collection. The second author contributed to manuscript drafting, manuscript revision, and approval of the final version. The third author contributed to clinical analysis of the case.

DATA AVAILABILITY

The data supporting the findings of this case report are not publicly available due to patient confidentiality and ethical restrictions. However, relevant data may be made available from the corresponding author upon reasonable request and with appropriate ethical considerations.

ACKNOWLEDGEMENTS

The authors would like to express their gratitude to the healthcare professionals and nursing staff in the Dewandaru psychiatric ward who provided support and assistance during patient care and data collection. Appreciation is also extended to the institution for facilitating the clinical learning process and the implementation of this case report.

FIGURE AND TABLE LEGENDS

The following table presents the comparison of the patient's bathing self-care ability before and after the implementation of Token Economy therapy.

Table 3. Improvement in Bathing Self-Care Ability Before and After Token Economy Therapy

Variable	Result	Notes
Ability to explain the benefits of bathing	Improved	Patient understood the importance of personal hygiene
Ability to identify bathing equipment	Improved	Patient correctly mentioned and used bathing tools
Ability to describe bathing procedures	Improved	Patient explained bathing steps appropriately
Ability to perform bathing correctly	Improved	Patient demonstrated proper bathing and grooming
Ability to follow daily self-care schedule	Partially improved	Patient still inconsistent in maintaining routine

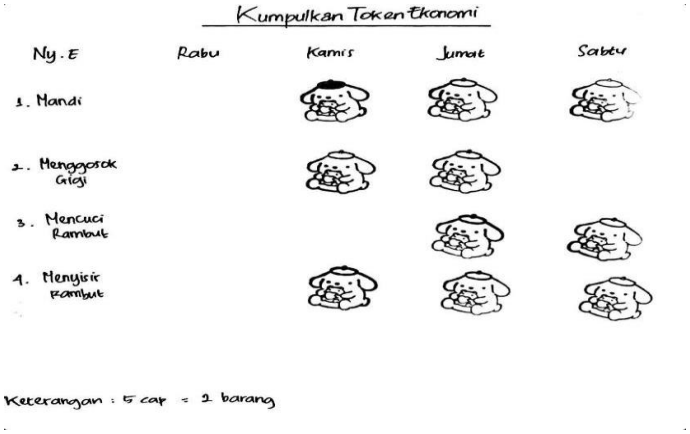


Figure 1. Token Economy Reinforcement Chart

Figure 1 demonstrates the implementation of the Token Economy system over a five-day intervention period. The patient received a total of 10 tokens (stamps) as positive reinforcement for completing targeted self-care activities, including bathing, brushing teeth, washing hair, and grooming. The accumulation of tokens indicates progressive improvement in the patient's motivation and adherence to self-care behaviors. This finding suggests that the Token Economy method was effective in encouraging the patient to perform personal hygiene activities consistently during the intervention period.

REFERENCES

Apriani, K. T. (2023). Gambaran Perilaku Isolasi Sosial Pada Pasien Skizofrenia Di Rumah Sakit Jiwa Provinsi Bali Tahun 2023. Poltekkes Kemenkes Denpasar Jurusan Keperawatan 2023.

Daulay, W., & Ginting, R. (2021). Dukungan Keluarga dan Tingkat Kemampuan Perawatan Diri Pada Orang Dengan Ganggua Jiwa (ODGJ). JINTAN: Jurnal Ilmu Keperawatan, 1(1), 7–15.

Fiddaraini, N. S. (2023). Pengaruh Penerapan Terapi Token Ekonomi Pada Asuhan Keperawatan Pasien Harga Diri Rendah. Jurnal of Community Health Development, 4(1), 36. https://doi.org/https://doi.org/10.20884/1.jchd.2023.4.1.7554

Kementrian Kesehatan Republik Indonesia/Kemenkes RI. (2018). Riset Kesehatan Dasar.pdf. In Badan Penelitian dan Pengembangan Kesehatan (p. 674). http://labdata.litbang.kemkes.go.id/images/download/laporan/RKD/2018/Laporan_Nasional_RKD2018_FINAL.pdf

Mintarsih, R. A. (2021). Pengaruh Token Ekonomi Untuk Meningkatkan Kemampuan Rawat Diri Pada Individu Dengan Gangguan Skizoafektif. Procedia : Studi Kasus Dan Intervensi Psikologi, 9(4). https://doi.org/https://doi.org/10.22219/procedia.v9i4.16346

Nasution, M. L., Daulay, W., & Wahyuni, S. E. (2021). Implementation Of Behavioral Therapy (Economic Token) On The Ability Of People With Mental Disorders In Fulfilling Self-cleaning (Personal Hygiene) In Medan Sunggal Subdistrict. Open Access Macedonian Journal of Medical Sciences, 9(T3), 84–86. https://doi.org/https://doi.org/10.3889/oamjms.2021.6307

Reptiana, A. (2020). Latihan peningkatan personal higiene masalah defisit perawatan diri pada pasien dengan gangguan jiwa. Tugas Akhir Universitas Muhammadiyah Magelang.

Rosdiana, A. M. (2022). Teknik Token Ekonomi : Teori dan Aplikasi. CONSEILS: Jurnal Bimbingan Dan Konseling Islam, 2(2), 42–52. https://doi.org/https://doi.org/10.55352/bki.v2i2.658

Stuart, G.W. dan Laraia, M. . (2016). Principles and Practice of Psychiatric Nursing. Mosby Year Book.

World Health Organization. (2025, September 30). Mental disorders. https://www.who.int/news-room/fact-sheets/detail/mental-disorders

Yusuf, A., Fitryasari, R., & Nihayati, H. . (2015). Buku Ajar Keperawatan Kesehatan Jiwa. Buku Ajar Keperawatan Kesehatan Jiwa, 1–366. https://doi.org/ISBN 978-xxx-xxx-xx-x

Yusuf, A. H., Fitryasari, R., Nihayati, E. H., & Tristiana, R. D. (2022). Keperawatan Kesehatan Jiwa: Pendekatan Holistik Dalam Asuhan Keperawatan. Salemba Medika.

Optimal Journal Clinical Case Report, Volume 01, No.01,July 2026, (Page. 91-109)
ISSN 3164-872X

ROY ADAPTATION MODEL-GUIDED NURSING MANAGEMENT OF STEMI COMPLICATED BY CARDIOGENIC SHOCK: A CASE REPORT

Prima Trisna Aji[a*], Muhammad Hasbi Nur[b], Elinda Rizkasari[c]

[a]Department of Medical Surgical Nursing, Faculty of Nursing and Health Sciences, Universitas Muhammadiyah Semarang, Indonesia

[b]Bachelor of Medicine Study Program, Faculty of Medicine, Universitas Muhammadiyah Semarang, Semarang, Indonesia

[c]Primary School Teacher Education Undergraduate Program, Faculty of Teacher Training and Education, Universitas Slamet Riyadi, Surakarta, Central Java, Indonesia

**Corresponding author: primatrisnaaji@unimus.ac.id*

Abstract

Background: ST-Elevation Myocardial Infarction (STEMI) complicated by cardiogenic shock is a life-threatening cardiovascular emergency associated with high mortality despite advances in reperfusion therapy and intensive cardiovascular care. Comprehensive nursing management is essential not only for physiological stabilization but also for promoting adaptive responses during critical illness. **Case Summary:** A 62-year-old male patient presented with severe chest pain radiating to the left arm, progressive dyspnea, diaphoresis, hypotension, and signs of systemic hypoperfusion. The patient had a history of uncontrolled hypertension, type 2 diabetes mellitus, and long-term smoking. Physical examination revealed hemodynamic instability, respiratory distress, poor peripheral perfusion, and pulmonary congestion. **Investigation and Diagnosis:** Electrocardiography demonstrated ST-segment elevation in the anterior leads consistent with acute anterior STEMI. Laboratory findings showed elevated cardiac troponin and serum lactate levels, while chest radiography revealed cardiomegaly with pulmonary congestion. Echocardiography demonstrated reduced left ventricular systolic function. Based on clinical findings and diagnostic evaluation, the patient was diagnosed with STEMI complicated by cardiogenic shock and acute pulmonary edema. **Management:** Emergency cardiovascular management included oxygen therapy, continuous hemodynamic monitoring, dual antiplatelet therapy, anticoagulation, vasopressor and inotropic support, diuretic therapy, and primary percutaneous coronary intervention (PCI). Nursing management was implemented using Roy Adaptation Model focusing on physiological stabilization, psychological adaptation, therapeutic communication, and family-centered support. **Outcome:** Following integrated cardiovascular management and Roy Adaptation Model-based nursing interventions, the patient's blood pressure improved from 82/58 mmHg to 104/68 mmHg, heart rate decreased from 124 to 92 beats/min, oxygen saturation increased from 88% to 97%, peripheral perfusion and urine output progressively improved within 48 hours, and pulmonary congestion markedly resolved. No recurrent malignant arrhythmias, major bleeding, or other significant in-hospital complications were observed **Conclusion:** This case highlights the importance of rapid recognition, multidisciplinary cardiovascular management, and adaptation-focused nursing care in patients with STEMI complicated by cardiogenic shock. Roy Adaptation Model provided a comprehensive framework for addressing both physiological instability and psychosocial adaptation during critical cardiovascular emergencies.

Keywords: cardiogenic shock; cardiovascular nursing; clinical case report; Roy Adaptation Model; STEMI

INTRODUCTION

ST-Elevation Myocardial Infarction (STEMI) remains one of the leading causes of cardiovascular mortality and morbidity worldwide despite advances in reperfusion therapy and critical cardiovascular management. STEMI occurs due to acute coronary artery occlusion resulting in transmural myocardial ischemia and extensive myocardial necrosis, which may rapidly progress to life-threatening complications, including cardiogenic shock, acute pulmonary edema, malignant arrhythmias, and multi-organ hypoperfusion (Casulli, 2021). Recent epidemiological reports have shown that cardiovascular disease continues to be the primary cause of global mortality, accounting for approximately 17.9 million deaths annually, with acute coronary syndrome contributing significantly to hospital admissions and critical care utilization (WHO, 2022). Cardiogenic shock remains one of the most severe complications of STEMI and is associated with high mortality rates despite improvements in early reperfusion and intensive cardiovascular treatment strategies (Journal et al., 2026).

Cardiogenic shock in STEMI develops as a consequence of extensive myocardial damage leading to impaired ventricular contractility, decreased cardiac output, systemic hypotension, and inadequate tissue perfusion. This condition frequently manifests with hemodynamic instability, respiratory distress, altered peripheral perfusion, oliguria, and metabolic deterioration requiring immediate multidisciplinary management (Baidhowy, 2025). In critically ill cardiovascular patients, rapid clinical deterioration may occur within a short period, emphasizing the importance of early recognition, continuous hemodynamic monitoring, oxygenation management, and evidence-based cardiovascular nursing interventions to prevent further complications and mortality (Alexander et al., 2024). Advanced cardiovascular nursing plays an essential role in supporting physiological stabilization, monitoring adaptive responses, identifying signs of worsening perfusion, and improving patient outcomes during acute cardiac emergencies (Puluhulawa, 2021).

From a nursing perspective, critically ill patients with STEMI complicated by cardiogenic shock experience complex adaptive responses involving physiological instability, psychological distress, impaired functional roles, and increased dependence on healthcare providers and family support systems (Thiele et al., 2019). Therefore, nursing management should not only focus on physiological stabilization but also address psychosocial adaptation and holistic patient responses during critical illness (Ummah, 2019). Roy Adaptation Model provides a comprehensive theoretical framework for understanding patient adaptation through four adaptive modes, namely physiological mode, self-concept mode, role function mode, and interdependence mode. This model enables nurses to assess adaptive behaviors systematically and implement individualized nursing interventions aimed at promoting positive adaptation in critically ill patients (Byrne et al., 2023).

Although several nursing theories, including Orem's Self-Care Deficit Theory, Neuman Systems Model, and Levine's Conservation Model, have been applied in cardiovascular nursing, the Roy Adaptation Model offers distinct advantages for managing critically ill patients with STEMI complicated by cardiogenic shock. Unlike theories that primarily emphasize self-care capacity, system stability, or energy conservation, the Roy Adaptation Model comprehensively addresses patients' dynamic adaptive responses across four interconnected modes: physiological function, self-concept, role function, and interdependence. This holistic perspective is particularly relevant for patients with cardiogenic shock, whose clinical condition is characterized not only by profound hemodynamic instability but also by significant psychological distress, temporary functional dependency, and the need for intensive family support. Consequently, the Roy Adaptation Model provides a more comprehensive framework for guiding nursing assessment, individualized interventions, and continuous evaluation of adaptive responses throughout the acute and recovery phases of critical cardiovascular illness.

Although previous studies have extensively discussed the medical management of STEMI and cardiogenic shock, few clinical case reports have specifically demonstrated how a nursing theory can systematically guide assessment, clinical decision-making, intervention planning, and evaluation during critical cardiovascular care. Existing reports predominantly emphasize pharmacological treatment and invasive procedures, while the

application of theory-based nursing management remains underreported. This knowledge gap underscores the need to describe how the Roy Adaptation Model can support holistic nursing care in patients with STEMI complicated by cardiogenic shock (Levine et al., 2022).

To the authors' knowledge, limited clinical case reports have specifically described the integration of Roy Adaptation Model within advanced cardiovascular nursing management for STEMI complicated by cardiogenic shock. This case provides important educational and clinical insight into adaptation-focused cardiovascular nursing care during critical hemodynamic instability.

CASE PRESENTATION

A 62-year-old male patient was admitted to the emergency department with a chief complaint of severe chest pain radiating to the left arm accompanied by progressive shortness of breath approximately six hours before hospital admission. The patient described the chest pain as crushing in nature with a pain intensity of 8 out of 10 and associated with diaphoresis, generalized weakness, palpitations, nausea, and cold extremities. The patient reported that the symptoms initially appeared during physical activity and progressively worsened despite resting at home.

The patient had a previous history of uncontrolled hypertension for approximately 10 years and type 2 diabetes mellitus for five years. The patient also reported a history of smoking one pack of cigarettes daily for more than 25 years. Medication adherence was poor, and the patient admitted irregular use of antihypertensive and antidiabetic medications. There was no previous history of coronary revascularization or documented myocardial infarction. Family history revealed that the patient's father had experienced cardiovascular disease at an older age. Social history showed limited physical activity and poor dietary control.

On admission, the patient appeared critically ill, anxious, diaphoretic, and dyspneic. Initial physical examination revealed a blood pressure of 82/58 mmHg, heart rate of 124 beats/minute, respiratory rate of 30 breaths/minute, body temperature of 36.4°C, and oxygen saturation of 88% on room air. Peripheral perfusion was poor as evidenced by cold extremities, delayed capillary refill time greater than three seconds, and weak peripheral pulses. Jugular venous distention was observed, and lung auscultation revealed bilateral fine crackles in the lower lung fields suggestive of pulmonary congestion. Cardiac auscultation demonstrated tachycardia with diminished heart sounds. Urine output during the initial assessment was decreased.

Initial electrocardiography demonstrated ST-segment elevation in the anterior leads consistent with acute anterior STEMI. Laboratory examination showed elevated cardiac troponin levels, increased serum lactate, hyperglycemia, and mild metabolic acidosis. Chest radiography revealed cardiomegaly with pulmonary vascular congestion suggestive of acute heart failure. Based on clinical presentation, hemodynamic instability, electrocardiographic findings, and laboratory results, the patient was diagnosed with STEMI complicated by cardiogenic shock requiring immediate intensive cardiovascular management and advanced nursing monitoring.

CLINICAL REASONING

The patient presented with acute severe chest pain radiating to the left arm, progressive dyspnea, diaphoresis, hypotension, tachycardia, and signs of systemic hypoperfusion. These manifestations strongly suggested an acute cardiovascular emergency requiring immediate diagnostic evaluation and hemodynamic stabilization. The initial differential diagnoses considered in this case included ST-Elevation Myocardial Infarction (STEMI), Non-ST Elevation Myocardial Infarction (NSTEMI), acute decompensated heart failure, pulmonary embolism, aortic dissection, and severe arrhythmia-associated hemodynamic instability (P. T. A. A. S. B. Z. E. Rizkasari, 2025).

STEMI was considered the primary working diagnosis because the patient demonstrated classic ischemic chest pain characteristics accompanied by electrocardiographic evidence of ST-segment elevation in the anterior leads, indicating acute transmural myocardial ischemia. In addition, elevated cardiac troponin levels further supported the presence of myocardial necrosis consistent with acute myocardial infarction (Aji, Baidhowy, & Rizkasari, 2026). The patient also exhibited hemodynamic instability characterized by systolic hypotension, tachycardia, cold extremities, delayed capillary refill, oliguria, and elevated serum lactate levels, which were strongly indicative of cardiogenic shock secondary to impaired myocardial contractility and reduced cardiac output (Aji, Tania, Ching, et al., 2026).

NSTEMI was excluded because the electrocardiographic findings showed persistent ST-segment elevation rather than ST-segment depression or T-wave inversion typically associated with NSTEMI. Pulmonary embolism was considered due to the presence of dyspnea and hypoxemia; however, the absence of sudden pleuritic chest pain, unilateral lower extremity swelling, and the presence of clear ischemic electrocardiographic findings made pulmonary embolism less likely (Stiexs et al., 2026). Acute aortic dissection was also considered because of severe chest pain and hemodynamic instability; however, the pain was not described as tearing in nature, there was no pulse deficit or mediastinal widening on chest radiography, and the electrocardiographic findings were more consistent with acute myocardial infarction (Aji & Rizkasari, 2021).

Acute decompensated heart failure was identified as a complication rather than the primary diagnosis because pulmonary congestion, bilateral crackles, and oxygenation impairment developed secondary to severe left ventricular dysfunction caused by acute myocardial ischemia. The progression from myocardial injury to impaired ventricular contractility, reduced cardiac output, systemic hypoperfusion, and pulmonary congestion reflected the pathophysiological mechanism of cardiogenic shock complicating STEMI (Aji & Sani, 2021).

From the perspective of Roy Adaptation Model, the patient demonstrated maladaptive physiological responses characterized by impaired oxygenation, hemodynamic instability, reduced tissue perfusion, and metabolic deterioration. Psychological maladaptation was also observed through anxiety, fear, and emotional distress during the acute cardiovascular event. These findings emphasized the importance of comprehensive adaptation-focused nursing management aimed at stabilizing physiological function, supporting psychological adaptation, and improving overall patient responses during critical illness (Hosseini & Soltanian, 2022).

Based on the overall clinical presentation, electrocardiographic findings, laboratory examinations, hemodynamic parameters, and pathophysiological deterioration, the final diagnosis established was acute anterior STEMI complicated by cardiogenic shock and acute pulmonary congestion requiring intensive cardiovascular management and advanced nursing care.

DIAGNOSTIC ASSESSMENT

Comprehensive diagnostic evaluation was performed immediately after admission to identify the underlying cause of hemodynamic instability and determine the severity of myocardial injury. Initial electrocardiography (ECG) demonstrated significant ST-segment elevation in the anterior leads, indicating acute anterior ST-Elevation Myocardial Infarction (STEMI). Laboratory examination revealed markedly elevated cardiac troponin levels confirming myocardial necrosis. Elevated serum lactate levels, metabolic acidosis, and impaired peripheral perfusion further supported the diagnosis of cardiogenic shock secondary to extensive myocardial ischemia (Wang et al., 2023).

Chest radiography demonstrated cardiomegaly accompanied by pulmonary vascular congestion and bilateral diffuse infiltrates suggestive of acute pulmonary edema due to left ventricular dysfunction. Echocardiographic examination showed reduced left ventricular ejection fraction with impaired anterior wall motion abnormalities, indicating severe systolic dysfunction contributing to reduced cardiac output and systemic

hypoperfusion (Wang et al., 2024). Hemodynamic assessment revealed persistent hypotension, tachycardia, hypoxemia, oliguria, and signs of peripheral vasoconstriction consistent with cardiogenic shock.

The Sequential Organ Failure Assessment (SOFA) score and Killip classification were also considered during the initial assessment to evaluate the severity of cardiovascular compromise and risk of mortality. The patient was classified as Killip class IV due to the presence of cardiogenic shock and pulmonary congestion, indicating a high-risk clinical condition requiring intensive cardiovascular management and close hemodynamic monitoring (Yeşilyurt, 2023).

Table 1. Summary of relevant diagnostic findings

Examination	Result	Clinical Interpretation
Electrocardiography (ECG)	ST-segment elevation in anterior leads (V1–V4)	Acute anterior STEMI indicating transmural myocardial ischemia
Cardiac troponin	Significantly elevated	Myocardial necrosis and acute myocardial infarction
Blood pressure	82/58 mmHg	Hemodynamic instability consistent with cardiogenic shock
Heart rate	124 beats/minute	Compensatory tachycardia due to reduced cardiac output
Respiratory rate	30 breaths/minute	Respiratory distress and increased oxygen demand
Oxygen saturation	88% on room air	Hypoxemia secondary to pulmonary congestion
Serum lactate	Elevated	Tissue hypoperfusion and anaerobic metabolism
Arterial blood gas analysis	Mild metabolic acidosis	Impaired tissue perfusion and oxygenation
Chest radiography	Cardiomegaly with pulmonary vascular congestion and bilateral infiltrates	Acute pulmonary edema associated with left ventricular failure
Echocardiography	Reduced left ventricular ejection fraction with anterior wall hypokinesia	Severe systolic dysfunction secondary to STEMI
Peripheral perfusion assessment	Cold extremities, delayed capillary refill, weak peripheral pulses	Systemic hypoperfusion due to cardiogenic shock
Urine output monitoring	Decreased urine output	Renal hypoperfusion associated with low cardiac output
Killip classification	Killip class IV	STEMI complicated by cardiogenic shock with high mortality risk
SOFA score	Increased SOFA score	Early organ dysfunction related to systemic hypoperfusion

The combination of electrocardiographic findings, elevated cardiac biomarkers, radiological evidence of pulmonary congestion, impaired ventricular contractility, and systemic hypoperfusion strongly supported the diagnosis of acute anterior STEMI complicated by cardiogenic shock and acute pulmonary edema requiring immediate intensive cardiovascular intervention and advanced nursing management.

THERAPEUTIC INTERVENTION

The patient received comprehensive emergency cardiovascular management immediately after the diagnosis of acute anterior ST-Elevation Myocardial Infarction (STEMI) complicated by cardiogenic shock was

established. Initial stabilization focused on improving myocardial perfusion, restoring hemodynamic stability, optimizing oxygenation, and preventing further organ hypoperfusion. All therapeutic interventions were performed according to evidence-based cardiovascular emergency management and patient safety principles (Mughal, 2022).

Upon admission, supplemental oxygen therapy was initiated using a non-rebreathing mask at 10 L/minute due to hypoxemia and respiratory distress. Continuous cardiac monitoring, pulse oximetry, urine output monitoring, and serial hemodynamic assessments were performed to detect early deterioration and evaluate treatment response. Two peripheral intravenous lines were established to facilitate rapid administration of fluids and emergency medications.

Pharmacological management included dual antiplatelet therapy consisting of aspirin 300 mg loading dose and clopidogrel 300 mg loading dose to reduce platelet aggregation and prevent further coronary thrombus formation. Intravenous unfractionated heparin was administered as anticoagulant therapy to reduce the risk of ongoing thrombosis and recurrent ischemic events. Intravenous norepinephrine infusion was initiated at a titrated dose to maintain adequate mean arterial pressure and improve systemic perfusion due to persistent hypotension associated with cardiogenic shock. Dobutamine infusion was administered to improve myocardial contractility and increase cardiac output while carefully monitoring the risk of tachyarrhythmia and increased myocardial oxygen demand (Hamzaoui & Boissier, 2023).

Intravenous loop diuretic therapy using furosemide was administered to reduce pulmonary congestion and improve respiratory status. Strict fluid balance monitoring was performed to prevent volume overload while maintaining adequate organ perfusion. Morphine was cautiously administered in low doses to reduce severe chest pain, decrease anxiety, and minimize sympathetic stimulation. Blood glucose levels were closely monitored and controlled using insulin therapy to optimize metabolic stability during the acute cardiovascular event.

Emergency reperfusion therapy through primary percutaneous coronary intervention (PCI) was planned as the definitive management to restore coronary blood flow and minimize myocardial damage. Prior to the procedure, the patient underwent intensive hemodynamic stabilization and continuous reassessment of perfusion status. Post-procedural monitoring included continuous electrocardiographic observation, assessment of recurrent chest pain, peripheral perfusion evaluation, monitoring for arrhythmias, bleeding complications, and reassessment of oxygenation and hemodynamic parameters (Aji, Rizkasari, & Rahmawati, 2026).

From the perspective of Roy Adaptation Model, nursing interventions focused on promoting adaptive responses in four adaptive modes. In the physiological mode, nursing management emphasized oxygenation support, tissue perfusion monitoring, hemodynamic stabilization, pain management, and fluid balance regulation. In the self-concept mode, therapeutic communication and emotional support were provided to reduce anxiety and fear related to the life-threatening condition. In the role function mode, nurses assisted the patient in adapting to temporary physical dependence during critical illness. In the interdependence mode, family involvement and psychosocial support were facilitated to strengthen the patient's coping mechanisms and emotional adaptation (Chen, 2025).

Continuous reassessment was conducted throughout hospitalization to evaluate treatment effectiveness, monitor complications, and ensure patient safety. The integrated combination of pharmacological therapy, reperfusion management, intensive cardiovascular monitoring, and Roy Adaptation Model-based nursing care contributed significantly to gradual hemodynamic stabilization, improved oxygenation, reduction of pulmonary congestion, and enhanced patient adaptation during critical cardiovascular care.

Table 3. Application of the Roy Adaptation Model Throughout the Nursing Care Process

Adaptive Mode	Focal Stimulus	Adaptive Problem	Nursing Intervention	Adaptive Outcome
Physiological	Acute STEMI with cardiogenic shock	Impaired oxygenation, decreased tissue perfusion, hemodynamic instability	Oxygen therapy, hemodynamic monitoring, vasopressor and inotropic support, preparation for PCI	Improved BP, oxygenation, tissue perfusion
Self-Concept	Fear of death and hospitalization	Anxiety and emotional distress	Therapeutic communication, reassurance, psychological support	Reduced anxiety and improved emotional adaptation
Role Function	Physical dependence during critical illness	Inability to perform usual roles	Gradual mobilization, self-care support, discharge preparation	Progressive recovery of functional role
Interdependence	Family concern and dependence	Need for psychosocial support	Family education, shared decision-making, discharge counseling	Enhanced family involvement and treatment adherence

Note: BP = blood pressure; ECG = electrocardiography; PCI = percutaneous coronary intervention; SpO_2 = peripheral oxygen saturation. The table summarizes the implementation of the Roy Adaptation Model across the four adaptive modes throughout the patient's nursing care.

THERAPEUTIC SEQUENCE

The patient arrived at the emergency department approximately six hours after the onset of severe chest pain accompanied by progressive dyspnea, diaphoresis, and generalized weakness. Initial assessment revealed hemodynamic instability characterized by hypotension, tachycardia, hypoxemia, cold extremities, delayed capillary refill, and decreased urine output. Electrocardiography demonstrated ST-segment elevation in the anterior leads consistent with acute anterior ST-Elevation Myocardial Infarction (STEMI). Immediate emergency cardiovascular stabilization was initiated to prevent further myocardial damage and systemic hypoperfusion.

During the initial stabilization phase, oxygen therapy using a non-rebreathing mask at 10 L/minute was administered to improve oxygenation and reduce myocardial oxygen demand. Continuous cardiac monitoring,

pulse oximetry, blood pressure monitoring, urine output monitoring, and serial hemodynamic evaluations were initiated due to the high risk of cardiovascular deterioration. Dual antiplatelet therapy consisting of aspirin and clopidogrel loading doses was administered promptly to inhibit platelet aggregation and reduce ongoing coronary thrombosis. Intravenous anticoagulant therapy with unfractionated heparin was also initiated to minimize further thrombotic complications (Navarese et al., 2021).

Despite initial stabilization efforts, the patient continued to experience persistent hypotension and signs of tissue hypoperfusion, including elevated serum lactate and worsening peripheral perfusion. Therefore, vasopressor therapy using norepinephrine infusion was initiated and titrated carefully to maintain adequate mean arterial pressure and preserve organ perfusion. Dobutamine infusion was subsequently added because persistent low cardiac output and impaired ventricular contractility suggested severe cardiogenic shock. The addition of inotropic support aimed to improve myocardial contractility and optimize systemic circulation while continuously monitoring for tachyarrhythmia and increased myocardial oxygen consumption (Juzar et al., 2022).

As pulmonary congestion and respiratory distress worsened, intravenous furosemide was administered to reduce fluid overload and improve pulmonary vascular congestion. Strict fluid balance monitoring was performed to avoid excessive fluid administration that could exacerbate pulmonary edema while still maintaining adequate tissue perfusion. Arterial blood gas analysis and oxygenation parameters were reassessed regularly to evaluate respiratory improvement and acid-base balance. Morphine was cautiously administered in low doses to reduce severe chest pain, sympathetic stimulation, and anxiety associated with acute myocardial infarction.

Following partial hemodynamic stabilization, the patient was prepared for reperfusion therapy through primary percutaneous coronary intervention (PCI) as definitive management to restore coronary blood flow and minimize ongoing myocardial ischemia. Prior to PCI, serial reassessment demonstrated gradual improvement in oxygen saturation and slight stabilization of blood pressure following vasopressor and inotropic support. Post-PCI monitoring included continuous electrocardiographic surveillance, assessment of recurrent ischemic symptoms, bleeding monitoring, peripheral perfusion reassessment, and evaluation of urine output and mental status to detect early complications and treatment response.

From the perspective of Roy Adaptation Model, therapeutic adjustments were continuously guided by the patient's adaptive responses. Physiological adaptation was addressed through oxygenation support, hemodynamic stabilization, perfusion monitoring, and fluid regulation. Psychological adaptation was facilitated through therapeutic communication and anxiety reduction interventions during critical illness. Interdependence adaptation was supported by involving family members in emotional support and patient care communication. Continuous reassessment of adaptive responses allowed nursing interventions to be modified according to the patient's evolving clinical condition and hemodynamic status (Lawton et al., 2022).

Over the subsequent hospitalization period, the patient demonstrated gradual clinical improvement characterized by improved oxygenation, stabilization of blood pressure, reduced pulmonary congestion, improved peripheral perfusion, and increased urine output. Continuous multidisciplinary cardiovascular management and intensive nursing monitoring contributed significantly to the patient's recovery and prevention of further hemodynamic deterioration.

CASE TIMELINE

Table 2. Clinical Case Timeline

Time	Clinical Event	Investigation	Treatment	Outcome
Day 0 (Emergency	Patient presented with severe chest	Initial vital signs assessment showed BP	Oxygen therapy via non-rebreathing mask 10	Initial stabilization

Department Admission)	pain radiating to the left arm, progressive dyspnea, diaphoresis, hypotension, and generalized weakness	82/58 mmHg, HR 124 beats/minute, RR 30 breaths/minute, SpO_2 88%. ECG demonstrated ST-segment elevation in anterior leads. Laboratory examination revealed elevated troponin and serum lactate levels	L/minute, continuous cardiac monitoring, aspirin loading dose, clopidogrel loading dose, intravenous heparin initiation	achieved with partial improvement in oxygenation but persistent hypotension and poor peripheral perfusion
Day 0 (First 6 Hours)	Persistent hemodynamic instability with signs of systemic hypoperfusion and worsening respiratory distress	Serial hemodynamic monitoring, arterial blood gas analysis, urine output assessment, chest radiography showing pulmonary congestion and cardiomegaly	Norepinephrine infusion initiated and titrated, dobutamine infusion added for inotropic support, intravenous furosemide administered, strict fluid balance monitoring	Slight improvement in blood pressure and oxygen saturation, pulmonary congestion remained present
Day 1	Continued monitoring in intensive cardiovascular care setting due to cardiogenic shock	Repeat ECG, serial troponin evaluation, peripheral perfusion reassessment, echocardiography demonstrating reduced left ventricular ejection fraction and anterior wall hypokinesia	Preparation for primary percutaneous coronary intervention (PCI), continuation of vasopressor and inotropic therapy, ongoing oxygenation support, pain management, anxiety reduction interventions	Hemodynamic status gradually stabilized, chest pain intensity decreased, peripheral perfusion slightly improved
Day 1 (Post-PCI)	Patient underwent successful reperfusion therapy through primary PCI	Post-procedural ECG monitoring, bleeding assessment, continuous hemodynamic observation	Continued antiplatelet therapy, anticoagulation monitoring, adjustment of vasopressor dosage according to blood pressure response	Improved coronary perfusion, stabilization of cardiac rhythm, reduced ischemic symptoms
Day 2	Progressive clinical stabilization with improvement in respiratory status and tissue perfusion	Repeat chest radiography, arterial blood gas reassessment, urine output monitoring, serial vital sign evaluation	Gradual reduction of oxygen support, tapering of norepinephrine dosage, continuation of cardiovascular medications and nursing monitoring	Improved oxygen saturation, reduced pulmonary congestion, increased urine output, improved

				peripheral perfusion
Day 3-4	Ongoing recovery phase with improvement in adaptive responses	Continuous cardiovascular monitoring and reassessment of hemodynamic parameters	Early mobilization support, patient education, psychological support based on Roy Adaptation Model, family involvement in care planning	Reduced anxiety, improved adaptation to illness, stable hemodynamic condition
Follow-Up (Post-Discharge)	Outpatient cardiovascular follow-up and rehabilitation planning	Clinical reassessment, blood pressure monitoring, symptom evaluation, medication adherence evaluation	Continuation of antiplatelet therapy, antihypertensive medication, diabetic management, smoking cessation education, lifestyle modification counseling	

OUTCOME AND FOLLOW-UP

The patient demonstrated gradual clinical improvement following intensive cardiovascular management and Roy Adaptation Model-based nursing interventions. During the first 24 hours of hospitalization, hemodynamic instability remained the primary clinical concern due to persistent hypotension, impaired peripheral perfusion, and respiratory distress associated with cardiogenic shock. However, continuous monitoring and therapeutic adjustment contributed to progressive stabilization of the patient's cardiovascular status.

Following initiation of vasopressor and inotropic support combined with oxygen therapy and reperfusion management, blood pressure gradually improved from 82/58 mmHg to 104/68 mmHg within the subsequent 48 hours. Heart rate decreased progressively from 124 beats/minute to 92 beats/minute, while oxygen saturation improved from 88% on room air to 97% with reduced oxygen support. Respiratory distress and pulmonary congestion also showed significant improvement as evidenced by reduced dyspnea, decreased bilateral crackles on lung auscultation, and improved arterial blood gas parameters. Peripheral perfusion improved gradually, demonstrated by warmer extremities, improved capillary refill time, stronger peripheral pulses, and increased urine output.

Serial electrocardiographic monitoring showed no recurrent malignant arrhythmias following primary percutaneous coronary intervention (PCI). Repeated laboratory evaluation demonstrated gradual reduction in serum lactate levels and stabilization of metabolic parameters, indicating improved systemic tissue perfusion. Follow-up echocardiographic evaluation revealed persistent but improving left ventricular systolic dysfunction without evidence of further mechanical complications. No major bleeding complications or recurrent ischemic events were identified during hospitalization.

From the perspective of Roy Adaptation Model, the patient demonstrated progressive adaptive responses in all four adaptive modes. Physiological adaptation improved through stabilization of oxygenation, perfusion, and hemodynamic status. Psychological adaptation was observed through decreased anxiety levels, improved emotional control, and enhanced patient cooperation during treatment. In the role function mode, the patient gradually regained independence in performing simple daily activities during the recovery phase. Interdependence adaptation was strengthened through active family involvement, emotional support, and effective communication between healthcare providers and the patient's family.

During short-term follow-up after discharge, the patient remained hemodynamically stable without recurrent chest pain or worsening heart failure symptoms. The patient demonstrated improved adherence to cardiovascular medications, dietary recommendations, smoking cessation counseling, and scheduled outpatient follow-up visits. Education regarding symptom recognition, lifestyle modification, medication adherence, and cardiovascular risk reduction was reinforced during discharge planning. The patient was advised to continue regular cardiology follow-up and participate in cardiovascular rehabilitation to optimize long-term recovery and prevent recurrent cardiovascular events.

Overall, the integrated combination of evidence-based cardiovascular treatment, intensive monitoring, reperfusion therapy, and Roy Adaptation Model-based nursing management contributed significantly to improved physiological stabilization, adaptive responses, and short-term clinical outcomes in this patient with STEMI complicated by cardiogenic shock.

DISCUSSION

This case report describes a critically ill patient with acute anterior ST-Elevation Myocardial Infarction (STEMI) complicated by cardiogenic shock who required intensive cardiovascular stabilization, reperfusion therapy, and comprehensive nursing management based on Roy Adaptation Model. Cardiogenic shock remains one of the most severe and life-threatening complications of STEMI and continues to be associated with high mortality rates despite advances in reperfusion strategies and intensive cardiovascular care (Elbadawi et al., 2019). The present case highlights the importance of rapid hemodynamic assessment, early recognition of tissue hypoperfusion, timely reperfusion therapy, and integrated nursing management in improving patient outcomes during acute cardiovascular emergencies.

The pathophysiological deterioration observed in this patient was consistent with the progression of extensive myocardial ischemia leading to impaired ventricular contractility, reduced cardiac output, systemic hypotension, pulmonary congestion, and multi-organ hypoperfusion. Previous studies have demonstrated that severe left ventricular dysfunction following STEMI contributes significantly to cardiogenic shock through decreased tissue perfusion and impaired oxygen delivery (Jacob C Jentzer, 2019). In this case, the patient demonstrated classic manifestations of cardiogenic shock including persistent hypotension, tachycardia, cold extremities, oliguria, elevated serum lactate levels, and pulmonary edema, all of which indicated severe circulatory failure and high mortality risk. Early hemodynamic stabilization using vasopressor and inotropic therapy was therefore essential to preserve organ perfusion and prevent further cardiovascular deterioration.

Continuous cardiovascular monitoring and intensive nursing observation played a major role in identifying changes in hemodynamic status and guiding therapeutic adjustments throughout hospitalization. Advanced cardiovascular nursing management in critically ill STEMI patients is essential because subtle changes in oxygenation, peripheral perfusion, urine output, and mental status may indicate worsening shock and impending organ dysfunction (Cenko et al., 2018). In this case, serial assessment of oxygenation, perfusion, fluid balance, respiratory status, and hemodynamic response enabled early detection of clinical progression and optimization of therapeutic interventions. The gradual improvement in blood pressure, oxygen saturation, pulmonary congestion, and peripheral perfusion following integrated cardiovascular management demonstrated the importance of multidisciplinary and evidence-based critical care approaches.

One of the major strengths and novelties of this case report is the implementation of Roy Adaptation Model as the theoretical foundation for cardiovascular nursing management in a patient with STEMI complicated by cardiogenic shock. Most previous case reports and cardiovascular studies primarily focus on medical stabilization and invasive interventions while providing limited discussion regarding theory-based nursing adaptation during critical illness (Prima Trisna Aji; Yunie Armiyati; Elinda Rizkasari, 2026). Roy Adaptation Model offers a holistic framework for understanding patient responses to physiological and psychosocial stressors through four adaptive modes: physiological mode, self-concept mode, role function mode, and

interdependence mode (E. Rizkasari et al., 2025). In this patient, maladaptive physiological responses were evident through impaired oxygenation, decreased tissue perfusion, pulmonary congestion, and hemodynamic instability. Simultaneously, psychological distress and anxiety emerged due to the life-threatening nature of the condition and dependence on intensive cardiovascular care.

The application of Roy Adaptation Model enabled nursing interventions to address not only physiological stabilization but also emotional adaptation, coping mechanisms, and family involvement during critical illness. Therapeutic communication, anxiety reduction, emotional reassurance, and family-centered support contributed to improved psychological adaptation and patient cooperation during treatment. Previous literature has emphasized that holistic nursing care and psychological support may positively influence recovery, coping ability, and adherence in critically ill cardiovascular patients (Hosseini & Soltanian, 2022). Therefore, integrating adaptation-focused nursing management with evidence-based cardiovascular treatment may improve overall patient outcomes beyond physiological recovery alone.

Another important clinical implication of this case is the significance of rapid reperfusion therapy combined with intensive cardiovascular monitoring in reducing myocardial damage and improving survival in STEMI complicated by cardiogenic shock. Current guidelines strongly recommend immediate reperfusion therapy through primary percutaneous coronary intervention (PCI) in patients with STEMI and cardiogenic shock because delayed reperfusion is associated with worsening myocardial necrosis and increased mortality (Bress et al., 2024). In this case, gradual hemodynamic stabilization prior to and following PCI contributed to improved oxygenation, stabilization of cardiac rhythm, reduction of pulmonary congestion, and improved tissue perfusion.

This case also demonstrates the importance of multidisciplinary collaboration involving cardiologists, critical care nurses, emergency teams, and family support systems during acute cardiovascular emergencies. Integrated collaboration facilitated timely decision-making, continuous monitoring, medication titration, complication prevention, and adaptive support during the critical phase of illness. The successful stabilization observed in this patient emphasizes that comprehensive cardiovascular nursing care is not limited to technical monitoring but also includes adaptive, psychosocial, and patient-centered management approaches.

Several limitations should be acknowledged in interpreting this case. First, this report represents a single case and therefore cannot be generalized to all patients with STEMI complicated by cardiogenic shock. Second, long-term follow-up data regarding cardiac functional recovery and long-term adaptation outcomes were limited. Third, invasive hemodynamic monitoring parameters were not comprehensively evaluated due to clinical and resource considerations. Nevertheless, the detailed description of hemodynamic deterioration, adaptation-focused nursing management, and integrated cardiovascular interventions provides important educational value and practical insight for critical cardiovascular nursing practice.

Overall, this case highlights the critical importance of early recognition of cardiogenic shock, rapid reperfusion therapy, intensive hemodynamic monitoring, and holistic adaptation-based nursing management in improving patient outcomes during acute STEMI emergencies. The integration of Roy Adaptation Model into advanced cardiovascular nursing management provided a comprehensive framework for addressing both physiological instability and psychosocial adaptation during critical illness, thereby contributing to improved patient stabilization and recovery.

This case emphasizes that advanced cardiovascular nursing extends beyond physiological monitoring and includes adaptive psychosocial support, early recognition of hemodynamic deterioration, therapeutic communication, and individualized patient-centered intervention. Integration of Roy Adaptation Model into cardiovascular critical care nursing may strengthen holistic patient management and improve adaptive responses during acute cardiac emergencies.

DIAGNOSTIC CHALLENGE

Several diagnostic and clinical management challenges were encountered during the early assessment and stabilization of this patient with acute ST-Elevation Myocardial Infarction (STEMI) complicated by cardiogenic shock. One of the primary challenges involved differentiating the cause of severe hemodynamic instability and respiratory distress during the initial emergency presentation. The patient arrived with hypotension, tachycardia, hypoxemia, diaphoresis, pulmonary congestion, and signs of systemic hypoperfusion, all of which could also be observed in other life-threatening cardiovascular and respiratory emergencies such as acute decompensated heart failure, pulmonary embolism, severe arrhythmia, or acute aortic syndrome (Trials et al., 2024).

Another important diagnostic challenge was the rapid progression of cardiogenic shock shortly after symptom onset. The patient exhibited severe circulatory compromise characterized by persistent hypotension, elevated serum lactate levels, oliguria, cold extremities, and impaired peripheral perfusion. In critically ill cardiovascular patients, early shock manifestations may overlap with compensatory sympathetic responses, making early recognition of true hemodynamic deterioration clinically challenging (Darzi, 2025). Therefore, continuous reassessment of perfusion status, serial hemodynamic monitoring, and repeated clinical evaluations were required to identify worsening circulatory failure and guide therapeutic escalation.

The presence of pulmonary congestion and respiratory distress also complicated the clinical decision-making process because oxygenation support and fluid management had to be balanced carefully. Excessive fluid administration could potentially worsen pulmonary edema, whereas inadequate circulatory support might aggravate systemic hypoperfusion and organ dysfunction. This condition required continuous adjustment of vasopressor therapy, inotropic support, oxygen therapy, and diuretic administration based on dynamic hemodynamic responses and ongoing cardiovascular monitoring (Abu-qbeitah & Ahmad, 2026).

Another challenge involved determining the optimal timing for reperfusion therapy through primary percutaneous coronary intervention (PCI). Although early reperfusion is strongly recommended in STEMI management, the patient's unstable hemodynamic condition increased the risk of procedural complications and peri-interventional deterioration. Intensive stabilization using vasopressor and inotropic therapy was therefore necessary prior to definitive reperfusion management. Continuous multidisciplinary coordination between emergency physicians, cardiologists, intensive care nurses, and cardiovascular care teams played a critical role in optimizing patient safety and clinical decision-making during the acute phase of illness.

One of the major diagnostic challenges was distinguishing acute STEMI complicated by cardiogenic shock from other life-threatening causes of chest pain and hemodynamic instability, including pulmonary embolism, acute aortic dissection, NSTEMI, and acute decompensated heart failure. At the time of presentation, overlapping clinical manifestations such as hypotension, dyspnea, hypoxemia, and pulmonary congestion created initial diagnostic uncertainty. Therefore, rapid integration of serial electrocardiographic findings, cardiac biomarker results, chest radiography, bedside echocardiography, and repeated hemodynamic assessments was essential to establish the final diagnosis and exclude alternative conditions (Aji, Rizkasari, & Baidhowy, 2026).

Clinical decision-making prioritized immediate hemodynamic stabilization while simultaneously preparing for definitive reperfusion therapy. Persistent ST-segment elevation in the anterior leads, elevated cardiac troponin levels, evidence of severe left ventricular systolic dysfunction, and progressive systemic hypoperfusion strongly supported the diagnosis of acute anterior STEMI complicated by cardiogenic shock. These findings justified urgent primary percutaneous coronary intervention (PCI) together with vasopressor and inotropic support. Although complete pre-hospital information and invasive hemodynamic monitoring data were limited during the emergency phase, serial clinical reassessment and multidisciplinary collaboration enabled timely therapeutic decisions and successful patient stabilization.

LIMITATION

Several limitations should be considered when interpreting this case report. First, this report describes a single patient with ST-Elevation Myocardial Infarction (STEMI) complicated by cardiogenic shock; therefore, the clinical findings and outcomes cannot be generalized to all critically ill cardiovascular patients. Individual patient characteristics, severity of myocardial injury, comorbid conditions, and variations in hemodynamic responses may influence clinical progression and treatment outcomes differently across cases.

Second, although comprehensive cardiovascular assessment was performed during hospitalization, several invasive hemodynamic monitoring parameters such as pulmonary artery catheterization data and advanced cardiac output measurements were not comprehensively available during the initial stabilization phase. The absence of detailed invasive hemodynamic evaluation may limit deeper interpretation regarding the severity of circulatory compromise and response to vasopressor or inotropic therapy.

Third, the exact duration of coronary artery occlusion prior to hospital admission could not be fully determined because the patient arrived several hours after symptom onset and pre-hospital clinical documentation was limited. Delayed presentation may have influenced the extent of myocardial injury, severity of cardiogenic shock, and subsequent clinical outcomes. Additionally, serial long-term echocardiographic evaluation and advanced imaging follow-up were limited during the post-discharge period, restricting comprehensive assessment of long-term ventricular recovery and cardiac remodeling (Trisna Aji et al., 2025).

Another limitation involves the short-term nature of the follow-up evaluation. Although the patient demonstrated significant clinical improvement during hospitalization and early outpatient follow-up, long-term adaptation outcomes, recurrence risk, medication adherence sustainability, and long-term quality of life could not be comprehensively assessed within this report. Future studies with prolonged follow-up and larger patient populations are needed to evaluate the long-term impact of Roy Adaptation Model-based cardiovascular nursing management in critically ill STEMI patients (Prima Trisna Aji, Marta Tania GCC, 2026).

Finally, although the Roy Adaptation Model provided a comprehensive theoretical framework for guiding nursing assessment and intervention, patient adaptation was evaluated primarily through clinical observation, routine nursing assessment, and multidisciplinary clinical judgment rather than using standardized adaptation measurement instruments specifically developed within the Roy Adaptation Model framework. Consequently, the validity and reliability of adaptation assessment may have been influenced by subjective clinical interpretation and inter-observer variability. Future case reports and clinical studies are encouraged to incorporate validated adaptation assessment instruments to provide more objective, reproducible, and theory-consistent evaluation of patient adaptation outcomes. Nevertheless, the present case demonstrates the practical feasibility of integrating the Roy Adaptation Model into cardiovascular nursing management and offers valuable clinical insights for adaptation-focused care in critically ill patients with STEMI complicated by cardiogenic shock.

LEARNING POINTS

1. Early recognition of cardiogenic shock in patients with ST-Elevation Myocardial Infarction (STEMI) is essential to prevent rapid hemodynamic deterioration, multi-organ hypoperfusion, and increased mortality risk.
2. Continuous hemodynamic monitoring, oxygenation assessment, and peripheral perfusion evaluation are critical nursing responsibilities for detecting clinical deterioration and guiding timely therapeutic interventions in critically ill STEMI patients.
3. Prompt reperfusion therapy combined with evidence-based pharmacological stabilization significantly improves myocardial perfusion and short-term clinical outcomes in patients with STEMI complicated by cardiogenic shock.

4. The Roy Adaptation Model provides a practical framework for critical cardiovascular nurses to systematically assess adaptive responses, prioritize individualized nursing interventions, integrate family-centered care, and evaluate both physiological and psychosocial recovery throughout hospitalization.
5. Successful management of STEMI complicated by cardiogenic shock requires close multidisciplinary collaboration, with cardiovascular nurses playing a central role in early assessment, continuous monitoring, therapeutic coordination, patient education, and long-term adaptation support.

CONCLUSION

This case report highlights the importance of rapid recognition and comprehensive multidisciplinary management of ST-Elevation Myocardial Infarction (STEMI) complicated by cardiogenic shock as a life-threatening cardiovascular emergency. Early hemodynamic stabilization, prompt reperfusion therapy, continuous cardiovascular monitoring, and evidence-based pharmacological management contributed to improved oxygenation, tissue perfusion, and short-term clinical recovery. Beyond conventional nursing care, which primarily focuses on physiological monitoring and treatment support, the Roy Adaptation Model provided additional value by enabling nurses to systematically assess adaptive responses, integrate psychosocial and family-centered interventions, prioritize individualized nursing care, and continuously evaluate both physiological and psychological recovery throughout hospitalization. This holistic, theory-guided approach strengthened comprehensive cardiovascular nursing management and supported the patient's overall adaptation during critical illness. Further studies involving larger patient populations and longer follow-up periods are warranted to evaluate the effectiveness of Roy Adaptation Model-based nursing interventions across diverse cardiovascular critical care settings.

ETHICAL CLEARANCE

Ethical clearance was not required for this clinical case report according to institutional policy because the manuscript describes a single anonymized clinical case without experimental intervention or identifiable patient information. All clinical data were fully anonymized to protect patient confidentiality and privacy in accordance with the ethical principles of the Declaration of Helsinki and publication ethics standards for case reports. Written informed consent for publication was obtained from the patient prior to manuscript preparation and submission.

PATIENT CONSENT

Written informed consent for publication of this clinical case report, including related clinical data and non-identifiable clinical images, was obtained from the patient prior to manuscript preparation and submission. All patient information was anonymized to ensure confidentiality and privacy protection throughout the reporting and publication process. No personal identifiers, medical record numbers, facial photographs, or identifiable information were included in this manuscript.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest related to the writing, analysis, and publication of this clinical case report.

FUNDING SOURCE

This article received no specific funding from any public, commercial, or non-profit funding agency.

AUTHORS' CONTRIBUTION]

Prima Trisna Aji contributed to case conceptualization, clinical data collection, cardiovascular nursing assessment, clinical interpretation, manuscript drafting, and preparation of the final manuscript. Muhammad Nur Hasbi contributed to clinical supervision, critical review of cardiovascular nursing management, manuscript revision, and scientific interpretation. Elinda Rizkasari contributed to manuscript editing, academic

review, language refinement, and approval of the final version of the manuscript. All authors read and approved the final manuscript prior to submission.

DATA AVAILABILITY

The data supporting the findings of this clinical case report are available from the corresponding author upon reasonable request. However, certain clinical data cannot be publicly shared due to patient confidentiality, privacy protection, and ethical considerations.

ACKNOWLEDGEMENTS

The authors would like to express sincere gratitude to the cardiovascular care team, emergency department staff, and intensive care nurses involved in the management of this patient. The authors also thank the patient and family for their cooperation and willingness to contribute to clinical education and scientific learning through this case report.

LIST OF ABBREVIATIONS

ACS = Acute Coronary Syndrome
AHA = American Heart Association
BP = Blood Pressure
CT = Computed Tomography
ECG = Electrocardiography
HR = Heart Rate
MRI = Magnetic Resonance Imaging
NSTEMI = Non-ST Elevation Myocardial Infarction
PCI = Percutaneous Coronary Intervention
RR = Respiratory Rate
SOFA = Sequential Organ Failure Assessment
SpO_2 = Peripheral Oxygen Saturation
STEMI = ST-Elevation Myocardial Infarction

FIGURE AND TABLE LEGENDS

Table 1. Summary of relevant diagnostic findings in a patient with STEMI complicated by cardiogenic shock.

Table 2. Clinical case timeline describing the chronological progression of clinical deterioration, diagnostic evaluation, therapeutic interventions, and patient outcomes during hospitalization and follow-up.

Table 3. Hemodynamic monitoring and clinical response during intensive cardiovascular management.

Variable	Result	Notes
Blood pressure	Improved from 82/58 mmHg to 104/68 mmHg	Hemodynamic stabilization after vasopressor and inotropic therapy
Oxygen saturation	Improved from 88% to 97%	Improved oxygenation and pulmonary perfusion
Peripheral perfusion	Improved capillary refill and extremity temperature	Better systemic circulation after stabilization

REFERENCES

Abu-qbeitah, S., & Ahmad, M. (2026). Artificial intelligence and big data applications in chronic disease management : clinical outcomes , challenges , and future directions. Journal Medicine, 23(May 2025), 1–7. https://doi.org/https://doi.org/10.17392/2061-23-01

Aji, P. T., Baidhowy, A. S., & Rizkasari, E. (2026). Empowering Older Adults with Hypertension through Community-Based Education on Warm Water Foot Soak and Deep Breathing Relaxation. Abdimas Umtas: Jurnal Pengabdian Kepada Masyarakat, 9(1), 560–571. https://doi.org/https://doi.org/10.35568/abdimas.v9i1.7668

Aji, P. T., & Rizkasari, E. (2021). Efektifitas Terapi Afirmasi Positif dan Relaksasi. Sinektik, 4(2), 196–208. https://doi.org/http://dx.doi.org/10.33061/js.v4i2.6716 EFEKTIFITAS

Aji, P. T., Rizkasari, E., & Baidhowy, A. S. (2026). Digital Self-Management and Psychological Well-Being in Hypertensive Patients : The Mediating Role of Adherence Across the Life Course. Journal Life Course Psychology, 1(1), 7–15. https://journal.scidacplus.com/index.php/lcp/article/view/830

Aji, P. T., Rizkasari, E., & Rahmawati, E. (2026). The Effectiveness of Counseling-Based Self- Management Education on Stress Coping among Patients with Hypertension. Journal Counseling Positivism, 1(1), 1–8. https://doi.org/https://attractivejournal.com/index.php/cp The

Aji, P. T., & Sani, F. N. (2021). Pengaruh Terapi Air Rebusan Daun Salam Terhadap Perubahan Teknan Darah pada Penderita Hipertensi di Wilayaha Tempurejo Jumapolo Karanganyar. In Jurnal Kesehatan (Vol. 12, Issue 13, pp. 50–63).

Aji, P. T., Tania, M., Ching, G., Rizkasari, E., & Care, N. (2026). Digital Pocketbook Education with a Nurse-Led Approach to Improve Hypertension Self-Management in Primary Care. Abdimas Umtas: Jurnal Pengabdian Kepada Masyarakat, 9(1), 857–868. https://doi.org/https://doi.org/10.35568/abdimas.v9i2.7857

Alexander, E., Estrada, C., Rafael, E., Sequeda, M., Enrique, J., Barros, B., Ríos, A. C., Michell, I., Segura, R., Lucia, G., & Barreto, L. (2024). Acute coronary syndrome : Definition , pathophysiology , diagnosis , and management. World Journal of Advanced Research and Reviews, 21(01), 2537–2548. https://doi.org/https://doi.org/10.30574/wjarr.2024.21.1.0352 Abstract

Baidhowy, A. S. prima trisna aji. (2025). Penerapan Teori Konservasi Levine Pada Pasien Dengan Acute Coronary Syndrome ; Studi Kasus. Journal Ners Muda, 6(3), 282–294. https://doi.org/https://doi.org/10.26714/nm.v6i3.20378

Bress, A. P., Anderson, T. S., Flack, J. M., Ghazi, L., Hall, M. E., Laffer, C. L., Still, C. H., Taler, S. J., Zachrison, K. S., & Chang, T. I. (2024). The Management of Elevated Blood Pressure in the Acute Care Setting: A Scientific Statement From the American Heart Association. Hypertension, 81(8), e94–e106. https://doi.org/10.1161/HYP.0000000000000238

Byrne, R. A., Rossello, X., Coughlan, J. J., Barbato, E., Berry, C., Chieffo, A., Claeys, M. J., Dan, G.-A., Dweck, M. R., Galbraith, M., Gilard, M., Hinterbuchner, L., Jankowska, E. A., Jüni, P., Kimura, T., Kunadian, V., Leosdottir, M., Lorusso, R., Pedretti, R. F. E., … Group, E. S. C. S. D. (2023). 2023 ESC Guidelines for the management of acute coronary syndromes: Developed by the task force on the management of acute coronary syndromes of the European Society of Cardiology (ESC). European Heart Journal, 44(38), 3720–3826. https://doi.org/10.1093/eurheartj/ehad191

Casulli, A. (2021). New global targets for ntds in the who roadmap 2021–2030. PLoS Neglected Tropical Diseases, 15(5), 1–10. https://doi.org/10.1371/journal.pntd.0009373

Cenko, E., Yoon, J., Kedev, S., Stankovic, G., Vasiljevic, Z., Krljanac, G., Kalpak, O., Ricci, B., Miličić, D., Manfrini, O., van der Schaar, M., Badimon, L., & Bugiardini, R. (2018). Sex Differences in Outcomes After STEMI: Effect Modification by Treatment Strategy and Age. JAMA Internal Medicine, 178(5), 632–639. https://doi.org/10.1001/jamainternmed.2018.0514

Chen, L. (2025). Effectiveness of the Roy adaptation model- based nursing intervention in improving physiological , psychological , and social outcomes in patients with Parkinson ' s disease. Chen BMC Neurology, 12(1), 1–9. https://doi.org/https://doi.org/10.1186/s12883-025-04232-2

Darzi, A. El. (2025). Artificial intelligence in chronic disease self-management : current applications and future directions. Journal in Public Health, 4(2), 1–11. https://doi.org/10.3389/fpubh.2025.1689911

Elbadawi, A., Elgendy, I. Y., Mahmoud, K., Barakat, A. F., Mentias, A., Mohamed, A. H., Ogunbayo, G. O., Megaly, M., Saad, M., Omer, M. A., Paniagua, D., Abbott, J. D., & Jneid, H. (2019). Temporal Trends and Outcomes of Mechanical Complications in Patients With Acute Myocardial Infarction. JACC: Cardiovascular Intervention, 12(18), 1–12. https://doi.org/10.1016/j.jcin.2019.04.039

Hamzaoui, O., & Boissier, F. (2023). Hemodynamic monitoring in cardiogenic shock. Journal of Intensive Medicine, 3(2), 104–113. https://doi.org/10.1016/j.jointm.2022.10.003

Hosseini, M., & Soltanian, M. (2022). Application of Roy ' s Adaptation Model in Clinical Nursing : A Systematic Review. Journal of Iranian Medical Council, 5(4), 1–17. https://doi.org/http://dx.doi.org/10.18502/jimc.v5i4.11327

Jacob C Jentzer, S. V. D. et al. (2019). Cardiogenic Shock Classi fi cation to Predict Mortality in the Cardiac Intensive Care Unit. Journal of the American College Of Cardiology, 74(17), 1–12. https://doi.org/10.1016/j.jacc.2019.07.077

Journal, M. N., Cetak, I., & Online, I. (2026). Penerapan Aromaterapi Chamomile Terhadap Kecemasan Pasien Pre-PCI di Rumah Sakit Abdul Moeloek Bandar Lampung. Malahayati Nursing Journal, 8(1), 368–376. https://doi.org/https://doi.org/10.33024/mnj.v8i5.25449 Diterbitkan:

Juzar, D. A., Muzakkir, A. F., Ilhami, Y. R., Taufiq, N., Pramudyo, M., Priyana, A., Anjarwani, S., Endang, J., & Widyantoro, B. (2022). Management of Acute Coronary Syndrome in Indonesia: Insight from One ACS Multicenter Registry. Indonesian Journal of Cardiology, 43(1), 45–55. https://doi.org/10.30701/ijc.

Lawton, J. S., Tamis-holland, J. E., Bangalore, S., Bates, E. R., Beckie, T. M., Bischoff, J. M., Bittl, J. A., Cohen, M. G., Dimaio, J. M., Don, C. W., Fremes, S. E., Gaudino, M. F., Goldberger, Z. D., Grant, M. C., Jaswal, J. B., Kurlansky, P. A., Mehran, R., Jr, T. S. M., Nnacheta, L. C., … Yong, C. M. (2022). 2021 ACC / AHA / SCAI Guideline for Coronary Artery Revascularization : A Report of the American College of Cardiology / American Heart Association Joint Committee on Clinical Practice Guidelines. American College of Cardiology Foundation and the American Heart Association, Inc., 12(1), 1–97. https://doi.org/10.1161/CIR.0000000000001038

Levine, G. N., Mcevoy, J. W., Fang, J. C., Ibeh, C., Mccarthy, C. P., Misra, A., Shah, Z. I., & Shenoy, C. (2022). Management of Patients at Risk for and With Left Ventricular Thrombus : A Scientific Statement From the American Heart Association. American Heart Asociation, 11(1), 1–19. https://doi.org/10.1161/CIR.0000000000001092

Mughal, L. H. (2022). Advances in the treatment of ST Elevation Myocardial Infarction in the UK. Journal SAGE, 11(1), 1–10. https://doi.org/10.1177/20480040221075519

Navarese, E. P., Lansky, A. J., Kereiakes, D. J., Kubica, J., Gurbel, P. A., Gorog, D. A., Valgimigli, M., Curzen, N., Kandzari, D. E., Bonaca, M. P., Brouwer, M., Umińska, J., Jaguszewski, M. J., Raggi, P., Waksman, R., Leon, M. B., Wijns, W., & Andreotti, F. (2021). Cardiac mortality in patients randomised to elective coronary revascularisation plus medical therapy or medical therapy alone: a systematic review and meta-analysis. European Heart Journal, 42(45), 4638–4651. https://doi.org/10.1093/eurheartj/ehab246

Prima Trisna Aji, Marta Tania GCC, E. R. (2026). SMART-HTN Pocketbook Education and Improved Medication Adherence and Blood Pressure Control in Primary Care. Jurnal Keperawatan Komprehensif, 12(2), 1–12. https://doi.org/https://doi.org/10.33755/jkk.v12i2.1012.

Prima Trisna Aji; Yunie Armiyati; Elinda Rizkasari. (2026). Meta-Heart Care: Pendekatan Keperawatan Berbasis Kecerdasan Buatan Untuk Edukasi dan Rehabilitasi Pasien Gagal Jantung Kronik. Book of Abstract of Trend and Issue in Healthcare, 3(1), 115–116. https://doi.org/https://doi.org/10.5281/3t5t4x85

Puluhulawa, H. R. N. (2021). Pengaruh Terapi Murottal AL Quran Pada Penurunan Tingkat Kecemasan Dalam Asuhan Keperawatan PAsien Pre-operasi di Ruang Pre-Op RSUD Prof. Dr. Aloei Saboe Kota Gorontalo. Journal of TSCNers, 32(3), 167–186.

Rizkasari, E., Aji, P. T., & Baidhowy, A. S. (2025). Digital Health Literacy and Cognitive Learning Outcomes Among Pre-Service Primary School Teachers in Indonesia Elinda. Jurnal Pendidikan Dan Pembelajaran Kimia JPPK FKIP Unila, 14(3), 123–131. https://doi.org/10.23960/jppkv2.14311

Rizkasari, P. T. A. A. S. B. Z. E. (2025). CASE REPORT: PENERAPAN SELF-MANAGEMENT KEPERAWATAN UNTUK MENCEGAH KEKAMBUHAN PADA PASIEN HIPERTENSI KRONIS. Journal of Nursing Science Research, 2(1), 67–75. https://doi.org/https://doi.org/10.33862/crfdhr36

Stiexs, A., Silalahi, W. J., Aji, P. T., Universitas, K., & Semarang, M. (2026). Intervensi Keperawatan Berbasis Oksigenasi , Posisi Semi-Fowler , dan Monitoring Hemodinamik pada Pasien Congestive Heart Failure : Laporan Kasus. Borobudur Nursing Research Journal, 1(1), 8–13. https://journal.aipviki5-jateng.or.id/index.php/bnrj/article/view/7

Thiele, H., Ohman, E. M., de Waha-Thiele, S., Zeymer, U., & Desch, S. (2019). Management of cardiogenic shock complicating myocardial infarction: an update 2019. European Heart Journal, 40(32), 2671–2683. https://doi.org/10.1093/eurheartj/ehz363

Trials, R., Azizi, Z., Broadwin, C., Islam, S., Schenk, J., Rodriguez, F., & Sandhu, A. T. (2024). Digital Health Interventions for Heart Failure Management in Underserved Rural Areas of the United States : A Systematic Review of. Journal of Thes American Heart Association, 2(1), 1–14. https://doi.org/10.1161/JAHA.123.030956

Trisna Aji, P., Sofyan Bhadowy, A., & Amanda, C. (2025). Non-Pharmacological Intervention To Reduce Blood Pressure in Elderly Hypertension: a Systematic Review. Prosiding Seminar Nasional Ipegeri Jateng (SNIJ), 3(1), 20–33. https://doi.org/https://pub.ipegerijateng.or.id/index.php/prosiding

Ummah, M. S. (2019). Urban growth and access to opportunities: A challenge for Latin America. Sustainability (Switzerland), 11(1), 1–14. http://scioteca.caf.com/bitstream/handle/123456789/1091/RED2017-Eng-8ene.pdf?sequence=12&isAllowed=y%0Ahttp://dx.doi.org/10.1016/j.regsciurbeco.2008.06.005%0Ahttps://www.researchgate.net/publication/305320484_SISTEM_PEMBETUNGAN_TERPUSAT_STRATEGI_MELESTARI

Wang, X., Chen, D., Zou, P., Zhang, H., Qiu, X., & Xu, L. (2024). Annals of Medicine Understanding adaptive tasks in cardiac rehabilitation among patients with acute myocardial infarction : a qualitative study. Journal Annals of Medicine, 3890(1), 1–13. https://doi.org/10.1080/07853890.2024.2311227

Wang, X., Xu, L., Lee, G., Chen, D., Zhang, H., & Chen, H. (2023). Development of an integrated cardiac rehabilitation program to improve the adaptation level of patients after acute myocardial infarction. Journal Frontier in Publis Health, 12(1), 1–13. https://doi.org/10.3389/fpubh.2023.1121563

WHO. (2022). Health literacy development for the prevention and control of noncommunicable diseases (WHO (ed.); 3rd ed., Vol. 1). World health organization. https://apps.who.int/iris/bitstream/handle/10665/364206/9789240055391-eng.pdf?sequence=1

Yeşilyurt, K. Ö. (2023). The Effect of Roy Adaptation Model on the Adaptation Status of Patients after Surgical Intervention. Journal of Educational and Research in Nursing, 20(3), 277–283. https://doi.org/10.14744/jern.2021.21246

Optimal Journal Clinical Case Report, Volume 01, No.01,July 2026, (Page. 110-122)
ISSN 3164-872X

SERIAL GLASGOW COMA SCALE ASSESSMENT DURING THE EMERGENCY MANAGEMENT OF MODERATE TRAUMATIC BRAIN INJURY IN PATIENTS WITH DIFFERENT COMORBIDITY PROFILES: A CASE SERIES

Restria Dewi Fibrianti[a]*, Endah Tri Wulandari[b], Aisyah Nur Azizah[c]

[abc] Department of Anesthesiology Nursing, Faculty of Health Sciences, Universitas 'Aisyiyah Yogyakarta, Sleman 55292, Indonesia

**Corresponding author: restriadewifibriant@gmail.com*

Abstract

Background: Moderate traumatic brain injury (mTBI) is a major cause of morbidity and mortality that requires prompt emergency management to prevent secondary brain injury. Although serial Glasgow Coma Scale (GCS) assessment is routinely used for neurological monitoring, evidence describing its role in evaluating early management outcomes among patients with different comorbidity profiles remains limited. This case series aimed to describe the usefulness of serial GCS assessment as an indicator of immediate emergency management outcomes in patients with moderate traumatic brain injury and different comorbidity profiles. **Investigation and Diagnosis:** Three patients underwent primary assessment using the ABCDE approach, serial GCS evaluation, vital sign monitoring, laboratory investigations, and non-contrast head computed tomography (CT) scan. Based on clinical findings and initial GCS scores of 9–11, all patients were diagnosed with moderate traumatic brain injury.**Management:** Patients received emergency management according to trauma protocols, including airway stabilization, oxygen therapy, intravenous isotonic fluid administration, head elevation, blood pressure control, and osmotic therapy when indicated. Serial GCS assessments were performed to monitor neurological changes during treatment. **Outcome:**Two patients demonstrated neurological improvement, with GCS increasing from 11 to 13 and 10 to 11, respectively, whereas one patient remained at GCS 9 and required endotracheal intubation. Patients with multiple comorbidities experienced more complex management and less favorable short-term neurological outcomes than those without significant comorbidities. **Conclusion:** Serial Glasgow Coma Scale assessment is a practical and reliable bedside tool for monitoring real-time neurological changes and evaluating immediate emergency management outcomes in patients with moderate traumatic brain injury. This case series also suggests that comorbidity profiles may influence short-term neurological recovery and should be considered when interpreting serial GCS changes.

Keywords: Case series; Comorbidity; Emergency department; Glasgow Coma Scale; Moderate traumatic brain injury.

INTRODUCTION

Moderate traumatic brain injury (mTBI) is a common emergency condition associated with significant morbidity and mortality. Delayed or inadequate management may result in secondary brain injury, including cerebral edema, intracranial hemorrhage, increased intracranial pressure, and cerebral ischemia (Pratiwi & Sutawan, 2021). Therefore, early assessment and prompt management are essential. The Glasgow Coma Scale (GCS) is widely used to assess the level of consciousness, determine injury severity, and monitor neurological changes in patients with traumatic brain injury (Teasdale et al., 2014). Head injury remains a major public health problem worldwide, with traffic accidents accounting for 37.1% of cases, followed by falls from height

(23.9%) (Ghazwan Lafta & Hayder Sbahi, 2023). In Indonesia, head injuries account for 11.9% of all injury cases (Nurfikasari et al., 2025). At Panembahan Senopati Regional Hospital Bantul, 273 patients with head injury were treated in the Emergency Department between May and October 2025. Although serial GCS assessment is a standard component of emergency neurological monitoring, limited case series have described how changes in serial GCS reflect early management outcomes among patients with different comorbidity profiles during the emergency phase. Because comorbid conditions may influence physiological responses, neurological recovery, and management complexity, interpreting serial GCS changes requires consideration of the patient's overall clinical condition rather than relying solely on GCS scores. Patients with moderate traumatic brain injury require prompt neurological assessment and continuous monitoring because early neurological deterioration may occur despite an initially stable clinical presentation (Robinson, 2021). This case series describes three patients with moderate traumatic brain injury and different comorbidity profiles to illustrate how serial GCS assessment can support evaluation of early neurological changes and immediate emergency management outcomes. The findings may contribute to emergency nursing and anesthesiology practice by highlighting the importance of interpreting serial GCS assessments alongside patients' comorbidities during the initial management of traumatic brain injury.

CASE PRESENTATION

Table 1. Baseline Characteristics of the Three Patients

Characteristics	Case 1	Case 2	Case 3
Age/Sex	23/M	35/F	58/M
Mechanism of injury	Motorcycle accident	Bathroom fall	Fall from tree
Comorbidities	None	Hypertension	HT, T2DM, chronic pulmonary disease
Initial GCS	E3V3M5 (11)	E3V3M4 (10)	E2V2M5 (9)
Blood pressure	150/95	180/85	175/100
MAP	113	117	125
SpO_2	96%	90%	94%
Laboratory findings	Leukocytosis, low RBC, low hematocrit	Leukocytosis, low RBC, low hematocrit	Leukocytosis, low RBC, low hematocrit
CT findings	Diffuse cerebral edema	Temporal fracture, cerebral edema	Basilar skull fracture, cerebral edema

Case 1

A 23-year-old male was admitted to the Emergency Department following a motorcycle accident without wearing a helmet, presenting with decreased consciousness, severe headache, nausea, and one episode of vomiting. He had no history of systemic disease, allergies, previous surgery, or regular medication use. On admission, the patient was somnolent with a Glasgow Coma Scale (GCS) score of E3V3M5 (11), consistent with moderate traumatic brain injury. Vital signs showed blood pressure 150/95 mmHg, heart rate 96 beats/minute, respiratory rate 22 breaths/minute, temperature 36.8°C, oxygen saturation 96%, and MAP 113 mmHg.

Physical examination revealed headache and vomiting without active external bleeding. Pupils were isocoric and reactive, capillary refill time was ≤2 seconds, and no deformity or fracture was identified. Non-contrast head CT demonstrated diffuse cerebral edema without intracranial hemorrhage.

Case 2

A 35-year-old female was admitted to the Emergency Department after a fall in the bathroom following worsening dizziness. She had a two-year history of uncontrolled hypertension due to poor treatment compliance. On admission, she was somnolent with a GCS score of E3V3M4 (10). Vital signs showed blood pressure 180/85 mmHg, heart rate 96 beats/minute, respiratory rate 22 breaths/minute, temperature 36.8°C, oxygen saturation 90%, and MAP 117 mmHg. Physical examination revealed gurgling breath sounds, indicating a threatened airway, a bleeding frontal laceration, reactive isocoric pupils, capillary refill time ≤2 seconds, and no deformity or fracture. Immediate airway management was performed, including airway positioning, suctioning, oxygen administration using a non-rebreathing mask, and stabilization according to the ABCDE approach before further evaluation. Non-contrast head CT demonstrated a linear temporal calvarial fracture with cerebral edema without intracranial hemorrhage.

Case 3

A 58-year-old male was admitted to the Emergency Department 30 minutes after falling from a tree (approximately 3 m). He presented with decreased consciousness, incomprehensible verbal sounds, headache, and epistaxis. He had controlled hypertension, type 2 diabetes mellitus, and chronic pulmonary disease following COVID-19. On admission, he was somnolent with a GCS score of E2V2M5 (9). Vital signs were blood pressure 175/100 mmHg, heart rate 130 beats/minute, respiratory rate 26 breaths/minute, temperature 36°C, oxygen saturation 94%, and MAP 125 mmHg. Physical examination revealed epistaxis, reactive isocoric pupils, capillary refill time ≤2 seconds, and no deformity or fracture. Non-contrast head CT suggested a basilar skull fracture with cerebral edema. Because of multiple comorbidities and progressive respiratory deterioration, advanced airway management was subsequently required.

CLINICAL REASONING

Table 2. Differential diagnosis considered during clinical reasoning

Differential Diagnosis	Supporting Findings	Reasons for Exclusion
Mild traumatic brain injury	History of head trauma	Initial GCS scores (9–11) were below the mild TBI range (13–15).
Severe traumatic brain injury	Decreased consciousness after trauma	Initial GCS scores remained above 8, therefore all patients were classified as moderate TBI.
Intracranial hemorrhage	Head trauma with altered	Non-contrast head CT showed no

	consciousness	significant intracranial hemorrhage or midline shift in all three patients.
Stroke	Altered level of consciousness	Clinical presentation followed traumatic injury, and CT findings were consistent with traumatic brain injury rather than cerebrovascular disease.

The final diagnosis in all three cases was moderate head injury. Clinical decision-making was based on the mechanism of injury, neurological examination, Glasgow Coma Scale (GCS) score, vital signs, and head CT findings. In all three patients, GCS scores ranged from 9–12, fulfilling the diagnostic criteria for moderate head injury. Neuroimaging demonstrated cerebral edema in all cases, with additional temporal bone fracture in Case 2 and suspected basilar skull fracture in Case 3, while significant intracranial hemorrhage and midline shift were excluded. These findings, together with the absence of clinical deterioration consistent with severe traumatic brain injury, supported the diagnosis of moderate head injury (Teasdale et al., 2014). Serial GCS assessment was selected as the primary indicator of management success because it provides a rapid, practical, and standardized method for detecting dynamic neurological changes during emergency treatment. Changes in GCS scores were interpreted together with clinical findings, hemodynamic status, and radiological results to evaluate the effectiveness of emergency management. In Cases 2 and 3, pre-existing comorbidities, including hypertension, type 2 diabetes mellitus, and chronic pulmonary disease, increased the complexity of clinical management and required closer neurological and hemodynamic monitoring throughout emergency care (Taneo et al., 2023).

DIAGNOSTIC ASSESSMENT

Table 3. Summary of relevant diagnostic findings

Examination	Result	Clinical Interpretation
Laboratory test	**Case 1:** Leukocyte 12.5 × 10^3/µL; erythrocyte 4.20 × 10^6/µL; hematocrit 38%. **Case 2:** Leukocyte 18.9 × 10^3/µL; erythrocyte 4.30 × 10^6/µL; hematocrit 38.7%. **Case 3:** Leukocyte 17.5 × 10^3/µL; erythrocyte 4.20 × 10^6/µL; hematocrit 37%.	Laboratory findings demonstrated leukocytosis with mild reductions in erythrocyte count and hematocrit, consistent with an acute inflammatory response following traumatic brain injury.
Imaging examination	**Case 1:** Head CT demonstrated diffuse cerebral edema with sulcal effacement, loss of gray-white matter differentiation, and ventricular compression. No intracranial hemorrhage or midline shift was identified. **Case 2:** Non-contrast head MSCT demonstrated a left temporal bone fracture with sinus hemorrhage and cerebral edema. No intracranial hemorrhage or midline shift was detected.	Neuroimaging confirmed diffuse cerebral edema (Case 1), left temporal bone fracture with sinus hemorrhage and cerebral edema (Case 2), and basilar skull fracture with cerebral edema (Case 3), without significant intracranial hemorrhage or midline shift.

Examination	Result	Clinical Interpretation
	Case 3: Head CT demonstrated a basilar skull fracture with cerebral edema. No significant intracranial hemorrhage or midline shift was identified.	
Clinical scoring / other assessment	**Case 1:** Initial GCS 11 (E3V3M5); GCS after management 12 (E3V4M5). **Case 2:** Initial GCS 10 (E3V3M4); GCS after management 11 (E3V3M5). **Case 3:** Initial GCS 9 (E2V2M5); GCS after management 9 (E2V2M5).	Serial Glasgow Coma Scale (GCS) assessment demonstrated neurological improvement in Cases 1 and 2, whereas Case 3 remained neurologically unchanged during Emergency Department management, supporting serial GCS as a practical indicator of short-term management outcomes.

THERAPEUTIC INTERVENTIONS AND CLINICAL PROGRESSION

Case 1

Upon arrival at the Emergency Department following a motorcycle accident, the patient underwent primary assessment using the ABCDE approach (ATLS Committee, 2023). Due to decreased consciousness (GCS 11) and vomiting, suctioning of approximately 10 mL of white secretions was performed to maintain airway patency and prevent aspiration. Oxygen therapy was administered via nasal cannula at 3 L/min. Intravenous treatment included 0.9% sodium chloride, ondansetron 4 mg IV, paracetamol 1 g IV, mannitol 20% 50 mL IV, and midazolam 1 mg IV before CT scan to facilitate neuroimaging by minimizing patient movement. Head elevation at 30° was maintained to optimize cerebral perfusion and reduce intracranial pressure (Pratiwi & Sutawan, 2021). Continuous monitoring of GCS, vital signs, oxygen saturation, and neurological status was performed. Following treatment, the patient's GCS improved from 11 (E3V3M5) to 13 (E4V4M5), indicating neurological improvement. The patient was subsequently referred to a higher-level healthcare facility for further management. These interventions were aimed at optimizing oxygenation, maintaining cerebral perfusion, reducing intracranial pressure, and preventing secondary brain injury (Nurfikasari et al., 2025).

Case 2

Upon admission to the Emergency Department, the patient underwent primary assessment using the ABCDE approach (ATLS Committee, 2023). Because of gurgling breath sounds and the risk of airway obstruction, suctioning was performed to maintain airway patency. Oxygen therapy was administered using a non-rebreathing mask at 10 L/min. Because oxygenation remained inadequate, bag-valve-mask ventilation was subsequently provided. Pharmacological management included mannitol 20% (0.5 g/kgBW IV), ondansetron 4 mg IV, paracetamol 1 g IV, and nicardipine infusion starting at 5 mg/hour with dose titration according to blood pressure response. The frontal laceration was irrigated with 0.9% sodium chloride and sutured under local anesthesia with lidocaine 1% (3 mL). Head elevation at 30° was maintained to promote cerebral venous drainage and reduce intracranial pressure (Pratiwi & Sutawan, 2021). Continuous monitoring of GCS, vital signs, oxygen saturation, and neurological status was performed. Following stabilization, the patient's GCS

improved from 10 (E3V3M4) to 11 (E3V3M5), indicating neurological improvement. The management aimed to optimize oxygenation, control intracranial pressure, stabilize hemodynamics, and prevent secondary brain injury while maintaining patient safety (Pratiwi & Sutawan, 2021).

Case 3

Following a fall from a height of approximately three meters, the patient underwent primary assessment using the ABCDE approach (ATLS Committee, 2023). Airway patency was maintained through suctioning, and oxygen therapy was initiated via nasal cannula at 5 L/min. However, progressive oxygen desaturation developed despite supplemental oxygen, requiring endotracheal intubation to secure the airway and provide ventilatory support. Rapid sequence intubation was performed using midazolam, fentanyl, propofol, and atracurium. Circulatory stabilization included insertion of two 18G intravenous lines, administration of 0.9% sodium chloride 500 mL IV, nicardipine infusion, mannitol 20% 100 mL IV, and paracetamol 1 g IV. Head elevation at 30° was maintained to promote cerebral venous drainage (Pratiwi & Sutawan, 2021). Continuous monitoring included serial GCS assessment, pupillary response, vital signs, oxygen saturation, blood glucose, urine output, and ECG monitoring. After stabilization, the patient was referred to a higher-level hospital with neurosurgical services. These interventions were intended to maintain airway protection, optimize oxygenation and cerebral perfusion, control intracranial pressure, and prevent secondary brain injury (Nurfikasari et al., 2025). Early management of cerebral edema is a key component of neurocritical care because it helps minimize secondary neurological injury in patients with traumatic brain injury (Cook et al., 2020).

CASE TIMELINE

Table 4. Clinical case timeline case 1

Time	Clinical Event	Investigation	Treatment	Outcome
19 February 2026 16.00 WIB	Patient arrived at the ED after a motorcycle accident without wearing a helmet, presenting with decreased consciousness, headache, nausea, and vomiting.	Primary survey (ABCDE), GCS E3V3M5 = 11, blood pressure, heart rate, respiratory rate, and oxygen saturation assessment.	Airway management and suction performed.	Airway remained patent.
16.10 WIB	Risk of hypoxia identified.	Oxygen saturation monitoring.	Oxygen therapy via nasal cannula at 3 L/min.	Oxygenation improved; SpO_2 remained stable.
16.20 WIB	Signs suggestive of increased intracranial pressure.	Serial neurological examination and GCS monitoring.	Head elevation 30°, mannitol 20% IV, and 0.9% NaCl IV administered.	Cerebral perfusion maintained and neurological status remained stable.
16.30 WIB	Persistent headache, nausea, and vomiting.	Clinical reassessment including vital signs.	Paracetamol 1 g IV and ondansetron 4 mg IV.	Symptoms improved.

16.40 WIB	Agitation noted before CT examination.	Neurological observation.	Midazolam 1 mg IV.	Patient became calmer and CT examination could be performed.
16.50 WIB	Neurological re-evaluation.	Repeat GCS, blood pressure, heart rate, respiratory rate, and oxygen saturation assessment.	Continued observation.	GCS improved from 11 (E3V3M5) to 13 (E4V4M5); patient was referred to a higher-level healthcare facility.

Table 5. Clinical case timeline case 2

Time	Clinical Event	Investigation	Treatment	Outcome
15 March 2026 08.30 WIB	Patient arrived at the ED after a fall in the bathroom with decreased consciousness and dizziness.	Primary survey (ABCDE), GCS E3V3M4 = 10, blood pressure, heart rate, respiratory rate, and oxygen saturation assessment.	Initial stabilization performed.	Moderate head injury identified.
08.35 WIB	Airway compromise risk due to gurgling breath sounds.	Airway assessment and oxygen saturation monitoring.	Suction performed.	Airway remained patent.
08.40 WIB	Persistent inadequate oxygenation.	Respiratory assessment and oxygen saturation monitoring.	Oxygen therapy using a non-rebreathing mask at 10 L/min.	Oxygenation improved.
08.50 WIB	Severe hypertension and signs of increased intracranial pressure.	Hemodynamic and neurological monitoring.	Mannitol 20% IV and nicardipine infusion initiated.	Hemodynamic status improved.
09.15 WIB	Frontal laceration with persistent bleeding.	Wound assessment.	Wound irrigation using 0.9% NaCl, lidocaine infiltration, and suturing.	Bleeding controlled.

09.30 WIB	Neurological re-evaluation.	Repeat GCS, blood pressure, heart rate, respiratory rate, and oxygen saturation assessment.	Continued monitoring.	GCS improved from 10 (E3V3M4) to 11 (E3V3M5).

Table 6. Clinical case timeline case 3

Time	Clinical Event	Investigation	Treatment	Outcome
25 March 2026 14.30 WIB	Patient arrived at the ED after falling from a tree (±3 m) with decreased consciousness and epistaxis.	Primary survey (ABCDE), GCS E2V2M5 = 9, blood pressure, heart rate, respiratory rate, and oxygen saturation assessment.	Initial stabilization initiated.	Moderate head injury with suspected basilar skull fracture identified.
14.35 WIB	Blood and secretions causing gurgling breath sounds.	Airway assessment.	Suction performed.	Airway temporarily maintained.
14.40 WIB	Increased work of breathing.	Respiratory assessment and oxygen saturation monitoring.	Oxygen therapy via nasal cannula at 5 L/min.	Oxygenation temporarily maintained.
14.45 WIB	Hypertension and tachycardia observed.	Hemodynamic monitoring and ECG monitoring.	Two 18G IV lines inserted, 0.9% NaCl 500 mL IV administered, nicardipine infusion started.	Hemodynamic status improved.
14.50 WIB	Decreased consciousness with signs of increased intracranial pressure.	Serial GCS assessment and pupillary examination.	Head elevation 30°, mannitol 20% IV, and midazolam 1 mg IV administered.	Neurological status closely monitored.
15.15 WIB	Ongoing monitoring while awaiting CT examination.	Neurological examination, blood glucose, and vital signs monitoring.	Urinary catheter insertion and ECG monitoring continued.	Patient remained under close observation.

15.30 WIB	Hematemesis with worsening oxygen saturation.	Repeat airway and respiratory assessment.	Suctioning and lateral positioning performed.	Oxygen saturation remained inadequate.
15.45 WIB	Persistent respiratory deterioration despite oxygen therapy.	Airway reassessment.	Decision made to perform endotracheal intubation.	Advanced airway management indicated.
15.50 WIB	Preparation for rapid sequence intubation.	Pre-intubation assessment.	Midazolam, fentanyl, propofol, and atracurium administered according to institutional protocol.	Patient prepared for intubation.
16.00 WIB	Endotracheal intubation successfully performed.	Tube placement, chest expansion, breath sounds, oxygen saturation, and vital signs assessment.	Ventilation maintained using bag-valve ventilation.	Airway secured and oxygenation improved.
16.10 WIB	Post-intubation re-evaluation.	Repeat neurological assessment, oxygen saturation, blood pressure, heart rate, respiratory rate, and tube position assessment.	Continued monitoring and ventilatory support.	Oxygenation improved and ventilation became adequate without immediate complications.
16.20 WIB	Final assessment before referral.	Repeat airway, breathing, circulation, neurological assessment, and post-intubation GCS documentation according to medical records.	Ongoing stabilization and referral preparation.	Patient stabilized and referred to a Type B hospital with neurosurgical facilities for further management.

OUTCOME AND FOLLOW-UP

Case 1

Following emergency management in the Emergency Department (ED), the patient's neurological status improved, as demonstrated by an increase in the Glasgow Coma Scale (GCS) from 11 (E3V3M5) on admission

to 13 (E4V4M5) at the final assessment. Hemodynamic and respiratory status remained stable throughout the observation period, with no evidence of secondary neurological deterioration or other acute complications. After initial stabilization in the ED, the patient was referred to a higher-level hospital for further evaluation and management.

Case 2

Following emergency management, the patient's neurological status improved, with the GCS increasing from 10 (E3V3M4) on admission to 11 (E3V3M5) during ED observation. Blood pressure and oxygenation improved following antihypertensive therapy and respiratory support, while no further neurological deterioration or systemic complications were observed. After stabilization, the patient continued further management according to the treating physician's recommendations after discharge from the Emergency Department.

Case 3

The patient with a suspected basilar skull fracture underwent continuous neurological, respiratory, and hemodynamic monitoring in the Emergency Department. During observation, the patient developed hematemesis, resulting in progressive airway compromise and worsening oxygenation, which necessitated endotracheal intubation. Following successful intubation, adequate ventilation and oxygenation were achieved, and no immediate intubation-related complications were observed. Because the patient was intubated and sedated, neurological assessment after intubation was interpreted with consideration of the effects of sedation and neuromuscular blockade. After initial stabilization, the patient was referred to a Type B hospital with neurosurgical services for definitive management.

DISCUSSION

The three cases demonstrate that emergency management of moderate traumatic brain injury (TBI) should be individualized according to the patient's clinical presentation and comorbid conditions. Although all patients were initially classified as having moderate TBI, their outcomes differed. Cases 1 and 2 showed improvement in Glasgow Coma Scale (GCS) scores following emergency management, whereas Case 3 experienced clinical deterioration requiring endotracheal intubation and referral to a higher-level hospital. These findings are consistent with previous studies showing that patients with similar injury severity may have different clinical outcomes depending on associated injuries and underlying comorbidities (Ghazwan Lafta & Hayder Sbahi, 2023). Serial GCS assessment was useful in evaluating treatment response during Emergency Department (ED) management by providing an objective indicator of neurological changes during the emergency phase, consistent with recent recommendations on quality indicators for traumatic brain injury care (Jeffcote et al., 2025). Improvement in GCS in Cases 1 and 2 reflected favorable neurological recovery following airway management, oxygen therapy, intracranial pressure control, and hemodynamic stabilization. In contrast, neurological assessment in Case 3 became more challenging after intubation because sedation may influence GCS scoring. Therefore, serial GCS should be interpreted together with clinical findings, vital signs, and airway status rather than as a single indicator. This finding supports previous recommendations that serial GCS remains a practical tool for monitoring neurological status and guiding clinical decision-making in moderate TBI (Maas et al., 2022). From a nursing perspective, continuous neuroprotective nursing care, including serial neurological assessment and timely intervention, is essential to reduce the risk of secondary brain injury during the acute management of traumatic brain injury (Promlek et al., 2021). The poorer clinical course in Case 3 may be related to hypertension, type 2 diabetes mellitus, and chronic pulmonary disease, which can impair cerebral autoregulation, reduce oxygen reserve, and increase the risk of secondary brain injury. The occurrence of hematemesis further increased the risk of aspiration and contributed to the need for definitive airway management. These findings highlight the importance of continuous neurological monitoring using serial GCS together with repeated assessment of vital signs and airway status in patients with moderate TBI. The main strength of this case series is the comparison of three patients with different clinical characteristics,

demonstrating the practical value of serial GCS in emergency management. However, long-term follow-up was not available; therefore, neurological recovery beyond the ED and changes in GCS after referral or hospitalization could not be evaluated. These findings are consistent with the latest Best Practices Guidelines for Traumatic Brain Injury, which emphasize structured assessment, early resuscitation, and individualized management to minimize secondary brain injury (The American College of Surgeons, 2024).

DIAGNOSTIC CHALLENGE

The main diagnostic challenge in these cases was the need for rapid assessment and clinical decision-making in patients with moderate traumatic brain injury presenting with different clinical manifestations before definitive CT imaging became available. Initial neurological evaluation relied primarily on clinical examination, serial Glasgow Coma Scale (GCS) assessment, vital signs, and airway evaluation. In Case 2, severe hypertension could mimic or coexist with signs of increased intracranial pressure, requiring careful interpretation of neurological findings while awaiting CT imaging. In Case 3, the occurrence of hematemesis, together with underlying chronic pulmonary disease, increased the risk of aspiration and complicated airway assessment, leading to the decision to perform endotracheal intubation before CT confirmation. These challenges highlight the importance of integrating serial GCS assessment with the patient's overall clinical condition to support timely emergency management before definitive imaging results become available.

LIMITATION

This case series has several limitations that should be considered when interpreting the findings. First, it includes only three cases, which limits the generalizability of the results to a broader patient population. Second, patient observation was limited to the period of care in the Emergency Department (ED), preventing assessment of long-term clinical outcomes and recovery. Third, the analysis was based on available clinical records, diagnostic findings, and monitoring data documented during ED management, making the findings dependent on the completeness and consistency of medical documentation. Therefore, the findings primarily reflect the initial management and short-term outcomes of patients with moderate traumatic brain injury rather than their long-term prognosis. Future prospective case series with larger sample sizes and longer follow-up are needed to further evaluate the role of serial Glasgow Coma Scale (GCS) assessment as an indicator of management outcomes in patients with moderate traumatic brain injury.

LEARNING POINTS

1. Serial Glasgow Coma Scale (GCS) assessment is a practical and reliable indicator for monitoring neurological changes and evaluating the effectiveness of emergency management in patients with moderate traumatic brain injury.
2. Patients with moderate traumatic brain injury and comorbidities, such as uncontrolled hypertension, type 2 diabetes mellitus, and chronic pulmonary disease, require closer neurological and physiological monitoring because these conditions may complicate clinical assessment and management.
3. Changes in serial GCS, together with respiratory and hemodynamic findings, facilitate early recognition of clinical deterioration and support timely interventions, including airway protection when indicated.
4. Patients with the same initial GCS may require different emergency management strategies depending on clinical presentation, associated injuries, and comorbidities, as demonstrated in these three cases.
5. Individualized management based on serial GCS assessment, continuous monitoring, and the patient's overall clinical condition is essential to optimize outcomes in moderate traumatic brain injury.

CONCLUSION

This case series describes the management of three patients with moderate traumatic brain injury who had different comorbidity profiles: no comorbidity, a single comorbidity (hypertension), and multiple comorbidities (hypertension, type 2 diabetes mellitus, and chronic pulmonary disease following COVID-19 infection). Differences in serial Glasgow Coma Scale (GCS) trends were observed among the three patients. The patient without comorbidities demonstrated the greatest improvement in GCS (11 to 13), the patient with hypertension showed slight improvement (10 to 11), whereas the patient with multiple comorbidities

maintained a GCS score of 9 during Emergency Department observation and required endotracheal intubation because of hematemesis and airway compromise. These observations suggest that comorbidities may influence clinical progression, management complexity, and serial GCS changes in patients with moderate traumatic brain injury. However, because this case series included only three patients and observations were limited to the Emergency Department, these findings should be interpreted as observational and hypothesis-generating rather than conclusive evidence. Further larger case series and prospective studies are needed to confirm the relationship between comorbidities, serial GCS changes, and clinical outcomes.

ETHICAL CLEARANCE

Ethical approval was obtained from the Health Research Ethics Committee of Universitas 'Aisyiyah Yogyakarta with approval number 5255/KEP-UNISA/II/2026.

PATIENT CONSENT

Written informed consent for publication of this case series and related clinical data was obtained from the patients or their legal guardians. All identifying information has been removed to protect patient confidentiality and privacy.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest related to the writing and publication of this The authors declare that there is no conflict of interest regarding the publication of this case series.

FUNDING SOURCE

The author received no specific financial support for the research, authorship, and publication of this article.

AUTHORS' CONTRIBUTION

Restria Dewi Fibrianti contributed to the conceptualization of the study, data collection, clinical analysis, manuscript drafting, and preparation of the final manuscript. Endah Tri Wulandari and Aisyah Nur Azizah contributed to study supervision, critical review of the manuscript, and approval of the final version of the manuscript.

DATA AVAILABILITY

The data supporting this case report cannot be shared publicly due to patient confidentiality and ethical restrictions.

ACKNOWLEDGEMENTS

The authors would like to express their sincere gratitude to RSUD Panembahan Senopati Bantul for providing permission and access to clinical data used in this case report. We also thank the Emergency Department staff for their support and cooperation during the data collection process. The authors are grateful to Universitas 'Aisyiyah Yogyakarta for academic guidance and support throughout the completion of this study. Their contributions were invaluable to the successful completion of this case series.

LIST OF ABBREVIATIONS

ABCDE = Airway, Breathing, Circulation, Disability, Exposure; COVID-19 = Coronavirus Disease 2019; CT = Computed Tomography; ED = Emergency Department; ECG = Electrocardiography; EDH = Epidural Hematoma; GCS = Glasgow Coma Scale; ICH = Intracerebral Hemorrhage; IV = Intravenous; MAP = Mean Arterial Pressure; MCV = Mean Corpuscular Volume; MCH = Mean Corpuscular Hemoglobin; MCHC = Mean Corpuscular Hemoglobin Concentration; MPV = Mean Platelet Volume; MSCT = Multi-Slice Computed Tomography; NRM = Non-Rebreathing Mask; PCT = Prokalsitonin; RDW-SD = Red Cell Distribution Width–Standard Deviation; SAH = Subarachnoid Hemorrhage; SDH = Subdural Hematoma; SpO_2 = Peripheral Oxygen Saturation

FIGURE AND TABLE LEGENDS

Table 1. Summary of Relevant Diagnostic Findings.

Table 2. Clinical Case Timeline of Case 1.

Table 3. Clinical Case Timeline of Case 2.

Table 4. Clinical Case Timeine of Case 3.

No figures were included in this manuscript.

REFERENCES

American College of Surgeons. (2024). Best Practices Guidelines: Traumatic Brain Injury.

ATLS Committee. (2023). Advanced Trauma Life Support (ATLS): Student Course Manual (11th ed.). American College of Surgeons.

Cook, A. M., Morgan Jones, G., Hawryluk, G. W. J., et al. (2020). Guidelines for the Acute Treatment of Cerebral Edema in Neurocritical Care Patients. Neurocritical Care, 32(3), 647–666.

Ghazwan Lafta, R., & Hayder Sbahi, A. (2023). Epidemiology and outcomes of traumatic brain injury: A global perspective. Journal of Emergency Medicine and Trauma Care, 15(2), 85–92.

Jeffcote, T., et al. (2025). Development of Quality Indicators for the Acute Management of Moderate to Severe Traumatic Brain Injury. Neurocritical Care.

Maas, A. I. R., Menon, D. K., Adelson, P. D., Andelic, N., Bell, M. J., Belli, A., Bragge, P., Brenner, L. A., Chesnut, R. M., Citerio, G., Coburn, M., Cooper, D. J., Crowder, A. T., Czosnyka, M., Diaz-Arrastia, R., Dreier, J. P., Duhaime, A. C., Ercole, A., … Manley, G. T. (2022). Traumatic brain injury: Integrated approaches to improve prevention, clinical care, and research. The Lancet Neurology, 21(11), 987–1048. https://doi.org/10.1016/S1474-4422(22)00305-4

Nurfikasari, D., Putri, A. R., & Hidayat, T. (2025). Characteristics and management outcomes of traumatic brain injury patients in Indonesia. Indonesian Journal of Emergency Nursing, 8(1), 12–20.

Pratiwi, N. K. A., & Sutawan, I. B. (2021). Management of increased intracranial pressure in traumatic brain injury patients: A review. Jurnal Keperawatan Gawat Darurat Indonesia, 4(2), 45–53.

Promlek, K., Currey, J., Damkliang, J., & Considine, J. (2021). Evidence-practice gaps in initial neuroprotective nursing care for moderate-to-severe traumatic brain injury. International Journal of Nursing Practice, 27(6), e12899. https://doi.org/10.1111/ijn.12899

Robinson, C. P. (2021). Moderate and Severe Traumatic Brain Injury. Continuum, 27(5), 1278–1300. https://doi.org/10.1212/CON.0000000000001036

Taneo, M. M., Lobo, M. L., & Kurniawan, D. (2023). Glasgow Coma Scale as a predictor of neurological outcomes in traumatic brain injury patients. Journal of Emergency and Critical Care Nursing, 7(1), 23–30.

Teasdale, G., Maas, A., Lecky, F., Manley, G., Stocchetti, N., & Murray, G. (2014). The Glasgow Coma Scale at 40 years: Standing the test of time. The Lancet Neurology, 13(8), 844–854. https://doi.org/10.1016/S1474-4422(14)70120-6

Optimal Journal Clinical Case Report, Volume 01, No.01,July 2026, (Page. 123-136)
ISSN 3164-872X

IMPROVING TUBERCULOSIS PATIENT COMPLIANCE THROUGH FAMILY NURSING INTERVENTIONS USING THE ABC (ANTECEDENTS–BEHAVIOUR–CONSEQUENCES) APPROACH

Supriadi[a] *, Dian Yuniar Syanti Rahayu[b]
[a,b] Poltekkes Kemenkes Bandung, Jalan Pajajaran No.56, Bandung, 40171, Indonesia
Corresponding author: supriadifalah@gmail.com

Abstract

Background: Tuberculosis control depends not only on the availability of medication but also on patient adherence to treatment to prevent drug resistance. Families play a crucial role in shaping patients' health behaviors. The ABC (*Antecedents–Behaviour–Consequences*) approach is used to evaluate the effectiveness of family nursing interventions in shifting patients from non-adherence to treatment adherence by reinforcing knowledge, providing family support, and monitoring regular medication intake. **Case Summary:** Patient X (45 years old) was diagnosed with smear-positive pulmonary tuberculosis and had a history of treatment discontinuation two years prior. A six-month intervention was implemented, comprising three key stages: Antecedent Structuring, Behavior Modification, and Consequence. Reinforcement following the provision of adequate information and the obtaining of consent. **Investigation and Diagnosis:** Sputum test results confirmed the patient had tuberculosis; the patient admitted to previously discontinuing medication due to nausea and a belief that they had recovered, deeming daily medication unnecessary. Family functioning was suboptimal, characterized by low health awareness and inadequate supervision of medication adherence. Family nursing diagnosis: Ineffective Family Health Management, related to the family's inability to optimally care for the ill family member. **Management:** The intervention employed the ABC approach. In the Antecedents phase, the family received education regarding the dangers of untreated latent tuberculosis, and strategies were implemented such as creating a reminder calendar, setting mobile phone alarms, and managing nausea by taking medication after meals or before bedtime. The Behavior phase involved training the wife to act as a treatment supervisor (PMO), ensuring she accompanied the patient during medication intake and integrated the medication schedule into the patient's daily routine. The Consequences phase utilized positive reinforcement, such as praise or small rewards, whenever the treatment calendar was fully completed each week. Patient progress was monitored through physical changes, such as weight gain and a reduction in coughing, serving as evidence of the benefits of treatment adherence. Additionally, the family was taught the importance of direct supervision and consistent emotional support to motivate the patient to complete the therapy and to ensure they understood the risk of drug resistance should treatment be discontinued prematurely. **Outcome:** The ABC intervention improved patient adherence (with scores rising from 4 to 8) and body weight (increasing from 48 kg to 54 kg), and resulted in negative AFB test results. Adherence was measured using the Morisky Medication Adherence Scale (MMAS) administered via interview. **Conclusion:** The ABC approach demonstrates potential effectiveness in improving patient adherence through enhanced family understanding, supervision of medication intake, and sustained positive reinforcement. Active family involvement as agents of behavioral change is a key factor in the successful long-term treatment of TBC patients.

Keywords: Compliance, Tuberculosis, Family Nursing, ABC Approach

INTRODUCTION

Tuberculosis (TBC) remains one of the world's major public health challenges. According to the 2024 Global TB Report by the World Health Organization (WHO), Indonesia ranks second globally, following India. It is estimated that there are 1,090,000 TBC cases and 125,000 deaths annually equating to 14 deaths every hour. These high figures indicate that TB control remains a top priority in healthcare services, particularly regarding treatment success. Successful TBC therapy relies heavily on patient adherence to the standard treatment regimen for a minimum of six months. Non-adherence to the treatment regimen can lead to therapy failure, disease recurrence, increased community transmission, and the development of drug resistance (Multidrug-Resistant Tuberculosis or MDR-TB).

Research findings indicate that patient adherence is influenced by numerous factors, including knowledge levels, motivation, medication side effects, access to healthcare services, psychological state, stigma, and the social support received. Among these determinants, family support plays a crucial role in the success of tuberculosis treatment. Families serve not only as Treatment Supporters (monitoring medication intake) but also as sources of emotional, informational, instrumental, and esteem support, all of which can boost patient motivation to maintain treatment adherence. Patients who receive strong family support tend to exhibit higher levels of medication adherence compared to those with limited family support.

Various nursing interventions have been developed to improve adherence among tuberculosis patients, such as health education, counseling, motivational interviewing, medication reminders, support from treatment supervisors (PMO), and family empowerment. However, most interventions still focus on increasing patient knowledge, whereas approaches that systematically alter adherence behavior through the modification of triggers and the reinforcement of behavior remain relatively limited. Therefore, a behavior-based nursing approach is needed one capable of explaining the interrelationships between behavioral triggers, the desired behavior, and the consequences that reinforce such behavioral change.

The ABC approach to behavior change explains that an individual's behavior is influenced by antecedents or factors preceding the behavior, such as reminders, the environment, knowledge, and family support. In the context of tuberculosis, the target behavior is patient adherence to the prescribed medication schedule. This behavior is subsequently reinforced through consequences, specifically positive reinforcement, such as praise, rewards, emotional support, and positive feedback from family members. By modifying these three components, it is hoped that a habit of sustained adherence will be established throughout the course of tuberculosis therapy.

Although various studies have reported that family support is associated with improved tuberculosis treatment adherence, a research gap remains regarding the application of family nursing interventions in clinical practice. Most studies merely evaluate the relationship between family support and adherence without detailing the mechanisms of behavioral change, such as the identification of triggers, behavior modification, and positive reinforcement, carried out in a structured manner by the family. Consequently, the implementation of the ABC approach in family nursing care for tuberculosis patients remains limited, particularly in the form of case reports that comprehensively describe the nursing process.

The novelty of this case report lies in the implementation of a family nursing intervention utilizing the ABC approach to enhance adherence among tuberculosis patients. This approach positions the family not merely as treatment supervisors, but as agents of behavioral change capable of identifying factors contributing to non-adherence, fostering consistent medication-taking habits, and providing sustained positive reinforcement. Consequently, this report aims to illustrate the application of behavioral theory within family nursing practice as a strategy to improve tuberculosis treatment outcomes. It seeks to describe the implementation of the ABC-based family nursing intervention in increasing treatment adherence and to provide clinical evidence regarding

the relevance of applying behavioral theory in family nursing practice to support therapeutic success and prevent treatment failure.

CASE PRESENTATION

General Patient Information: The patient is a 45-year-old male working as a casual daily laborer. He resides in a densely populated neighborhood with inadequate home ventilation. Clinically, he has a history of active smoking over the past 20 years. Sputum analysis using TCM (molecular testing) returned a result of mycobacterium tuberculosis detected (MTB Detected). Chief Complaint and History of Present Illness: The chief complaint is a persistent productive cough lasting for the past three weeks. The sputum is yellowish-white and occasionally blood-streaked. The patient also reports fever particularly at night, accompanied by night sweats in the absence of physical exertion and a loss of appetite resulting in a weight loss of approximately 4 kg over the last month. Symptoms progressed chronologically, starting as a dry cough that subsequently became productive and worsened over the past week. Treatment History: The patient was previously diagnosed with pulmonary tuberculosis two years ago but discontinued treatment after two months because they felt their condition had improved. The patient has no history of diabetes mellitus, hypertension, or drug allergies. To date, the patient has only taken over-the-counter cough medication purchased at local shops to alleviate symptoms. Family History: The patient lives with his wife and two children in a small house. No other family members reportedly have similar complaints. As the family's breadwinner, the patient experiences psychological distress because his condition hinders his ability to work. Family support for treatment adherence was previously considered inadequate due to his wife's lack of understanding regarding the risk of drug resistance. Physical Examination and Vital Signs: Upon physical examination, the patient appeared moderately ill and thin (BMI 17.5 kg/m^2). Vital signs: Blood pressure 110/70 mmHg, pulse rate 88 beats/minute, respiratory rate 22 breaths/minute, and temperature 37.8°C. Key Clinical Findings: Pulmonary auscultation revealed bronchial breath sounds and coarse crackles in the right upper lung field. No lymphadenopathy was observed. Initial Diagnostic Findings: Sputum analysis via rapid molecular test (TCM) showed mycobacterium tuberculosis detected (MTB Detected) with rifampicin sensitivity (Rif Sensitive), and an elevated Erythrocyte Sedimentation Rate (ESR).

CLINICAL REASONING

Clinical Reasoning: Based on the initial assessment, the family demonstrated “Ineffective Family Health Management.” This was based on a history of interrupted treatment and the family’s failure to modify the patient’s environment and lifestyle (active smoker). This issue was prioritized because it directly impacts the risk of retreatment failure and potential transmission to other family members in a densely populated environment. Decision Making through the ABC Approach to identify the root of non-adherence. Antecedents: It was found that the triggers for non-adherence were the lack of medication reminders and the misperception that “feeling well” meant “being cured.” The wife’s lack of knowledge as a DOTs was a negative antecedent. Behavior: The patient often missed doses when he started to feel better and continued smoking, which worsened airway irritation. Consequences: The absence of consequences (either punishment or reward) within the family for patient compliance or non-compliance, resulting in a lack of internal motivation for the patient to complete the 6-month treatment. The diagnosis focused on patient noncompliance related to ineffective family role performance. Successful tuberculosis treatment depends not only on medication consumption but also on behavioral changes. The ABC approach was chosen because it has been clinically proven effective in mapping complex behaviors into simple modification steps for families. Supporting Clinical Findings: Objective data include a history of treatment interruption, a positive TCM result (Rifampicin-sensitive), and radiological evidence of cavities indicating chronic tissue damage resulting from previous treatment irregularity. Subjective data include the wife's statement regarding her inability to motivate her husband, and the patient's own statement that the medication regimen felt overwhelming, leading to frequent missed doses. An alternative family nursing diagnosis knowledge deficit was ruled out because the patient was already aware of his tuberculosis diagnosis; the core issue was behavioral rather than a mere lack of information. Although findings

such as rhonchi and coughing indicated ineffective airway clearance, these were considered secondary effects of the primary disease. Clinical focus was therefore shifted to treatment adherence as the causal solution for permanently resolving the symptoms. Clinical Reasoning Conclusion: Clinical decision-making focuses on strengthening the family's role in providing positive reinforcement (consequences) whenever the patient takes their medication on time. By modifying antecedents (providing a pill organizer and a visual schedule), it is expected that the behavior (adherence) will improve, thereby enabling the sputum conversion target to be achieved.

DIAGNOSTIC ASSESSMENT

Adherence was measured using the Morisky Medication Adherence Scale-8 (MMAS-8) instrument through interviews conducted before and after the intervention. A summary of the findings regarding the patients, resulting from the family nursing intervention using the ABC approach, is as follows:

Table 1. Patient Evaluation Before and After ABC Intervention

Parameter	Pre-Intervention (Initial)	Post-Intervention (Final)	Change	Clinical Interpretation
Compliance Score	4	8	+4 point	Significant improvement from Low to High category
Behavioral Status	Often forgetful and irregular	Discipline and punctuality	Pattern Change	Antecedents (reminders) and Consequences (support) function effectively.
BTA results	Positif (+2)	Negatif (-)	Germ Conversion	Medication adherence is directly correlated with bacterial clearance
Body Weight	48 kg	54 kg	+6 kg	Improvement in nutritional status as a result of adherence to treatment and nutrition
Clinical Complaints	Productive cough & fever	Symptoms disappear	Clinical Resolution	Compliance eliminates systemic symptoms of tuberculosis

Based on clinical criteria and supporting examinations, the patient was classified as a case of Bacteriologically Confirmed Pulmonary Tuberculosis. The patient was a relapse/retreatment case, considering a history of drug discontinuation (drop-out) 2 years ago. This finding reinforces the need for intervention using the ABC approach, because even though the bacteria are still sensitive to the drug, the risk of repeated treatment failure is very high if adherence behavior is not improved.

THERAPEUTIC INTERVENTION

ABC behavioral therapy is a systematic approach to understanding and modifying behavior by analyzing the relationship between Antecedents (triggers), Behavior (behavior), and Consequences (impact/reinforcement). In the context of tuberculosis, this therapy is used to replace bad habits such as drug withdrawal with disciplined medication adherence. Interventions are carried out through three key stages to modify the patient's home ecosystem: 1) Antecedents (Trigger Arrangement): Removing physical and mental barriers before medication-taking behavior begins. Examples include using a daily pill box, setting an alarm on the family's cell phone, and posting a medication schedule calendar in a public area of the house as a visual reminder, 2) Behavior (Action Modification): Ensuring medication-taking occurs appropriately. Families are trained to conduct direct supervision (Directly Observed Treatment) to ensure medication is actually taken

according to the dosage and 3) Consequences (Impact Reinforcement): Providing positive responses immediately after the behavior is performed. Examples include verbal praise from the family or appreciation from health workers when laboratory results improve, which serve as motivation for repeating compliant behavior. Unlike chemical medications, the dosage in behavioral therapy is measured by the intensity of the support. Support is provided daily (whenever medication is scheduled) and follows the treatment period, which is a minimum of 6 months. The intensive phase (the first 2 months) requires closer supervision, followed by the maintenance phase (the next 4 months) to ensure stable behavior until the end of treatment. Patient monitoring and safety are carried out in layers to ensure effectiveness: 1) Routine monitoring of drug side effects (nausea, itching, joint pain) to prevent patients from abruptly discontinuing treatment due to physical discomfort; 2) Sputum smear (AFB) examinations at 2 and 6 months to objectively verify that behavioral compliance is directly proportional to medical recovery; and 3) Ensuring that family members acting as caregivers (PMO) understand how to remove phlegm and maintain home ventilation to prevent transmission within the family environment. The ABC approach was chosen for several strategic reasons: 1) It can address the root cause; the patient's history of drug withdrawal indicates that education alone is insufficient; It requires real environmental and support system changes, 2) is economical and independent, meaning it does not require additional costs and empowers the family as the "agent of change" closest to the patient, and 3) Can prevent MDR, because the total adherence generated by this model is the only way to prevent drug resistance, which is clinically much more difficult and expensive to treat. The interpretation of the increase in adherence score from 4 to 8 indicates the success of this procedure in bringing patients out of the high-risk zone of treatment failure.

THERAPEUTIC SEQUENCE

Family Nursing Interventions use the ABC approach, structured chronologically to ensure lasting behavioral change. The sequence begins with Antecedents, as behavior will not change unless triggers or inhibiting factors are addressed first. Once the environment is ready, Behavior, as the core intervention, is implemented. Finally, Consequences are given to "lock" the behavior into a permanent new habit until the treatment period is completed.

Table 2. ABC Approach Interventions

ABC components	Specific Nursing Actions	Clinical Rationalization
Antecedents (Trigger/Stimulus)	1. Environmental modifications: Providing a daily pill box. 2. Visual education: Placing a medication calendar in a visible area. 3. Setting reminders on family phones.	▪ Creating strong external cues to prevent “forgetting” ▪ Removing environmental barriers before the behavior begins.
Behaviour	1. Direct assistance in taking medication by the family. 2. DOTs (Directly Observed Treatment short-course) technique 3. Education on how to deal with mild side effects of medication	▪ Changing passive actions into active ones. ▪ The presence of family members ensures that the medication is actually swallowed, not just taken.
Consequences (Impact/ Reinforcement)	1. Positive Reinforcement: Offer praise or verbal support after each dose. 2. Self-Reward: Set aside money (usually spent on cigarettes) for additional nutritional intake. 3. Weekly evaluations with a nurse.	▪ Provides a sense of accomplishment. ▪ Positive reinforcement increases the likelihood that compliant behavior will be repeated in the future.

CASE TIMELINE

A Case Timeline presents the patient's clinical events chronologically, from the onset of symptoms to the evaluation of the results of the ABC approach intervention. The critical point as the main success occurred in Month 2, where laboratory results (ARR conversion) were used as a positive consequences instrument to motivate the patient to complete the remaining 4 months of treatment. The educational value, namely the change from "Drug Discontinuation" status (2 years ago) to "Cured" (currently) proves that technical medical intervention must be accompanied by modification of patient and family behavior.

Table 3. Chronological Timeline of Pulmonary Tuberculosis Cases with the ABC Approach

Time	(*Clinical Event*)	Investigation/ Diagnostics	Treatment / Intervention	Result (*Outcome*)
2 Years Ago	First diagnosis of pulmonary TBC.	ARR (+)	Starting ATD (Anti-Tuberculosis Drugs) category 1	Stopped the medication after 2 months because I felt fine
Month 0 (Beginning of Case)	Cough with phlegm for >3 weeks, shortness of breath, night sweats, weight loss of 4 kg	MRT Sputum (MTB detected, Rif Sensitive), ARR (+2)	Diagnosis of Recurrent Pulmonary TBC Cases	The patient was re-enrolled in the TBC treatment program
Minggu 1	Evaluate family readiness and identify barriers to compliance	Behavioral assessment (identification of negative antecedents)	Intervention Antecedents: Family education, provision of pill-boxes, and reminder alarms	The family has a structured medication schedule
Week 2-4	Intensive phase of treatment; monitoring of drug side effects	Daily monitoring of vital signs and clinical symptoms	Intervention Behavior: Strict supervision of the wife in taking medication	Medication compliance was 100% in the first month; coughing decreased
Month 2	Evaluation of the intensive phase; transition period to the advanced phase	Sputum ARR examination	Intervention Consequences: Positive reinforcement for successful compliance	ARR conversion to Negative (-); weight gain 2 kg; appetite improved
Months 3-6	Continuation Phase of treatment.	Monthly routine monitoring at the Community Health Center	Ongoing family nursing to prevent boredom of taking medication	The patient remained compliant, no doses were missed
End of Month 6	Completion of treatment regimen	Final sputum AFB result negative	Termination of family nursing care.	Declared cured, the family's health behavior improved steadily

OUTCOME AND FOLLOW-UP

Results: The case study presents the patient's progress objectively and systematically, aligning with the objectives of applying the ABC approach in family nursing. Following a six-month intervention, the patient demonstrated significant progress across two phases: 1) Intensive Phase (Months 1–2): Systemic symptoms, such as night sweats and fever, resolved by the third week. Productive coughing decreased drastically, and appetite began to improve. Objectively, the patient's weight increased from 48 kg to 54 kg by the end of the second month. 2) Continuation Phase (Months 3–6): The patient no longer complained of shortness of breath. Functional capacity improved, enabling the patient to resume light work. Body weight stabilized at 54 kg (a 6

kg increase). The evaluation of the ABC intervention's effectiveness yielded the following results: 1) Antecedents: The family successfully maintained a supportive environment, and the use of a pillbox and mobile phone alarms became a routine habit that eliminated instances of missed medication; 2) Behavior: Patient adherence reached 100% (Total Compliance). Unlike the previous treatment history, which was discontinued in the second month, the patient did not miss a single dose this time due to direct supervision by his wife; and 3) Consequences: Positive reinforcement in the form of emotional support from the family and appreciation from healthcare workers upon receiving a negative sputum smear result (in the second month) served as a strong motivator for the patient to complete the treatment. **Final Outcome:** Laboratory results (sputum smear for AFB) at the end of the second and sixth months were negative, and the patient was declared cured by the local health facility. During the treatment period, the patient experienced mild side effects, specifically nausea and joint pain in the first month. However, through family nursing interventions involving education on medication timing and nutritional intake, these issues were successfully managed without interrupting treatment (no adverse events compromising adherence were observed). **Follow Up:** Short-term follow-up involves monitoring physical condition for three months after recovery to ensure no symptoms of relapse occur, alongside ongoing education regarding the importance of home ventilation and a balanced diet. Long-term follow-up entails periodic screening for family members (close contacts) to rule out latent transmission, as well as maintaining a clean and healthy lifestyle and permanently abstaining from smoking to preserve lung function.

DISCUSSION

This case demonstrates that improving tuberculosis treatment adherence is influenced not only by the availability of anti-tuberculosis medication but also by behavioral changes supported by the family. Following a family nursing intervention utilizing the ABC approach, the patient exhibited improved adherence to the medication schedule. These findings reinforce the understanding that adherence is a behavior shaped by the interplay of individual, environmental, and social support factors; therefore, it cannot be effectively improved through health education alone. Various studies have shown that non-adherence to tuberculosis treatment is a primary cause of treatment failure, disease recurrence, increased community transmission, and the development of multidrug-resistant (MDR) tuberculosis. Factors influencing adherence include knowledge levels, motivation, perceptions of the disease, drug side effects, access to healthcare services, stigma, psychological state, and family support. Consequently, interventions that focus solely on increasing knowledge often fail to bring about sustained behavioral change.

The results of this case study indicate that the patient's history of treatment discontinuation was not solely due to a lack of knowledge regarding TB. Although the patient understood the importance of treatment, they were unable to maintain adherence over the long term. These findings align with research showing that while knowledge is linked to adherence, it is not the sole predictor of treatment success. Studies have reported that intrinsic motivation, self-efficacy, and family support exert a stronger influence on adherence than knowledge alone. Consequently, behavioral change requires strategies that bridge the gap between knowing and doing. Family involvement in tuberculosis management is a crucial component of successful interventions. When family members take an active role as treatment supporters (PMO), provide emotional support, and offer positive reinforcement, patient adherence improves significantly. These findings align with various studies reporting that TB patients who receive family support are more likely to complete their treatment. Family support helps patients maintain motivation, reduces treatment fatigue during long-term therapy, fosters a sense of responsibility regarding treatment, and strengthens the patient's relationship with healthcare services.

These findings also support the concept of family-centered nursing, which posits that the family is an integral part of the patient's healing process. Under this approach, the family functions not only as a treatment supervisor but also as a facilitator of behavioral change. The family's role is multifaceted, encompassing the identification of adherence barriers, the provision of emotional support, the establishment of medication

routines, and the offering of positive reinforcement regarding the patient's successful adherence to therapy. The ABC approach provides a systematic framework for explaining these behavioral changes. Skinner's behavioral theory reinforces the study's results, indicating that behavior arises from the interaction between environmental stimuli and the consequences that follow the behavior.

In the anteceden stage, the family helps create conditions that foster adherence by providing medication reminders, establishing daily schedules, and minimizing environmental barriers that previously caused the patient to forget or delay treatment. Modifying these antecedent factors increases the likelihood of the desired behavior occurring. The behavior stage focuses on establishing the patient's habit of taking medication at the prescribed dosage and time. This behavior is not merely observed but consistently monitored by the family, enabling early detection of any decline in adherence. Repeated monitoring facilitates the formation of a new, more adaptive routine compared to previous behaviors. Subsequently, in the consequences stage, the family provides positive reinforcement, such as praise, rewards, attention, or emotional support whenever the patient successfully maintains adherence. According to operant conditioning theory, behaviors followed by positive consequences are more likely to be repeated in the future. Thus, patient adherence is no longer driven solely by the obligation to undergo treatment but evolves into a habit reinforced by the family environment.

These findings demonstrate that the ABC approach facilitates behavioral change through the modification of triggers and continuous positive reinforcement. From a nursing practice perspective, adopting the ABC approach shifts the nurse's role from a mere provider of information to a facilitator of behavioral change. Nurses go beyond educating patients about their illness and treatment; they assess factors influencing adherence, empower families to create a supportive environment, and evaluate the effectiveness of behavioral reinforcement provided throughout the treatment process. This approach strengthens the implementation of holistic, behavior-change-oriented family nursing care.

The novelty of this case report lies in the systematic application of the ABC behavioral theory within family nursing care for tuberculosis patients in the community; while most previous studies have focused on the relationship between family support and treatment adherence, this report demonstrates the mechanism of behavioral change through the structured identification of antecedents, the shaping of behavior, and the provision of positive consequences. Consequently, the family functions not merely as a supervisor of therapy but also as an agent of behavioral change, playing an active role in sustaining patient adherence. This approach offers several advantages: it is relatively simple, requires no additional cost, is easily implemented in primary healthcare settings, and aligns with Indonesian cultural values that position the family as the primary support system for caring for ill members. Through family involvement, interventions can be sustained continuously at home without total reliance on healthcare professionals.

Nevertheless, there are several limitations to consider. The success of the ABC approach is heavily influenced by the quality of family relationships, the family's ability to provide consistent positive reinforcement, and the patient's readiness to accept such support. Furthermore, as this report describes only a single case, the findings cannot yet be generalized to the entire population of tuberculosis patients. Future research should employ experimental or quasi-experimental designs with larger samples and longer follow-up periods to evaluate the ABC approach's effectiveness regarding treatment adherence, therapeutic success, and the prevention of MDR-TB and other complications. This case is significant because it offers a solution to the classic problem of patients feeling cured prematurely. Through the ABC approach, the critical phase between the second and sixth months when symptoms have vanished but the bacteria have not yet been completely eradicated can be managed by maintaining consistent treatment adherence, supported by steady positive reinforcement from the family.

DIAGNOSTIC CHALLENGE

The primary challenge in this case lies not in the medical complexity of the illness, but rather in the complexity of the individual and their support systems. The following factors make this case particularly challenging for family nurse practitioners:

1. Difficulty in Family Nursing Diagnosis. Determining a diagnosis at the family level is much more difficult than diagnosing an individual. Nurses must be able to distinguish whether the problem is incompetence (lack of knowledge), unwillingness (motivational issues), or inability (economic/resource issues). In this case, the challenge is identifying that the real problem is not a "stupid patient," but rather a passive family support system that fails to provide behavioral reinforcement.
2. Limited Past Clinical Information. The patient had a history of dropping out (discontinuing medication) two years ago. However, there is often information bias regarding the actual reasons for the patient's discontinuation. Was it due to unreported side effects, hidden depression, or distrust of healthcare providers? Without accurate past data, nurses risk repeating the same intervention errors.
3. Decision Making Complexity. Using the ABC approach requires careful mapping of behaviors: 1) Identifying Appropriate Antecedents: Not all reminders (such as alarms) are appropriate for every patient. Determining what triggers are truly effective requires trial and error, and 2) Determining Meaningful Consequences: Offering praise or rewards may feel awkward or irrelevant in certain family dynamics. The nurse must decide what reinforcement is strong enough to maintain compliance for the full six months.
4. Obstacles to Psychosocial and Environmental Factors. Stigma and Denial: Patients who feel well in the second month often deny their illness. Fighting this feeling of being "cured" is psychologically more challenging than treating the cough. Economic Conditions: As a day laborer, the pressure to return to work full-time often overrides the priority of seeking treatment. Integrating medication schedules with an irregular work schedule creates additional complications in the care plan.
5. The Challenge of Treatment Fatigue. Tuberculosis is a chronic disease requiring an extensive and prolonged medication regimen. Maintaining the family's motivation to remain disciplined supervisors for six consecutive months poses a challenge of clinical endurance. This is where the complexity of decision-making is tested: determining when a nurse should provide more intensive intervention and when to allow space for family autonomy.

LIMITATION

1. Limitations of the Examination and Clinical Data: Data on adherence and family interaction (ABC components) were primarily obtained through self-reporting by the patient and family (wife). This is susceptible to social desirability bias, where respondents tend to report only positive outcomes. This case did not use a standardized anxiety assessment instrument, even though psychological conditions significantly influence the internal motivation of chronic patients. Confounding Factors: Weight gain and clinical improvement could have been influenced by additional nutritional support or other environmental factors that were not strictly controlled in this case study.
2. Limitations of Formulating Nursing Diagnoses: Family nursing diagnoses are formulated at a single point in time (beginning). However, family dynamics are highly volatile. These diagnoses may not capture changes in internal family conflicts that may arise during treatment. The ABC model relies heavily on open communication; in cultural settings where family members are reluctant to verbally criticize or praise one another, this diagnosis formulation may be difficult to apply universally.
3. Limitations of Follow-up: This report ends when the patient is declared cured (6 months). However, without follow-up for 1-2 years, it is difficult to determine whether the behavioral changes are permanent or only persist during the nurse's supervision (risk of long-term relapse).
4. The focus of this report is on the index patient. Limited information regarding the long-term health status of other exposed family members (close contacts) creates a gap in the overall evaluation of the success of family nursing.
5. Limitations of the Reporting and Interpretation Process: As a single case study, these results reflect success in one family unit with specific characteristics. Readers should not assume that the ABC approach will yield identical results in families with more severe levels of dysfunction. (Limited Generalizability). Interpretation should take into account that the emphasis is placed on the success of behavioral interventions, so certain technical medical aspects may not be discussed in as much depth as in specialist pulmonary/biomedical journals.

LEARNING POINTS

Practical and clinically relevant learning points from the case of increasing TB patient compliance through the ABC approach are:

1. Compliance is behavior, not just cognition. Treatment success is determined not only by patient understanding (knowledge), but also by consistent management of environmental stimuli (antecedents) and motivational reinforcement (consequences).
2. The Importance of Visual Cues (Antecedents): Simple interventions such as the use of pill boxes and medication schedule calendars in public areas of the home have been shown to be much more effective in preventing forgetfulness than mere verbal instructions.
3. Family as an agent of behavioral change: The family must be trained not only as a monitor of drug dosage, but as a provider of positive reinforcement to maintain the patient's morale during the long and tedious treatment period.
4. Urgency of Evaluation in the Critical Phase (Month 2): As clinical symptoms disappear in the second month, the risk of discontinuation increases. Healthcare workers should utilize the momentum of negative BTA conversion as a psychological "reward" (Consequences) to motivate patients to complete treatment.
5. ABC Approach as a Relapse Solution: For patients with a history of drug withdrawal (drop-out), standard medical interventions should be accompanied by ABC behavioral analysis to break past failure patterns through modification of the home ecosystem.

CONCLUSION

Conclusion: This case demonstrates that successful tuberculosis treatment in patients with a history of drug withdrawal cannot rely solely on pharmacological therapy but requires structured behavioral modification. The ABC approach has been shown to alter patient non-adherence patterns by managing environmental triggers and providing consistent positive reinforcement within the family. This case provides a significant contribution to family nursing practice by offering a practical and measurable framework. This intervention shifts the family's role from merely passive medication-taking monitors to active behavioral support units. This demonstrates that nursing strategies based on behavioral psychology can be integrated with clinical care to improve health outcomes in chronic diseases at the community level. **Recommendations:** 1) For Health Services: Community health centers and nurses are advised to adopt the ABC model as part of their tuberculosis patient support protocol, especially for patients at high risk of discontinuation, 2) For Nursing Education: Emphasize training in therapeutic communication skills and behavior modification techniques for nurses to be able to guide families effectively, and 3) For Further Research: Further research with experimental or multi-case study designs is needed to test the effectiveness of the ABC approach in a wider population and evaluate the resilience of adherence behavior in the long term (post-cure).

ETHICAL CLEARANCE

In writing this case study report, formal approval from the Health Research Ethics Committee was not required, because this case study is a report of routine nursing care results that have become standard of care. Because there are no new medical treatments, drug trials, or invasive interventions that pose risks to the patient, this is categorized as a retrospective review of existing clinical practice. This report does not include personal identification (name, specific address, medical record number, or facial photo) so that patient confidentiality remains protected in accordance with the professional code of ethics. This case report aims to share clinical experiences and educational value among practitioners. Informed Consent is a direct verbal agreement from the patient and family, that the case is written for scientific purposes. The author still guarantees that the patient's rights are not violated and the data remains completely confidential. This case report was prepared in accordance with the principles of nursing ethics. All patient data has been anonymized (removing names and other personal identifiers) to maintain patient confidentiality and privacy in accordance with the Declaration of Helsinki. The interventions provided are part of standard nursing care carried out professionally. The patient and family have provided informed consent for the use of their clinical data for educational purposes and scientific publications without disclosing personal identities.

PATIENT CONSENT

The patient and family have given written consent to the publication of the case. Patient and family confidentiality is fully protected. Names, personal details, and details that could directly identify the patient will be omitted or disguised in the report.

CONFLICT OF INTEREST

The author declares that there is no conflict of interest, either financial or personal, with any party related to the implementation of the intervention, writing, and publication of this case report. The entire nursing care process and manuscript preparation were conducted independently for the purpose of advancing nursing knowledge and practice.

FUNDING SOURCE

This article did not receive any specific funding.

AUTHORS' CONTRIBUTION

Main author: Conceptualization, responsible for designing the research idea, developing the ABC approach framework, and family nursing care methodology, preparing the initial draft of the manuscript, including the introduction, case description, and discussion, and conducting a critical review of the manuscript content, revising the clinical substance, and ensuring the draft conforms to case reporting standards. Co-author: Conducted direct clinical assessments in the field, observed family behavior, and collected laboratory and radiological investigation results from patients, analyzed the collected data, determined nursing diagnoses, and evaluated the effectiveness of ABC interventions on patient compliance. All authors have read, reviewed, and approved the final version of this manuscript for publication.

DATA AVAILABILITY

The datasets supporting the findings of this case report are not publicly available to protect patient confidentiality and privacy in accordance with ethical constraints. However, summarized and de-identified clinical data are available from the corresponding author upon reasonable request for review, subject to applicable patient data protection procedures. To protect patients, the raw data (e.g., original medical records) are not publicly available. The authors remain open to other researchers for verification upon reasonable request.

ACKNOWLEDGEMENTS

The author expresses his deepest gratitude and appreciation to the Head of the Garuda Bandung Community Health Center and all nursing staff who facilitated the licensing process and assisted with field coordination during the implementation of family nursing care. He also expresses his gratitude to the families and tuberculosis patients who actively participated in this nursing intervention until its completion.

LIST OF ABBREVIATIONS

ABC: Antecedents, Behavior, Consequences (Behavioral change model)

ARR: Acid Resistant Rod (Sputum examination method)

ATD: Anti Tuberculosis Drugs

BW: Body Weight

ESR: Erythrocyte Sedimentation Rate (ESR)

Hb: Hemoglobin.

BMI: Body Mass Index (Nutritional status parameter)

ESR: Erythrocyte Sedimentation Rate

MDR-TB: Multi-Drug-Resistant Tuberculosis (TB that is resistant to many types of drugs)

MRT: molecular rapid test (DNA-based diagnostic method)

MTB: Mycobacterium tuberculosis (The bacteria that causes tuberculosis)

PA: Postero-Anterior (Position where chest x-rays are taken)

Rif: Rifampicin (One of the main types of TB drugs)

TBC: Tuberculosis

FIGURE AND TABLE LEGENDS

Table & Variable No	Result	Note
Table 1. Patient Evaluation Before and After ABC Intervention	1. Significant improvement in adherence from low to high category. 2. Antecedents (reminders) and consequences (support) function effectively. 3. Medication adherence is directly correlated with bacterial clearance. 4. Improved nutritional status as a result of medication and nutritional adherence. 5. Adherence eliminates systemic symptoms of tuberculosis.	The risk of repeated treatment failure is very high if adherence behavior is not improved.
Table 2. ABC Approach Interventions	**Antecedents** (Trigger/Stimulus) 1. Creating a strong external cue to prevent "forgetting." 2. Removing environmental barriers before the behavior begins. **Behavior** 1. Changing passive actions to active ones. 2. Family presence ensures that the medication is actually swallowed, not just taken. **Consequences** (Impact/Reinforcement) 1. Providing a sense of accomplishment 2. Positive reinforcement increases the likelihood that adherence behavior will be repeated in the future.	Family Nursing Intervention with ABC approach arranged chronologically to ensure permanent behavioral changes
Table 3. Chronological Timeline of Pulmonary Tuberculosis Cases with the ABC Approach	1. The family has a structured medication schedule. 2. Medication compliance is 100% in the first month; coughing has decreased. 3. ARR smears have converted to negative (-); weight has increased by 6 kg; appetite has improved. 4. The patient remains compliant no doses have been missed. 5. The patient has been declared cured, and the family's health behavior has improved steadily.	The educational value of the change from "Drug Discontinued" status (2 years ago) to "Recovered" proves that technical medical intervention must be accompanied by modification of patient and family behavior.

REFERENCES

Barik AL, Indarwati R, Sulistiawati (2021). The role of social support on treatment adherence in tuberculosis patients: a systematic review. Nurse Health J Keperawatan. 10(2):136-148.

Cooper JO, Heron TE, Heward WL. (2020). Applied behavior analysis. 3rd ed. Hoboken (NJ): Pearson.

Davis RA, Leavitt HB, Singh A, et al. (2024), Examining interventions that aim to enhance tuberculosis treatment adherence in Southeast Asia: a systematic review and meta-analysis. Int J Tuberc Lung Dis; 28(1):48-63.

Dinas Kesehatan Provinsi Jawa Barat, (2023). Profil kesehatan: Situasi tuberkulosis di wilayah Jawa Barat. Kementerian Kesehatan Republik Indonesia.

Falah M, Sansuwito T, Dioso R III, et al. (2025). Enhancing self-care adherence in tuberculosis patients through family support: a systematic review. Int J Public Health Sci. 14(1).

International Council of Nurses. (2023). Family nursing and person-centred care. Geneva: International Council of Nurses.

Kementerian Kesehatan Republik Indonesia. (2020). Pedoman nasional pelayanan kedokteran tata laksana tuberkulosis. Kemenkes RI.

Kulkarni M, Golechha S, Raj R, et al. (2022). Predicting treatment adherence of tuberculosis patients at scale. arXiv. Available from: https://arxiv.org/abs/2211.02943

Lutfian, Azizah A, Wardika IJ, Wildana F, Maulana S, Wartakusumah R. (2025). The role of family support in medication adherence and quality of life among tuberculosis patients: a scoping review. Jpn J Nurs Sci. 22(1): e12629.

Miltenberger RG. (2023). Behavior modification: principles and procedures. 7th ed. Boston (MA): Cengage Learning.

Mulyadi, M., & Nursalam, N. (2021). Keperawatan keluarga dalam meningkatkan kepatuhan minum obat pasien tuberkulosis paru. Jurnal Keperawatan Indonesia, 24(2), 115-125.

Santosa A, Juniarti N, Pahria T, et al. (2025). Digital adherence technology to improve medication adherence in tuberculosis patients: a systematic review and meta-analysis of randomized controlled trials. NPJ Prim Care Respir Med.

Tim Pokja SDKI DPP PPNI. (2017). Standar Diagnosis Keperawatan Indonesia: Definisi dan Indikator Diagnostik (Edisi 1). Jakarta: DPP PPNI.

Tim Pokja SLKI DPP PPNI. (2019). Standar Luaran Keperawatan Indonesia: Definisi dan Kriteria Hasil Keperawatan (Edisi 1). Jakarta: DPP PPNI.

Tim Pokja SIKI DPP PPNI. (2018). Standar Intervensi Keperawatan Indonesia: Definisi dan Tindakan Keperawatan (Edisi 1). Jakarta: DPP PPNI

World Health Organization. (2023). WHO consolidated guidelines on tuberculosis. Geneva: World Health Organization.

World Health Organization. (2024). Global tuberculosis report 2024. Geneva: World Health Organization.

Wright LM, Leahey M. (2021). Nurses and Families: A Guide to Family Assessment and Intervention. 7th ed. Philadelphia: F.A. Davis.

Zulfitri, R., & Jannah, M. (2022). Efektivitas intervensi perilaku terhadap keberhasilan pengobatan pasien tuberkulosis: Tinjauan sistematis. Jurnal Ilmu Keperawatan, 10(1), 45-56

Optimal Journal Clinical Case Report, Volume 01, No.01,July 2026, (Page. 137-144)
ISSN 3164-872X

DIABETIC FOOT EXERCISE FOR BLOOD GLUCOSE INSTABILITY IN TWO OLDER ADULTS WITH TYPE 2 DIABETES MELLITUS: A CLINICAL CASE REPORT

Nuniek Tri Wahyuni[a*], Popi Ovtapiana[b], Elis Nurul Amalia[c], Sumarni[d]

[a,b,c,d]Cirebon College of Health Sciences, West Java, Indonesia

**Corresponding author: nuniek.triwahyuni@yahoo.com*

Abstract

Background: Older adults with type 2 diabetes mellitus are vulnerable to blood glucose instability and lower-extremity complaints, including stiffness, numbness, and tingling. Diabetic foot exercise is a simple non-pharmacological nursing intervention that may support peripheral circulation, muscle activity, and glucose utilization. Objective: This clinical case report aimed to describe the implementation, feasibility, short-term clinical response, and outcome variation of diabetic foot exercise as an adjunctive nursing intervention in two older adults with type 2 diabetes mellitus in a nursing-home setting. **Case Summary:** This report describes two anonymized male residents of a nursing home in Cirebon, Indonesia, who had type 2 diabetes mellitus and the nursing diagnosis of unstable blood glucose level related to insulin resistance. Case 1 was a 69-year-old man with recurrent nocturia, fatigue, difficulty walking with a walker, foot stiffness and numbness, and random blood glucose of 421 mg/dL. Case 2 was a 73-year-old man with foot stiffness and tingling, nocturia, fatigue, hunger, anxiety regarding blood glucose elevation, hypertension history, and random blood glucose of 205 mg/dL. **Investigation and Diagnosis:** Both cases were assessed through nursing interview, physical examination, vital signs, medication review, and serial random blood glucose monitoring. Management: Diabetic foot exercise was implemented once daily for three consecutive days, 10-15 minutes per session, after routine pharmacological therapy. The intervention was combined with monitoring, education regarding diet and exercise adherence, and collaboration for antidiabetic medication. **Outcome:** In Case 1, random blood glucose decreased from 421 to 206 mg/dL; symptoms of stiffness and numbness persisted and the nursing problem was not fully resolved. In Case 2, random blood glucose decreased from 205 to 105 mg/dL and foot stiffness/tingling improved; the nursing problem was considered resolved. **Conclusion:** Diabetic foot exercise was feasible as an adjunctive nursing intervention in this nursing-home context; however, the observed short-term improvements should be interpreted cautiously because both patients continued pharmacological therapy and other nursing care during the observation period.

Keywords: blood glucose instability; case report; diabetic foot exercise; older adult; type 2 diabetes mellitus

INTRODUCTION

Diabetes mellitus is a chronic metabolic disorder characterized by hyperglycemia due to impaired insulin secretion, insulin action, or both (World Health Organization, 2024). In older adults, physiological changes, reduced physical activity, comorbid illness, and inconsistent dietary patterns can increase vulnerability to unstable blood glucose levels (Federation, 2025). In addition to the risk of acute and chronic complications, older adults with diabetes frequently report lower-extremity symptoms such as stiffness, numbness, tingling, weakness, and impaired mobility (Kementerian Kesehatan Republik Indonesia, 2024). These symptoms can reduce independence and increase anxiety regarding disease progression (Antoro, 2023).

Nursing management for diabetes requires pharmacological collaboration, blood glucose monitoring, education, and feasible self-care interventions (Antoro, 2023). Diabetic foot exercise is a structured sequence of ankle, toe, and lower-leg movements performed in a sitting position (Kementerian Kesehatan Republik

Indonesia, 2024). It is intended to strengthen small foot muscles, improve joint flexibility, promote peripheral circulation, reduce lower-extremity discomfort, and support glucose utilization by active muscles (Kementerian Kesehatan Republik Indonesia, 2024).

Although previous applied studies have reported blood glucose reduction after diabetic foot exercise, most reports have focused on short-term implementation and have provided limited discussion of geriatric characteristics, functional status, mobility limitations, and contextual nursing-home factors that may influence patient outcomes. In older adults living in residential care facilities, the feasibility and response to diabetic foot exercise may vary according to baseline glucose level, mobility, lower-extremity symptoms, medication regimen, diet, and ability to perform the exercise movements. This creates a clinical gap in understanding how diabetic foot exercise can be adapted and interpreted as part of gerontological nursing care rather than as a stand-alone intervention.

The two cases were selected because both patients lived in the same nursing-home setting and had type 2 diabetes mellitus with unstable blood glucose levels, but they differed in baseline random blood glucose, mobility status, lower-extremity complaints, medication regimen, and symptom response. The novelty of this report lies in describing the clinical reasoning and practical nursing lessons from two comparable but clinically different older adults. This clinical case report aimed to describe the implementation, feasibility, short-term clinical response, and outcome variation of diabetic foot exercise as an adjunctive nursing intervention in two older adults with type 2 diabetes mellitus in a nursing-home setting.

CASE PRESENTATION

The case data were anonymized. No patient name, medical record number, exact date of birth, full address, or facial image is reported.

Case 1

A 69-year-old male nursing-home resident with physician-diagnosed type 2 diabetes mellitus for approximately two years complained that his blood glucose often increased during routine medical visits. He reported nocturia 3-5 times per night, sleep disturbance, fatigue, and bilateral foot stiffness and numbness that limited prolonged activity. He required a walker for ambulation. He denied a family history of diabetes and reported poor dietary control in the past. Current medications documented in the case record included acarbose 100 mg three times daily with meals, metformin three times daily after meals, and insulin therapy documented as insulin degludec 70% before meals. Initial vital signs were blood pressure 122/61 mmHg, pulse 87 beats/minute, respiratory rate 20 breaths/minute, temperature 36.6°C, and random blood glucose 421 mg/dL.

Case 2

A 73-year-old male nursing-home resident with physician-diagnosed type 2 diabetes mellitus for approximately one year reported elevated blood glucose during routine physician visits, bilateral foot stiffness and tingling, easy fatigue, increased hunger, and nocturia more than three times per night. He could walk without an assistive device for approximately 30 minutes. He had a five-year history of hypertension and no known family history of diabetes. He reported limited knowledge regarding management of elevated blood glucose and felt anxious when blood glucose increased. Current medications included glimepiride 2 mg once daily in the morning and amlodipine 5 mg once daily for hypertension. Initial vital signs were blood pressure 138/82 mmHg, pulse 100 beats/minute, respiratory rate 20 breaths/minute, temperature 36.6°C, and random blood glucose 205 mg/dL.

CLINICAL REASONING

The main clinical problem in both cases was unstable blood glucose level related to insulin resistance, supported by prior physician diagnosis of type 2 diabetes mellitus, elevated random blood glucose, nocturia, fatigue, hunger, and lower-extremity complaints. The nursing assessment also considered mobility limitation, possible peripheral neuropathic symptoms, anxiety, knowledge deficit, and possible non-adherence to dietary recommendations. Hypoglycemia was not supported because neither patient reported sweating, tremor, dizziness, or altered consciousness during assessment, and measured blood glucose values were elevated or within the monitored post-intervention range. Acute infection or foot ulcer was not identified in the available case data because no fever, wound, or local inflammatory signs were documented. The final nursing focus was therefore blood glucose instability with supportive management of lower-extremity symptoms and self-care education (Persatuan Perawat Nasional Indonesia, 2017).

DIAGNOSTIC ASSESSMENT

Diagnostic assessment was based on interview, physical examination, vital signs, medication review, and random capillary blood glucose monitoring. Baseline random blood glucose was measured before the first diabetic foot exercise implementation. During the three intervention days, random blood glucose was documented after routine medication and after the diabetic foot exercise session. The exact timing in relation to meals, including whether the measurement was preprandial or postprandial and the number of hours after eating, was not consistently recorded in the source case study. Therefore, the glucose values are interpreted as short-term monitoring data rather than standardized measures of glycemic control. No HbA1c, fasting blood glucose, two-hour postprandial glucose, renal function test, lipid profile, neurological examination score, ankle-brachial index, or imaging result was available in the source case study; this limitation is considered when interpreting outcomes.

Table 1. Summary of relevant baseline diagnostic findings

Variable	Case 1	Case 2	Clinical interpretation
Age/sex	69-year-old male	73-year-old male	Older adults with type 2 diabetes mellitus
Main complaints	High blood glucose, nocturia 3-5 times/night, fatigue, foot stiffness and numbness	High blood glucose, nocturia >3 times/night, fatigue, hunger, foot stiffness and tingling, anxiety	Symptoms consistent with blood glucose instability and lower-extremity discomfort
Mobility	Uses walker; limited activity due to stiffness/numbness	Walks without assistive device for approximately 30 minutes	Baseline mobility differed between cases
Blood pressure	122/61 mmHg	138/82 mmHg	Case 2 had a history of hypertension
Pulse/respiration/temperature	87/min; 20/min; 36.6℃	100/min; 20/min; 36.6°C	No fever documented
Random blood glucose before intervention	421 mg/dL	205 mg/dL	Both elevated at baseline; Case 1 more severe
Medication documented	Acarbose, metformin, insulin therapy	Glimepiride; amlodipine for hypertension	Pharmacological therapy continued during nursing intervention
Timing of glucose measurement	Baseline value before exercise implementation; follow-up values after medication and exercise session; meal timing not consistently documented	Baseline value before exercise implementation; follow-up values after medication and exercise session; meal timing not consistently documented	RBG was used for short-term monitoring only and was not equivalent to standardized fasting, postprandial, or HbA1c-based evaluation

THERAPEUTIC INTERVENTION

Both patients received diabetic foot exercise as an adjunct to routine pharmacological therapy. The exercise was delivered once daily for three consecutive days, 10-15 minutes per session, after medication administration. The three-day observation period followed the available educational case-study schedule and was consistent with several applied case-based reports that implemented diabetic foot exercise over three consecutive days. This duration was intended to evaluate immediate feasibility, safety, patient participation, and short-term monitoring response; it was not intended to determine sustained glycemic control or long-term improvement of lower-extremity symptoms. The nursing intervention included identifying possible causes of hyperglycemia, monitoring blood glucose, monitoring signs and symptoms of hyperglycemia, educating patients about diet and exercise adherence, and teaching the diabetic foot exercise sequence. The exercise was performed in a sitting position with both feet touching the floor. Movements included toe extension and flexion, alternating heel and forefoot lifting, ankle rotation with toes or heels raised, knee extension with toe movement, dorsiflexion toward the face, bilateral leg extension, ankle forward-backward movement, circular ankle movement as if writing numbers in the air, and paper/cloth manipulation using the toes where feasible. The intervention was stopped or modified if pain or excessive fatigue occurred; no adverse event was documented (Persatuan Perawat Nasional Indonesia, 2018).

THERAPEUTIC SEQUENCE

The sequence was consistent for both cases: baseline assessment, confirmation of readiness and comfort, implementation of diabetic foot exercise, post-intervention symptom inquiry, random blood glucose monitoring, and planning for independent continuation. Pharmacological therapy was not changed by the researcher; medication use was continued according to the physician's plan. The main difference between cases was performance quality: Case 1 continued to have stiffness and numbness that limited movement, whereas Case 2 showed progressive improvement in movement and comfort.

CASE TIMELINE

Table 2. Clinical case timeline

Time	Clinical event	Investigation	Treatment	Outcome
Day 0 / baseline	Case 1 assessed with nocturia, fatigue, foot stiffness/numbness, and walker use. Case 2 assessed with nocturia, fatigue, hunger, foot stiffness/tingling, and anxiety.	Baseline RBG measured before the first exercise implementation: Case 1 421 mg/dL; Case 2 205 mg/dL. Exact timing relative to meals was not documented.	Medication review, nursing assessment, and education plan.	Nursing diagnosis: unstable blood glucose level related to insulin resistance.
Day 1	First diabetic foot exercise session, 10-15 minutes.	RBG documented after routine medication and exercise session: Case 1 348 mg/dL; Case 2 132 mg/dL. Exact postprandial interval was not documented.	Exercise after routine medication; symptom monitoring.	Both cases reported persistent foot symptoms; glucose decreased in both cases.
Day 2	Second exercise session.	RBG documented after routine medication and exercise session: Case 1 306 mg/dL; Case 2 176 mg/dL. Exact postprandial interval was not documented.	Exercise repeated; dietary education reinforced.	Case 1 still stiff/numb. Case 2 glucose increased from day 1; this was considered possibly related to reported dietary variation in case notes, but no structured dietary intake assessment was conducted.

Time	Clinical event	Investigation	Treatment	Outcome
Day 3	Third exercise session and final short-term observation.	RBG documented after routine medication and exercise session: Case 1 206 mg/dL; Case 2 105 mg/dL. Exact postprandial interval was not documented.	Exercise repeated; independent practice encouraged.	Case 1 improved glucose but problem not fully resolved due to persistent symptoms. Case 2 symptoms improved and problem was considered resolved. Three-day observation was used to assess short-term feasibility only.
Follow-up plan	Continue self-care in the nursing home.	Ongoing glucose and symptom monitoring recommended, ideally with standardized timing and additional parameters when available.	Diabetic foot exercise 10-15 minutes, at least 3 times per week, with diet adherence and routine medication.	Planned maintenance of glucose control and foot comfort.

OUTCOME AND FOLLOW-UP

In Case 1, random blood glucose decreased from 421 mg/dL at baseline to 348 mg/dL on day 1, 306 mg/dL on day 2, and 206 mg/dL on day 3. The total reduction from baseline to day 3 was 215 mg/dL, and the average day-to-day reduction documented in the case study was 71.7 mg/dL. However, the patient continued to report foot stiffness and numbness, and the exercise movements were not optimal. The nursing problem was therefore not fully resolved. In Case 2, random blood glucose decreased from 205 mg/dL at baseline to 132 mg/dL on day 1, increased to 176 mg/dL on day 2, and decreased to 105 mg/dL on day 3. The total reduction from baseline to day 3 was 100 mg/dL, and the average day-to-day reduction documented in the case study was 33.3 mg/dL. The patient reported improved comfort and reduced stiffness/tingling, and the nursing problem was considered resolved. Because the RBG measurements were not standardized according to meal timing and both patients continued pharmacological therapy, these changes should be interpreted as short-term clinical observations rather than evidence of a direct causal effect of diabetic foot exercise. Both patients were advised to continue diabetic foot exercise independently for 10-15 minutes at least three times per week, while maintaining diet adherence and routine medical therapy.

DISCUSSION

This two-case report suggests that diabetic foot exercise was feasible in a nursing-home setting and could be integrated with routine monitoring, education, and pharmacological collaboration. Both cases showed a decrease in random blood glucose after three consecutive days of integrated nursing management that included diabetic foot exercise. However, the clinical interpretation should be cautious because the intervention was implemented alongside ongoing antidiabetic medication, dietary education, routine nursing monitoring, and without a control condition. Therefore, the observed changes should be interpreted as temporally associated with the overall care process rather than as a causal effect of diabetic foot exercise alone.

The findings of this case report are consistent with previous applied studies and case-based reports showing that diabetic foot exercise may help reduce blood glucose levels in patients with type 2 diabetes mellitus. (Mustofa, E. E., Purwono, J., 2022) reported that diabetic foot exercise performed for three consecutive days with a duration of 10-15 minutes per session reduced blood glucose from 381 mg/dL to 263 mg/dL. Similarly, Indriyani et al. (2023) found that diabetic foot exercise performed for four consecutive days reduced blood glucose from 266 mg/dL to 130 mg/Dl (Indriyani, E., & Dewi, 2023). Pratiwi et al. (2021) also reported a reduction in blood glucose from 395 mg/dL to 185 mg/dL after diabetic foot exercise was implemented for three consecutive days (Pratiwi, D., Nurhayati, S., & Purnomo, 2021). These previous findings provide a relevant comparison for the present cases, in which Case 1 showed a reduction from 421 mg/dL to 206 mg/dL

and Case 2 showed a reduction from 205 mg/dL to 105 mg/dL after three days of observation. Nevertheless, these comparisons should be interpreted carefully because study designs, baseline glucose levels, medications, dietary patterns, and timing of glucose measurement may differ across reports.

The possible mechanism underlying the observed short-term improvements is that lower-extremity muscle activity during diabetic foot exercise may increase glucose uptake by skeletal muscles, improve peripheral circulation, maintain joint flexibility, and reduce lower-extremity discomfort. The movements involved in diabetic foot exercise, such as toe flexion and extension, ankle rotation, heel and forefoot lifting, and leg extension, stimulate repeated muscle contraction. This process may support glucose utilization when combined with medication adherence, dietary regulation, and routine monitoring. However, the present report cannot separate the specific contribution of exercise from medication effects, meal variability, baseline glucose differences, spontaneous fluctuation of RBG, or other daily activities.

Outcome variation was clinically important in this report. Case 1 had a much higher baseline random blood glucose level and greater mobility limitation, as shown by walker use and persistent foot stiffness and numbness. These geriatric and functional factors may have reduced exercise quality and contributed to incomplete nursing problem resolution despite substantial glucose reduction. In contrast, Case 2 had a lower baseline blood glucose level, better mobility, and progressive improvement in foot stiffness and tingling. The increase in blood glucose on the second day in Case 2 was described in the case notes as possibly related to dietary variation; however, no structured dietary intake assessment, food record, or calorie/carbohydrate analysis was conducted. Therefore, dietary influence should be interpreted as a possible contributing factor rather than a confirmed cause. This issue supports the importance of integrating family or caregiver support and nursing roles in improving adherence to blood glucose control (Antoro, 2023).

These observations indicate that diabetic foot exercise should not be viewed as a stand-alone therapy. It should be integrated into a comprehensive nursing care plan that includes blood glucose monitoring, medication adherence, dietary education, exercise education, foot care, and individualized assessment of mobility and neuropathic symptoms. For older adults in residential care settings, diabetic foot exercise has practical value because it is simple, low-cost, can be performed in a sitting position, and can be adjusted to the patient's functional capacity. Nevertheless, future case reports should include standardized foot assessment, HbA1c measurement, fasting or postprandial glucose measurement with clear timing, dietary intake records, medication adherence evaluation, and longer follow-up to strengthen clinical interpretation.

DIAGNOSTIC CHALLENGE

The main diagnostic challenge was the limited objective assessment. Blood glucose was measured using random capillary values rather than fasting glucose, two-hour postprandial glucose, or HbA1c. In addition, the timing of RBG measurement in relation to meals was not consistently documented. The lower-extremity symptoms were compatible with diabetic neuropathic complaints, but no standardized neuropathy score, monofilament test, vibration test, or vascular assessment was documented. Therefore, the report focuses on nursing assessment and short-term response rather than definitive diagnostic classification of neuropathy or vascular disease. Transparent reporting of these limitations is important in case reports to avoid overinterpretation (Gagnier, J. J, 2013).

LIMITATION

This report has several limitations. It included only two cases, had a three-day intervention period, used random blood glucose monitoring, and did not include long-term follow-up. The three-day period was sufficient only to describe feasibility and immediate clinical observation, not to establish sustained glycemic control or long-term improvement in lower-extremity symptoms. The exact timing of RBG measurement relative to meals was not consistently documented. Dietary intake, medication adherence, and physical activity outside the intervention were not controlled or measured using standardized tools. Because both patients

continued pharmacological therapy and received nursing education and monitoring, the observed glucose reductions cannot be attributed solely to diabetic foot exercise.

LEARNING POINTS

1. Diabetic foot exercise can be taught as a simple adjunctive nursing intervention for older adults with type 2 diabetes mellitus and unstable blood glucose levels in residential care settings.
2. Baseline glucose level, mobility limitation, lower-extremity symptoms, medication regimen, and functional ability may influence short-term outcomes.
3. Random blood glucose monitoring helps nurses evaluate short-term response, but the timing of measurement in relation to meals and medication must be clearly documented.
4. Diabetic foot exercise should be integrated with medication adherence, dietary education, foot care, and individualized assessment rather than used as a stand-alone therapy.
5. Future reports should include standardized foot assessment, HbA1c, clearly timed fasting or postprandial glucose measurements, dietary records, and longer follow-up.

CONCLUSION

Diabetic foot exercise was feasible as an adjunctive nursing intervention for two older adults with type 2 diabetes mellitus in a nursing-home setting. During the three-day observation period, both cases showed improved short-term random blood glucose values, while lower-extremity symptom response differed between patients. The first case showed substantial glucose reduction but persistent foot symptoms and incomplete problem resolution, whereas the second case showed improved glucose values and lower-extremity comfort. Because both patients continued antidiabetic medication and received other nursing interventions, the glucose changes cannot be attributed solely to diabetic foot exercise. This case report highlights the importance of individualized gerontological nursing care, careful documentation of glucose measurement timing, and integration of exercise with medication adherence, dietary education, and ongoing monitoring.

ETHICAL CLEARANCE

According to institutional confirmation from Sekolah Tinggi Ilmu Kesehatan Cirebon, formal ethical clearance was not required for this anonymized clinical case report because it was prepared from a completed educational case study, involved a limited number of cases, did not include experimental procedures beyond routine nursing care documentation, and did not present any identifiable patient information. The case data were reported anonymously, without patient names, medical record numbers, full addresses, exact dates of birth, facial images, or other personal identifiers. Written informed consent for publication was obtained from the patients, and confidentiality was maintained throughout the reporting process. If required by the journal, an institutional exemption letter can be provided as supporting documentation.

PATIENT CONSENT

Written informed consent for publication of this anonymized clinical case report was obtained from the patients. The manuscript does not include patient names, medical record numbers, full addresses, exact dates of birth, facial images, or other identifiable personal information. Patient confidentiality was maintained throughout the reporting and publication process.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest related to the writing and publication of this article.

FUNDING SOURCE

This article received no specific funding.

AUTHORS' CONTRIBUTION

ENA contributed to data collection and initial case documentation. NTW contributed to conceptualization, nursing analysis, supervision, and manuscript revision. PO and S contributed to supervision, clinical analysis, and manuscript revision. All authors reviewed and approved the final version before submission.

DATA AVAILABILITY

Supporting data are not publicly available because they contain confidential patient information. De-identified data may be available from the corresponding author upon reasonable request and subject to institutional permission.

ACKNOWLEDGEMENTS

The authors would like to thank Panti Wreda Kasih Kota Cirebon and STIKes Cirebon for supporting the case study.

LIST OF ABBREVIATIONS

BP = blood pressure; DM = diabetes mellitus; HbA1c = glycated hemoglobin; RBG = random blood glucose; SDKI = Standar Diagnosis Keperawatan Indonesia; SIKI = Standar Intervensi Keperawatan Indonesia; SLKI = Standar Luaran Keperawatan Indonesia; T2DM = type 2 diabetes mellitus.

FIGURE AND TABLE LEGENDS

Table 1. Summary of relevant baseline diagnostic findings. Table 2. Clinical case timeline. No clinical image or figure is included in this manuscript.

REFERENCES

Antoro, et all. (2023). Dukungan Keluarga Dan Peran Perawat Terhadap Kepatuhan Kontrol Kadar Gula Darah. In Media Husada Journal Of Nursing Science (Vol. 4, Number 2). https://doi.org/10.33475/mhjns.v4i2.128

Federation, I. D. (2025). Diabetes Fact and Figures. Https://Idf.Org/about-Diabetes/Diabetes_facts-Figures/.

Gagnier, J. J, et all. (2013). The CARE guidelines: Consensus-based clinical case reporting guideline development. Journal of Medical Case Reports, 7, 223.

Indriyani, E., & Dewi, T. K. (2023). Penerapan Senam Kaki Diabetes Melitus Terhadap Kadar Glukosa Darah Pada Penderita Diabetes Melitus Di Puskesmas Yosomulyo. In Jurnal Cendikia Muda (Vol. 3, Number 2). https://jurnal.akperdharmawacana.ac.id/index.php/JWC/article/view/466/0

Kementerian Kesehatan Republik Indonesia. (2024). Senam kaki diabetik untuk diabetes mellitus. In https://keslan.kemkes.go.id/view_artikel/3869/senam_kaki-diabetik-untuk-diabetes-melitu (Vol. 53, Number 1). http://publications.lib.chalmers.se/records/fulltext/245180/245180.pdf%0Ahttps://hdl.handle.net/20.500.12380/245180%0Ahttp://dx.doi.org/10.1016/j.jsames.2011.03.003%0Ahttps://doi.org/10.1016/j.gr.2017.08.001%0Ahttp://dx.doi.org/10.1016/j.precamres.2014.12

Mustofa, E. E., Purwono, J., & L. (2022). Penerapan senam kaki diabetes pada pasien dengan diabetes mellitus type 2. In Jurnal Cendikia Muda (Vol. 2, Number 1).

Persatuan Perawat Nasional Indonesia. (2017). Standar Diagnosis Keperawatan Indonesia. Dewan Pengurus Pusat Persatuan Perawat Nasional Indonesia.

Pratiwi, D., Nurhayati, S., & Purnomo, J. (2021). Penerapan senam kaki diabetes. Jurnal Cendekia Muda, 1(4), 512–522. https://www.jurnal.akperdharmawacana.ac.id/index.php/JWC/article/view/245

World Health Organization. (2024). Diabetes. Https://Www.Who.Int/News-Room/Fact-Sheets/Detail/Diabetes. https://www.who.int/news-room/fact-sheets/detail/diabetes

Optimal Journal Clinical Case Report, Volume 01, No.01,July 2026, (Page. 145-181)
ISSN 3164-872X

CLINICAL CASE REPORT ARTICLE TITLE: IMPLEMENTATION OF OCCUPATIONAL HEALTH NURSES IN NURSING MANAGEMENT AT SITE OH CLINICAL INDONESIAN COMPANY

Devanda Faiqh Albyn[a*], Satiman[b], Yuli Nurdiansyah[c], Dhiya Auliya[d], Muhammad Miftah[e]

[a]Healh and Bussiness Institute Annisa, Bogor, Indonesian

[b]Academy of Occupational Health Nurses Indonesian, Papua, Indonesian

[c]Ministry of Health Kuwait, Kuwait

[d]Pertamina Jaya Hospital Jakarta, Indonesian

[e]Universitas Mitra Indonesia, Lampung, Indonesia

**Corresponding author: dfaiqhalbyn@gmail.com*

Abstract

Background: A clinical case report on this topic serves to document how Occupational Health Nurses (OHNs) bridge the gap between reactive medical treatment and proactive safety systems in high-risk Indonesian industries (e.g., mining, oil, and gas). It highlights the evolution of nurses from basic clinic assistants to strategic leaders in worker health. Case **Summary**: This article explores the integration of Occupational Health Nurses (OHNs) in managing employee health and safety at an Indonesian company's clinic. It highlights how OHNs systematically conduct risk assessments, enforce workplace safety protocols, and deliver preventative care to mitigate occupational hazards and improve overall employee wellness. **Investigation and Diagnosis**: Occupational Health Nurses (OHNs) in Indonesian companies execute clinical investigations and diagnoses by integrating the Nursing Process with Occupational Safety and Health (OSH) Management Systems. This involves hazard identification, workplace risk assessments, and targeted health surveillance to manage employee well-being and maintain workforce fitness. **Management**: Implementing Occupational Health Nurses (OHNs) in an Indonesian clinical setting involves integrating clinical care with OHS (Occupational Health and Safety) principles. This management process emphasizes direct patient care, hazard surveillance, and preventive health strategies to minimize workplace accidents and improve employee well-being. **Outcome**: Implementation of Occupational Health Nurses (OHNs) in clinical site settings significantly improves workplace health outcomes. Benefits include reduced occupational hazards, enhanced employee compliance with safety protocols, and lower work-related injury rates. It also optimizes case management and promotes a safer, more productive industrial environment. Conclusion: The conclusion of this case report highlights that integrating Occupational Health Nurses (OHNs) into management at the Indonesian site is vital. It improves hazard monitoring, ensures rapid emergency responses, and significantly reduces workplace injuries by prioritizing preventive care and strict safety compliance.

The abstract should be structured, concise, and written in a maximum of 350 words. Do not include patient-identifying information.

Keywords: Case Report OHN, OHN Implementation, Indonesian OHN Practice

INTRODUCTION

Evidence-Based Practice in Nursing (EBPN) dalam ranah Occupational Health Nursing (OHN) adalah integrasi sistematis antara bukti ilmiah terkini, keahlian klinis perawat, dan preferensi pekerja. Pendekatan ini memastikan intervensi K3 (Keselamatan dan Kesehatan Kerja) efektif, efisien, dan mendukung program pencegahan kecelakaan di tempat kerja. research gap (kesenjangan antara teori dan praktik) serta novelty (kebaruan) terhadap guideline Penyakit Akibat Kerja (PAK) atau Occupational Health Nursing (OHN) mengharuskan Anda membedah kelemahan pedoman saat ini. Fokus pada ketidaksesuaian antara pedoman global dan konteks lokal yang dinamis. Berbeda dengan guideline OHN standar yang bersifat administratif dan kuratif, penelitian ini mengusulkan model intervensi promotif berbasis lingkungan kerja dengan integrasi telemedis yang telah disesuaikan dengan ketersediaan sumber daya dan regulasi BPJS di Indonesia. Kebaruan penelitian yakni model implementasi evidence-based occupational health yang secara spesifik disesuaikan dengan regulasi Indonesia, seperti UU Ketenagakerjaan serta integrasi program promotif-preventif BPJS Ketenagakerjaan. Data Badan Penyelenggara Jaminan Sosial (BPJS) Ketenagakerjaan menyebutkan sebanyak 370.747 kasus kecelakaan kerja di Indonesia dan 725 kasus PAK. Untuk PAK terjadi akibat pekerjaan dan/atau lingkungan tertuang dalam Peraturan Menteri Kesehatan (Permenkes) Nomor 11 Tahun 2022. Angka Kecelakaan Kerja Tembus 400 Ribu Kasus, Data dari Kementerian Ketenagakerjaan RI mencatat sepanjang tahun 2024 jumlah kecelakaan kerja yang telah terlapor secara nasional menembus angka 462.241 kasus, yang terdiri atas 91,65 persen dari pekerja formal, 7,43 persen dari pekerja informal, dan 0,92 persen dari pekerja jasa konstruksi. Tingginya angka tersebut menunjukkan bahwa upaya perlindungan pekerja belum sepenuhnya optimal. Sehingga perlu adanya penguatan sistem keselamatan kerja secara berkelanjutan dan menyeluruh. Secara global, penyakit akibat kerja menyebabkan sekitar 2 juta kematian setiap tahun. Pajanan di tempat kerja berkontribusi signifikan terhadap penyakit paru kronis, kanker, penyakit kardiovaskular, dan berbagai gangguan kesehatan lainnya. Diperkirakan sekitar 5–7% kematian akibat kanker di dunia berkaitan dengan pajanan di tempat kerja. Angka ini menunjukkan bahwa penyakit akibat kerja merupakan masalah kesehatan masyarakat berskala besar. Berbagai tenaga profesional Keselamatan dan Kesehatan Kerja (K3) juga sudah dipekerjakan perusahaan dan industri di 49 negara antara lain occupational health physicians, occupational health nurses, occupational hygienists, safety engineers, ergonomists/physiotherapists, dan psychologists (International Labour Organization/ILO, 2018 dan Devanda, 2022).

Occupational Health Nursing (OHN) adalah cabang khusus keperawatan yang berfokus pada pencegahan cedera, penyakit, dan promosi kesehatan di lingkungan kerja. Profesi ini menggabungkan keahlian klinis dengan prinsip-prinsip bisnis, manajemen, dan hukum untuk memastikan tenaga kerja tetap sehat, produktif, dan aman dari bahaya okupasional. Menurut American Association of Occupational Health Nurses (AAOHN), OHN adalah perawat teregistrasi (RN) yang secara mandiri menerapkan keahlian perawatannya untuk mengamati dan menilai kesehatan pekerja terkait pekerjaan serta risikonya. The American Board for Occupational Health Nurses (ABOHN) menekankan pada aspek kompetensi dan sertifikasi. Mereka mendefinisikan OHN sebagai tenaga profesional yang telah mendapatkan kredensial spesifik untuk memberikan layanan kesehatan komprehensif kepada pekerja dan komunitas perusahaan. Sertifikasi dari ABOHN (seperti COHN atau COHN-S) membuktikan bahwa perawat memiliki standar keahlian tertinggi dalam bidang penanganan trauma akut, manajemen penyakit kronis, toksikologi, hingga ergonomi. Profesi OHN dan paramedis perusahaan bisa menjadi terobosan atau pengoptimalan terhadap pendistribusian SDM perawat di Indonesia. Jadi, ini akan dapat memeratakan di berbagai sektor pelayanan kesehatan. Banyak manfaat yang didapat berprofesi sebagai OHN seperti upah yang memadai, lingkungan kerja yang bervariatif seperti Industri Formal :pertambangan, minyak dan gas (migas), agri-forestry (perkebunan/kehutanan), konstruksi-manufaktur, kepariwisataan, serta transportasi,etc. Optimasi peran Occupational Health Nurse (OHN) atau Perawat Kesehatan Kerja sangat penting untuk menurunkan angka kecelakaan, menekan biaya perawatan, dan meningkatkan produktivitas. Optimalisasi dicapai dengan memperkuat fungsi promotif, preventif, serta deteksi dini penyakit fisik maupun mental, menjadikan OHN bukan sekadar tenaga kuratif biasa. Implementasi Evidence-Based Practice in Nursing (EBPN) dalam ranah Occupational Health Nursing (OHN) atau Keperawatan

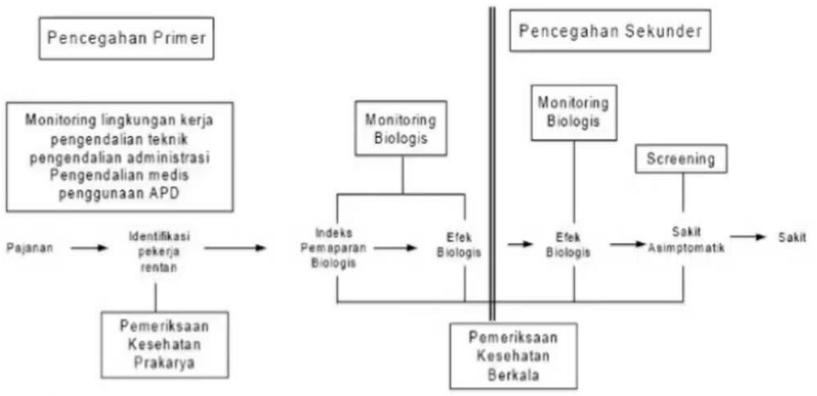
Kesehatan Kerja di Indonesia saat ini masih terbilang rendah. Meskipun perawat memiliki persepsi positif mengenai pentingnya EBPN untuk pedoman klinis, penerapannya di lapangan terkendala oleh beberapa hambatan. Tantangan utama yang dihadapi meliputi:Keterbatasan Waktu & Beban Kerja: Tingginya rasio pekerja yang harus ditangani di lingkungan industri membatasi waktu perawat untuk membaca dan menganalisis literatur ilmiah.Akses & Keterampilan: Terbatasnya akses ke basis data jurnal internasional serta kendala bahasa Inggris dan kemampuan critical appraisal (penilaian kritis) terhadap hasil penelitian.Dukungan Manajemen: Minimnya fasilitas pendukung dan dukungan institusi/manajemen perusahaan terhadap inovasi berbasis bukti.Secara legal, penerapan praktik berbasis bukti ilmiah ini sebenarnya sudah diamanatkan dalam Undang-Undang Keperawatan Nomor 38 Tahun 2014 Pasal 2 huruf b, yang menyatakan bahwa praktik keperawatan harus berasaskan nilai ilmiah. Berdasaarkan penjelasan diatas betapa krusialnya peran OHN dalam implementasi SMK3 di sebuah perusahaan, dalam naskah ini akan dijelaskan bagaimana konsep case report yang aplikatif guna bisa di implementasikan di seluruh sektor industri indonesia berdasarkan evidance base practice para penulis yang berkolaborasi praktisi dengan akademisi serta lintas generasi agar konsep case report ini bisa di bakukan dan berdampak sebagai rujukan implementasi praktik OHN di sektor industri formal Indonesia.

CASE PRESENTATION

Dalam penyusunan case report OHN ini di inisiasiasi oleh tim APPOKI (Akademi Praktisi Perawat Okupasi Indonesia) yang nantinya akan menjadi template Baku yang di gunakan dan di implementasikan dalam pelayanank kesehatan kerja bagi perawat perusahaan diberbagai sektor. Sebagai dasar pembakuan naskah ini karna belum adanya pedoman maupun template pengerjaan pelaporan OHN di Indonesia, tim penyusun dalam naskah ini terdiri dari praktisi dan akademisi OHN baik dalam dan luar negri hingga multisektoral serta lintas generasi. Terkait laporan klinis kali ini akan diajukan 7 contoh pasien dari berbagai departemen di suatu industri (konstruksi, pabrik, agri, transportasi, pertambangan, migas onshore, migas offshore. Berikut data kajian laporan kasus yang dibuat OHN yang kami susun:

- Data Umum : Tanggal Laporan, Nomor Induk Kependudukan, Nomor Induk Karyawan, Nama Perusahaan, Unit Kerja (Saat ini/Riwayat Mutasi)
- Pengkajian : N/FU (New/Follow Up), DS/DO (Data Subjektif/ Data Objektif), WR/NWR (Non or Work-Related)
- Pemeriksaan Kesehatan Kerja & Riwayat: OHR (Ocupational Health Record) ; MCU, FFT, DCU, RTW
- Hasil Pemeriksaan : Dx (dIagnosis), Dx Medis, ICD11, Dx Keperawatan, Risiko PAK/Risk OH Desease
- OHN Responsibility : HRA (Health Risk Assesment), Clinical Care (4 Pilar) +MERP, HS (Health Surveilance), Complaince & Kebijakan, Wellness & Edukasi
- Health Claim : BPJS Kesehatan, BPJS Ketenagakerjaan, Asuransi Kesehatan

CLINICAL REASONING



Sumber: Jeyaratnam J, Koh Dprevention of occupational diseases in Jeyaratnam J, Koh D (eds), Textbook of occupational medicine in practise Singapore; world scientific; 1996: 420

Gambar 1: Prinsip Dasar pelayanan Kesehatan Pekerja

Diatas merupakan alur pelayanan kesehatan kerja secara umum di sebuah perusahaan, urgensi clinical case report OHN ini dibuat karna belum ada pedoman maupun template yang baku sehingga bisa di aplikasikan di berbagai site bidang industri, Urgensi pembuatan template baku pelaporan kasus kesehatan kerja oleh Occupational Health Nurse (OHN) sangat tinggi karena menyangkut kepatuhan hukum, akurasi data, kecepatan respons, dan pencegahan penyakit akibat kerja (PAK) yang lebih efektif. Berikut adalah alasan utama urgensi tersebut:

1. Kewajiban Hukum dan Regulasi

- Undang-Undang Nomor 1 Tahun 1970 tentang Keselamatan Kerja merupakan peraturan induk yang mengatur kewajiban pengusaha dalam menyediakan lingkungan kerja yang aman, termasuk pencegahan kecelakaan, penyediaan alat pelindung diri (APD), serta kewajiban memberikan edukasi kepada pekerja. Undang-undang ini juga mengatur hak pekerja untuk mendapatkan perlindungan serta kewajiban untuk mematuhi prosedur keselamatan., Regulasi kesehatan kerja di Indonesia berpusat pada UU No. 17 Tahun 2023 tentang Kesehatan, yang diturunkan melalui PP No. 28 Tahun 2024 tentang Peraturan Pelaksanaan UU Kesehatan. Aturan ini mewajibkan pemberi kerja menjamin kesehatan pekerja melalui upaya promotif, preventif, kuratif, dan rehabilitatif, serta menanggung biaya pengobatan Penyakit Akibat Kerja (PAK), PP No. 50 Tahun 2012 tentang SMK3: Aturan wajib mengenai penerapan Sistem Manajemen Keselamatan dan Kesehatan Kerja (SMK3) bagi perusahaan skala besar/berisiko tinggi, Permenaker No. 5 Tahun 2018 tentang K3 Lingkungan Kerja: Mengatur standar higiene, sanitasi, kualitas udara, radiasi, dan pencahayaan demi kenyamanan pekerja, PP No. 28 Tahun 2024 tentang Peraturan Pelaksanaan Undang-Undang Nomor 17 Tahun 2023 tentang Kesehatan, Permenaker No. 01/MEN/1976 tentang Pemeriksaan Kesehatan Tenaga Kerja: · Permenaker No. 02/MEN/1980 tentang Pemeriksaan Kesehatan Tenaga Kerja, Undang-Undang Nomor 13 Tahun 2003 tentang Ketenagakerjaan menyatakan bahwa setiap pekerja berhak memperoleh perlindungan K3 dan setiap perusahaan wajib menerapkan Sistem Manajemen K3 (SMK3). Hal ini menunjukkan bahwa K3 bukan hanya aspek teknis, tetapi juga bagian dari sistem manajemen perusahaan. Undang-Undang Nomor 40 Tahun 2004 tentang Sistem Jaminan Sosial Nasional (SJSN) dan Undang-Undang Nomor 24 Tahun 2011 tentang BPJS memperkuat perlindungan pekerja melalui jaminan kecelakaan kerja (JKK) dan jaminan kematian (JKM). Peraturan Menteri Ketenagakerjaan Nomor 13 Tahun 2025 tentang Panitia Pembina K3 (P2K3), yang memperbarui struktur organisasi, tugas, serta mekanisme pelaporan P2K3. Pembaruan ini bertujuan untuk memperkuat peran P2K3 sebagai organ pengawasan internal perusahaan yang lebih aktif, responsif, dan berbasis data.
  Selanjutnya, Peraturan Menteri Ketenagakerjaan Nomor 14 Tahun 2025 tentang Standar Kegiatan Usaha dan Produk dalam Perizinan Berusaha Berbasis Risiko menegaskan bahwa pemenuhan aspek K3 kini menjadi salah satu syarat utama dalam memperoleh dan mempertahankan legalitas operasional perusahaan. Hal ini menunjukkan bahwa K3 tidak lagi dipandang sebagai pelengkap, melainkan sebagai fondasi dalam menjalankan kegiatan usaha.
  Regulasi K3 Terbaru 2024–2025: Transformasi Paradigma

Periode 2024–2025 menandai perubahan signifikan dalam regulasi K3 di Indonesia, Beberapa pembaruan penting meliputi:

- Permenaker No. 13 Tahun 2025 → penguatan peran P2K3
- Permenaker No. 14 Tahun 2025 → K3 sebagai syarat legalitas usaha
- Kepmenaker No. 46 Tahun 2025 → standarisasi kompetensi operator
- Integrasi dengan regulasi lingkungan seperti pengelolaan limbah B3
- Berdasarkan Kepmenkaer No. 333 Tahun 1989, penyakit akibat kerja yang ditemukan wajib dilaporkan kepada Departemen Tenaga Kerja selambat-lambatnya 2 × 24 jam setelah diagnosis.
- Pelaporan harus menggunakan formulir standar (B2/F5, B3, 4/F6, B88/F7) sesuai Kepmenaker No. Kep-511/Men/1985.

- UU No. 36/2009 tentang Kesehatan dan resolusi WHO juga menjadi dasar pemikirannya untuk pencatatan dan pelaporan kesehatan kerja.

2. Standarisasi Data untuk Akurasi dan Komparasi

- Template baku memastikan kelengkapan data yang wajib diisi (nama pekerja, NIK, jenis pekerjaan, diagnosis, riwayat pekerjaan, dll.) seperti pada formulir BPJS Ketenagakerjaan F3 PAK.
- Data yang konsisten memungkinkan analisis tren PAK di tingkat perusahaan, kabupaten/kota, maupun nasional.
- Memudahkan evaluasi oleh dokter penasehat dan Dinas Tenaga Kerja.

3. Kecepatan Respons dan Intervensi Dini

- OHN sebagai frontline detector kasus kesehatan kerja perlu melaporkan dalam waktu 1 × 24 jam setelah diagnosis dokter perusahaan.
- Template baku mempercepat proses pengisian dan mengurangi kesalahan yang menyebabkan keterlambatan pelaporan.

Hasilnya: intervensi lebih cepat untuk mencegah kasus berulang atau memperburuk kondisi pekerja.

4. Dukungan Sistem Informasi Kesehatan

- Pencatatan dan pelaporan K3 adalah bagian dari sistem informasi kesehatan yang wajib dimiliki fasilitas kesehatan dan perusahaan.
- Template baku memudahkan integrasi dengan aplikasi e-incident atau sistem digital lainnya untuk monitoring real-time.

5. Pencegahan dan Pengendalian Risiko di Tempat Kerja

- Hanya 60% perawat yang melaporkan muskuloskeletal akibat kerja di rumah sakit, menunjukkan rendahnya pelaporan tanpa sistem yang terstandar.
- Data dari pelaporan baku menjadi dasar program pencegahan K3, evaluasi risiko, dan perbaikan lingkungan kerja.

6. Perlindungan Hukum bagi OHN dan Perusahaan

- Template baku dengan dokumen pendukung yang lengkap (surat keterangan ahli, catatan medis, riwayat pekerjaan) melindungi hak pekerja atas klaim BPJS Ketenagakerjaan.
- Juga melindungi OHN dan perusahaan dari sanksi hukum jika terjadi pelanggaran pelaporan.

Kesimpulan

Template baku pelaporan kasus kesehatan kerja oleh OHN bukan hanya formalitas, tetapi instrument strategis untuk:

- Mematuhi regulasi (Kepmenaker 333/1989, UU 36/2009)
- Meningkatkan akurasi dan kecepatan pelaporan PAK
- Mendukung analisis epidemiologi PAK nasional
- Mencegah kasus berulang melalui intervensi berbasis data
- Melindungi hak pekerja dan melindungi OHN secara hukum

DIAGNOSTIC ASSESSMENT

Diagnostic Assessment untuk menentukan risiko penyakit akibat kerja (PAK) oleh Occupational Health Nurse (OHN) adalah proses sistematis yang menggabungkan 7 langkah diagnosis PAK (berdasarkan Permenkes No. 56/2016) dengan Health Risk Assessment (HRA) dan nursing diagnosis untuk mengidentifikasi, menilai, dan memprediksi risiko PAK sebelum penyakit berkembang.

Penerapan tujuh langkah diagnosis Penyakit Akibat Kerja (PAK) oleh Occupational Health Nursing (OHN) atau Perawat Kesehatan Kerja berfokus pada tindakan preventif, identifikasi dini (skrining), dan manajemen kasus. Pada kasus spesifik seperti Musculoskeletal Disorders (MSDs), OHN mengaplikasikan ketujuh langkah ini melalui observasi ergonomis, manajemen keluhan nyeri, dan pemantauan kondisi lingkungan kerja.

Penerapan tujuh langkah diagnosis PAK pada kasus Carpal Tunnel Syndrome (CTS) — salah satu jenis MSDs — yang ditangani oleh OHN di suatu fasilitas industri adalah sebagai berikut:

Langkah 1: Menegakkan Diagnosis KlinisOHN melakukan anamnesis terkait keluhan mati rasa, kesemutan, atau nyeri pada tangan/jari pekerja, dan melakukan pemeriksaan fisik sederhana, seperti uji Tinel atau Phalen.

Langkah 2: Identifikasi Pajanan di Tempat KerjaOHN mengidentifikasi faktor risiko ergonomis di tempat kerja, seperti: gerakan tangan berulang (repetitive movements), penggunaan getaran mekanis, atau posisi pergelangan tangan yang kaku dan salah.

Langkah 3: Menentukan Hubungan antara Pajanan dan DiagnosisOHN menganalisis kesesuaian antara frekuensi gerakan tangan saat bekerja (misalnya: pekerja operator assembly line atau packaging) dengan gejala CTS yang dialami pekerja.

Langkah 4: Menentukan Besarnya PajananOHN mengevaluasi seberapa intens pajanan tersebut dengan melihat masa kerja, durasi kerja (jam per hari), dan penerapan job rotation.

Langkah 5: Menentukan Faktor IndividuOHN menilai apakah ada kondisi medis lain yang memperberat risiko, seperti riwayat diabetes, obesitas, rheumatoid arthritis, atau kebiasaan di luar kerja.

Langkah 6: Menentukan Pajanan di Luar Tempat KerjaOHN memastikan apakah pekerja memiliki hobi atau aktivitas di luar jam kerja (seperti merajut, bermain alat musik, atau olahraga tertentu) yang juga menggunakan gerakan tangan secara repetitif.

Langkah 7: Menetapkan Diagnosis Okupasi (PAK)Berdasarkan data klinis dan lingkungan kerja, OHN menetapkan apakah CTS tersebut merupakan Penyakit Akibat Kerja (PAK) atau penyakit yang diperberat oleh pekerjaan. OHN kemudian menyusun rencana perawatan dan rekomendasi modifikasi stasiun kerja kepada pihak manajemen.

OCCUPATIONS AND EXPOSURES ASSOCIATED WITH WRA (Work-related asthma)

1. Anamnesis Kerja
   Keluhan Utama: Sesak napas dan dada terasa berat.Riwayat Penyakit Sekarang: Keluhan sesak napas, batuk kering, dan mengi mulai dirasakan sejak 3 bulan terakhir. Keluhan memberat saat jam kerja dan membaik saat akhir pekan (libur) atau berada di luar pabrik.Riwayat Pekerjaan: Pasien bekerja di bagian pengemasan (packing) serbuk detergen kimia di pabrik sabun selama 5 tahun. Tidak ada riwayat asma pribadi maupun keluarga sebelumnya.
2. Pemeriksaan FisikTanda Vital: Tekanan Darah 120/80 mmHg, Nadi 88 kali/menit, Suhu 36.5°C, Frekuensi Napas 26 kali/menit.Status Generalis:Paru: Inspeksi terlihat penggunaan otot bantu napas, auskultasi terdengar suara napas mengi (wheezing) pada kedua lapang paru saat ekspirasi.Kulit: Terdapat dermatitis iritan ringan pada area lengan akibat paparan debu sabun secara lokal.
3. Pemeriksaan PenunjangSpirometri: Menunjukkan pola obstruktif dengan VEP1 (Volume Ekspirasi Paksa Detik Pertama) 75% nilai prediksi. Terjadi peningkatan VEP1 >12% setelah pemberian bronkodilator.Uji Provokasi Bronkus / PEF (Peak Expiratory Flow): Penurunan arus puncak ekspirasi sebesar 20% atau lebih setelah jam kerja dibandingkan sebelum mulai bekerja.Darah Rutin: Eosinofil meningkat (mengindikasikan reaksi alergi atau inflamasi).
4. Penilaian PajananIdentifikasi Bahaya: Terdapat paparan debu detergen yang mengandung enzim dan bahan kimia iritan di area pengemasan (pajanan inhalasi).Durasi & Frekuensi: Pasien terpajan debu selama 8 jam

sehari, 6 hari dalam seminggu, tanpa menggunakan Masker N95 atau APD yang memadai.Sistem Ventilasi: Sistem pembuangan udara (exhaust fan) di area packing kurang berfungsi optimal.

5. Differential Diagnosis (Diagnosis Banding)Asma Akibat Kerja (Occupational Asthma): Dipicu oleh alergen/iritan spesifik di tempat kerja.Work-Exacerbated Asthma (Asma yang Diperburuk Pekerjaan): Asma yang sudah ada sebelumnya dan memburuk akibat kondisi lingkungan kerja (debu/dingin).Bronkitis Kronis: Peradangan saluran napas yang biasanya berkaitan erat dengan riwayat merokok jangka panjang.
6. Final Diagnosis (Diagnosis Okupasi / Akhir)Asma Akibat Kerja (Occupational Asthma) ec. debu/enzim detergen. Diagnosis ini ditegakkan berdasarkan hubungan kausal yang kuat antara gejala klinis dengan lingkungan kerja, onset gejala yang membaik di luar jam kerja, dan hasil uji spirometri.



Kewajiban melapor PAK Permennakertrans No. Per.01/MEN/1981 Pengurus dan Badan yang ditunjuk wajib melaporkan PAK kepada Dirjen Binawas Laporan PAK paling lama 2 x 24 Jam setelah dibuat diagnosis.

Kriteria Diagnosis PAK Di FKTP

◦ Diagnosis klinis dapat ditegakkan di FKTP.

◦ 1.Penyakit yang memiliki penyebab yang jelas dan spesifik.

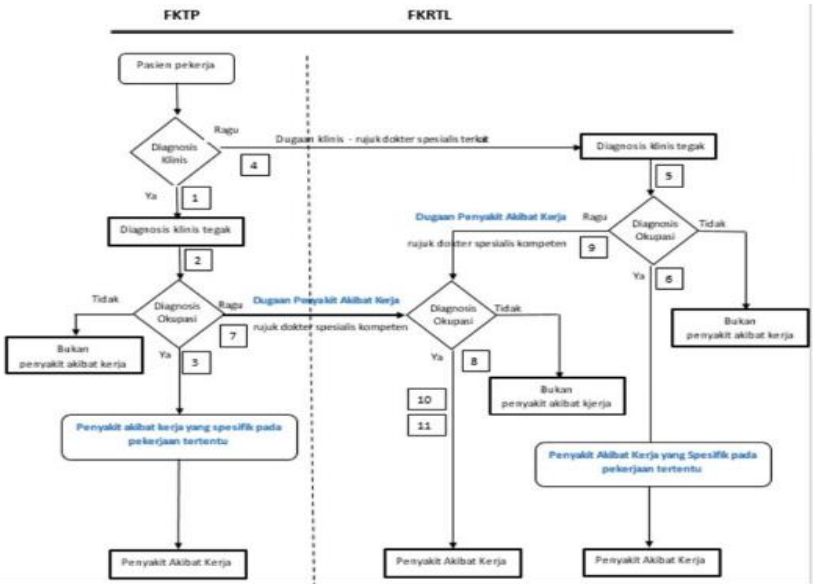
◦ 2.Memiliki hubungan waktu antara pajanan dan timbulnya penyakit yang jelas.

◦ 3.Besar pajanan dapat diakui/diterima secara umum.

◦ 4.Pengaruh faktor individu dan faktor lain di luar tempat kerja dapat disingkirkan dengan sederhana.

◦ 5.Untuk penentuan diagnosa Penyakit Akibat Kerja yang Spesifik pada Jenis Pekerjaan Tertentu yang dapat ditegakkan di FKTP (A1) dilakukan oleh dokter yang memiliki kompetensi

◦ diagnosis Penyakit Akibat Kerja di FKTP.



Alur Penetapan PAK

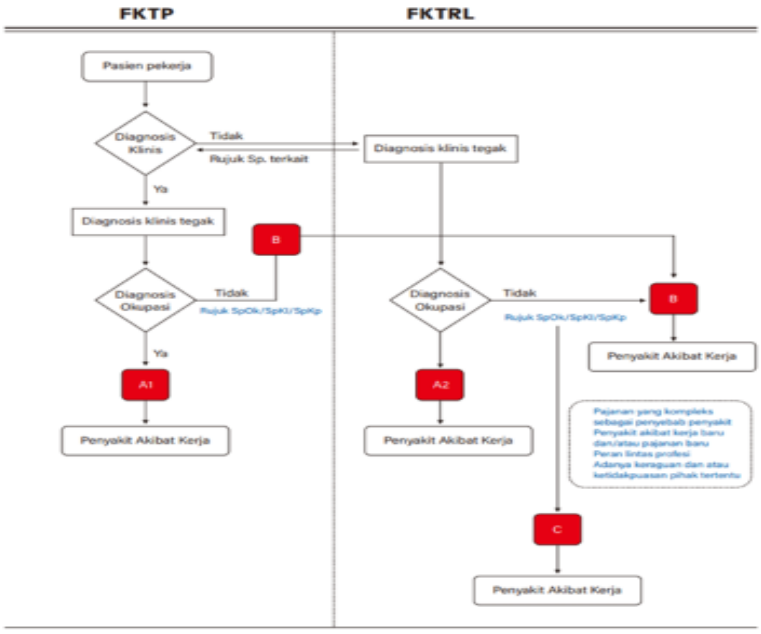


Chart 1. Most common sensitizers, by molecular weight (high or low), as well as commonly associated occupations/workplaces and exposures.

Sensitizer	Occupation/Workplace/Exposure
High molecular weight (≥ 5 kDa)	
Flours and grains	bakers, food industry
Latex	health care workers; producers and frequent users of latex products
Enzymes	manufacture and use of detergents; pharmaceutical and food industries
Plant-derived products	agricultural workers
Animals and animal-derived products	laboratories, veterinaries, agricultural workers
Fungi	offices, schools, cleaners
Low molecular weight (< 5 kDa)	
Diisocyanates	polyurethane production; foam production; automotive paint and polyurethane varnish; plastics industry
Persulfates	hairdressers
Metals (chrome, nickel, cobalt, zinc, platinum salts)	metal coatings (galvanization), welders, pharmaceutical industry, and refineries
Quaternary ammonium compounds	cleaners
Acrylates	dentists, adhesive resins, synthetic fabrics, printer inks, plastics industry, manicurists
Wood dust	carpenters
Cleaning products: chloride, ammonia, glutaraldehyde	cleaners and health care workers
Drugs (e.g., antibiotics)	pharmaceutical industry
Phthalic and trimellitic anhydrides	epoxy resin manufacture, spray paint workers

Chart 2. Occupations/workplaces and agents/mixed agents associated with irritant-induced occupational asthma.

Occupation/workplace	Agents/mixed agents
Cleaners and health care workers	chloride, ammonia, disinfectants, hydrochloric acid, organic solvents
Aluminum smelting	fluorides, sulfur dioxide, aluminum oxide
Pulp and paper mills	sulfur dioxide
Swine and dairy production	aerosols from endotoxins and organic dusts; manure gases
Dark-room environment	acetic acid
Welding	nitrogen oxides, fluorides, ozone, metals
Biocides	ethylene oxide, formalin, insecticides (organophosphates, organochlorines, and carbamates)
Construction work	spray paints, cement dust, calcium oxide (lime), floor sealant (aromatic hydrocarbons)
Firefighters, first responders, security agents	smoke (fires), fumes released by chemical spills
Mechanics, highway workers, and railroad workers	diesel exhaust, organic solvents

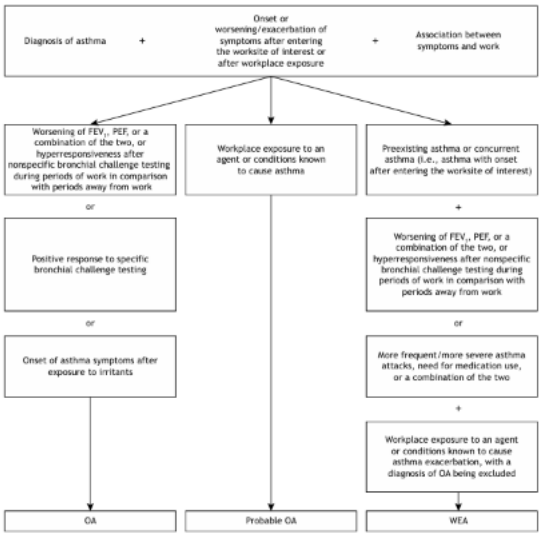


Figure 1. Algorithm for the diagnosis of work-related asthma. OA: occupational asthma; and WEA: work-exacerbated asthma.

(Roio LCD,et.al. 2021)

Komponen Utama Diagnostic Assessment OHN :

Komponen	Deskripsi	Metode/Alat
1. Penegakan Diagnosis Klinis	Menentukan kondisi kesehatan pekerja melalui anamnesis, pemeriksaan fisik, dan pemeriksaan penunjang	Anamnesis (auto/alloanamnesis), pemeriksaan tanda vital, spirometri, audiometri, EKG, lab darah/urin
2. Identifikasi Pajanan di Tempat Kerja	Mendeteksi semua paparan bahaya (fisik, kimia, biologis, ergonomi, psikososial)	Anamnesis pekerjaan lengkap (kronologis pekerjaan, bahan, cara kerja, APD), MSDS, data pengukuran lingkungan
3. Penilaian Hubungan Pajanan-Penyakit	Menghubungkan pajanan dengan diagnosis klinis berdasarkan evidence-based	Waktu timbul gejala (lebih sering di kerja, berkurang saat libur), data pra-kerja & berkala
4. Penilaian Besarnya Pajanan	Menentukan apakah pajanan cukup menyebabkan penyakit	Kualitatif: observasi cara kerja, lama/masa kerja, pemakaian APDKuantitatif: data pengukuran lingkungan periodik, biomonitoring
5. Faktor Individu	Mengidentifikasi faktor yang mempercepat/menurunkan risiko PAK	Umur, jenis kelamin, kebiasaan (merokok), riwayat penyakit keluarga/genetik, atopi, penyakit penyerta
6. Faktor di Luar Pekerjaan	Menentukan apakah ada pajanan sama di luar kerja	Hobi, pekerjaan rumah, pekerjaan sampingan, gaya hidup
7.	Kesimpulan: PAK atau bukan PAK	Sintesis 6 langkah sebelumnya;

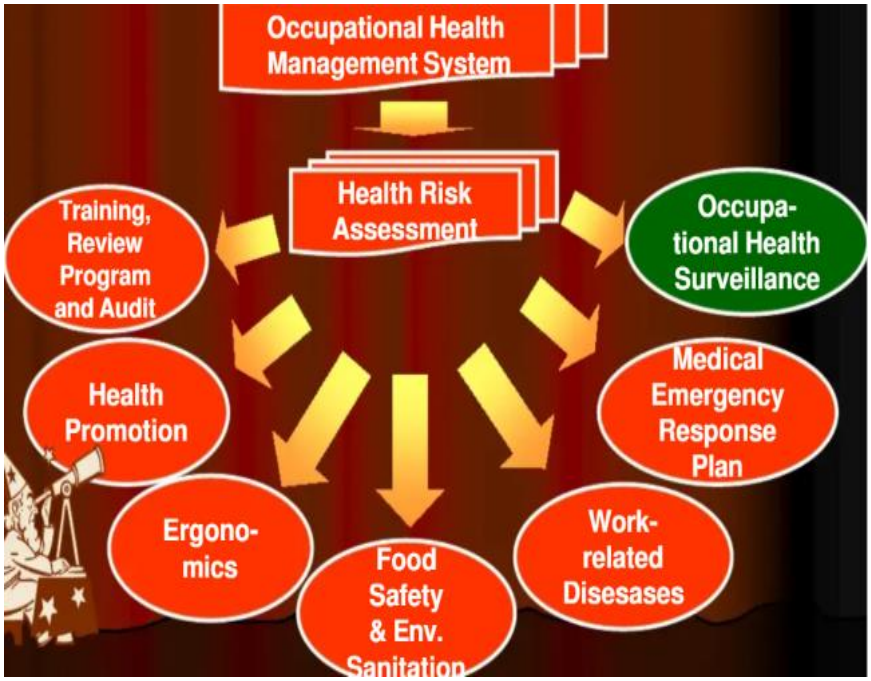
Penentuan Diagnosis Okupasi		minimal 1 faktor pekerjaan berperan

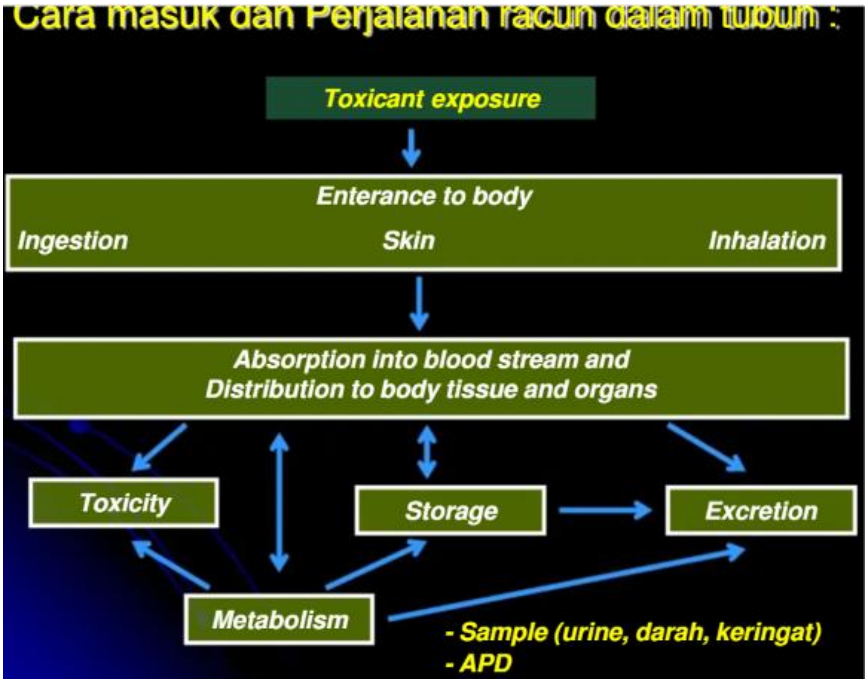
Metode Assessment yang Digunakan OHN

A. Health Risk Assessment (HRA)

Proses 3 langkah untuk mengidentifikasi, menilai, dan mengendalikan risiko kesehatan:

Langkah	Aktivitas
1. Identifikasi Bahaya	Deteksi bahaya dari 6 kategori: fisik, kimia, biologis, ergonomi, psikososial, teknologi
2. Penilaian Bahaya Kesehatan	Kuesioner gaya hidup + pemeriksaan kesehatan + analisis data medis
3. Rekomendasi Pengendalian	Intervensi untuk meminimalkan risiko PAK





Pajanan bhn kimia	Parameter yg diukur	Sampel biologis
Acetone	Acetone	Urine
Aluminium	Aluminium	urine
Arsenic (inorganic)	- Jml Arsenic inorganic - Methylarsenic acid - Dimethylarsenic acid	urine
Cadmium	Cadmium	urine / blood
Carbon monoxide	carboxyhaemoglobin	blood
Chromium	chromium	urine
2-ethoxyethanol, dan 2-ethoxyethanol acetate	2-ethoxyacetic acid	urine
Fluoride	fluoride	urine
n-Hexane	2,5-hexanedione	urine

Pajanan bhn kimia	Parameter yg diukur	Sampel biologis
Lead (organic)	lead	urine / blood
Lead (tetraalkyl)	lead	urine
Manganese	Manganese	urine
Mercury	Mercury	urine
Methanol	Methanol	urine
Methyl ethyl ketone (MEK)	Methyl ethyl ketone (MEK)	urine
Methyl Isobuthyl Ketone (MIBK)	Methyl Isobuthyl Ketone (MIBK)	urine
Organophosphate pesticide	cholinesterase activity	blood
Pentachlorophenol (PCP)	Total PCP	urine
Perchloroethylene	tricholoacetic acid	urine
Selenium	Selenium	urine

Pajanan bhn kimia	Parameter yg diukur	Sampel biologis
Styrene	mandelic acid	urine
Trichloroethylene	trichloroacetic acid	urine
Xylene	methylhippuric acid	urine
Toluene	- hippuric acid - Toluene	Urine blood
Benzene	- Mucinic acid - Phenylmercapturic acid	urine

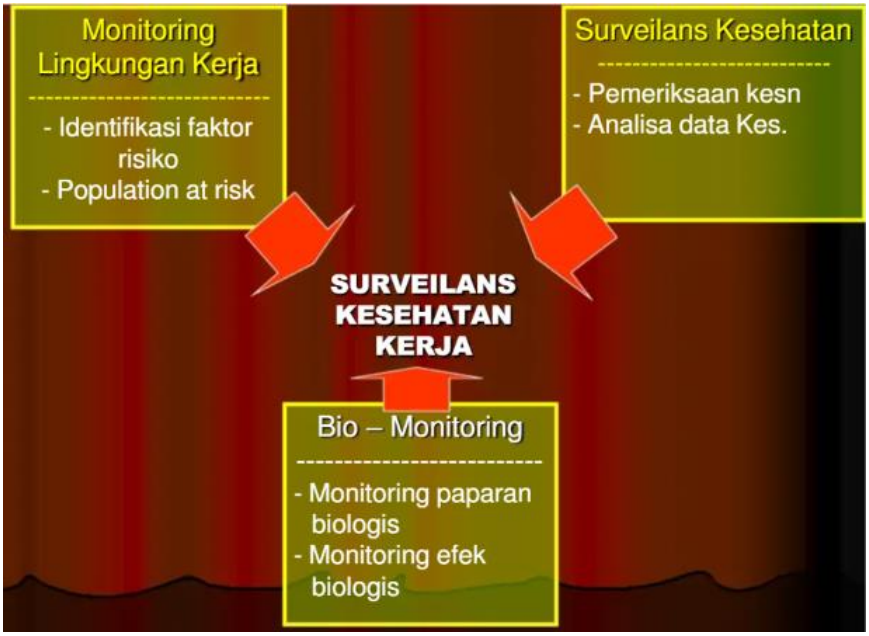


Table 1. OHN Report

Report	Top 3 OH Desease	OH Clinical Intervention
Daily	...	...
Weekly	...	...
Monthly	...	...

B. Nursing Diagnosis (NANDA-I)

OHN menggunakan diagnosis keperawatan untuk menentukan risiko, seperti:

"Risk of occupational injury" (00265)

Diagnosis kelompok (group data) untuk populasi pekerja dengan kategori health maintenance

C. Occupational Health Assessment (OHA)

Structured assessment guide untuk 6 kategori risiko occupational:

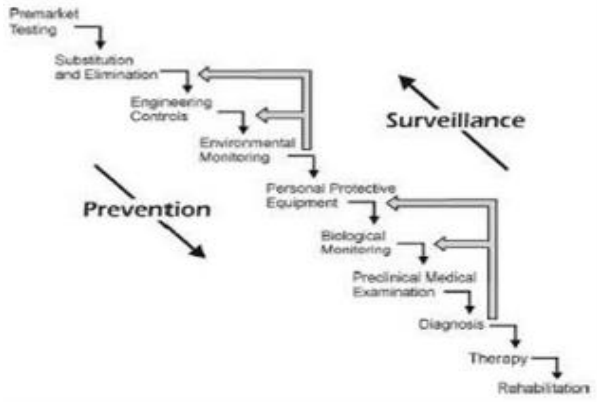
Kategori Risiko	Contoh
Fisik	Bising, suhu ekstrem, vibrasi, radiasi bphn
Kimia	Debu, uap, gas, kabut, partikel nano bphn
Biologi	Bakteri, virus, jamur, bioaerosol bphn
Ergonomi	Angkat angkut berat, postur janggal, gerak repetitif, VDT bphn
Psikososial	Beban kerja kualitatif/kuantitatif, kerja shift, hubungan interpersonal bphn
Teknologi	Risiko terkait teknologi kerja digitalcommons.wku

D. Health Surveillance OHN Assessment

Sebagai Occupational Health Nurse (OHN), health surveillance (pemantauan kesehatan) dilakukan menggunakan beberapa metode assessment utama yang bersifat sistematis dan berkala untuk mendeteksi dini dampak lingkungan kerja terhadap pekerja.

Surveilans kesehatan kerja (Occupational Health/Hiperkes) adalah pengamatan sistematis terhadap pekerja dan lingkungan kerja untuk mendeteksi dini Penyakit Akibat Kerja (PAK). Peran Occupational Health Nurse (OHN) sangat krusial dalam siklus ini, mulai dari pengumpulan data hingga manajemen klinis.

Hirarki pencegahan kesehatan kerja dengan contoh umpan balik surveilans



Sumber : Schulte (2008)

Perbedaan PAK dan PAHK, hubungan penyakit dan pekerjaan :

PENYAKIT AKIBAT KERJA *(work disease)*	PENYAKIT KARENA HUB KERJA *(work related disease)*	PENYAKIT MENGENAI POPULASI PEKERJA
Hubungan dgn pekerjaan sangat kuat dan spesifik	Penyebab majemuk, lingkungan kerja sangat berperan	Tidak ada hubungan dgn pekerjaan
Biasanya satu penyebab sudah dikenal sebagai PAK/ Acuan : ILO	Ada beberapa faktor risiko/etiologinya kompleks	Penyakit dapat diperparah oleh bahaya pekerjaan

Contoh jenis pemeriksaan Kesehatan berdasarkan hazard spesifik:

Hazard	Jenis pemeriksaan
Bising	Audiometri, kuesioner
Debu	Spirometri, foto toraks, kuesioner
Gas anorganik	Spirometri, foto toraks, kuesioner
Ultra violet	Mata (katarak), kulit (kanker)
Virus hepatitis B	HBsAg, HBcAg, SGOT, SGPT
Pelarut organik	Neurologik, iritasi mata, kulit dan saluran pernapasan, fungsi ginjal, fungsi hati, spirometri, pemantauan biologik

Contoh jenis pemeriksaan kesehatan berdasarkan jabatan

Jabatan	Jenis pemeriksaan
Pengguna respirator	Fungsi paru
Penjamah makanan	Higiene personal, kultur feses, foto toraks
Off-shore	Audiogram, fungsi paru, drugs dan alkohol
Supir	Visus, audiogram, drugs dan alkohol
Operator VDU	Visual acuity
Fire fighter	Audiogram, fungsi paru
Operator alat berat	Visus, lapang pandang, acuity, depth, buta warna, audiometric, spirometri, CTD
Welders	Urinalisis, biomonitoring
Petugas medis	Serologi HBV, foto toraks CTD

Berikut adalah panduan standar operasional untuk OHN:

1. Indikator Surveilans Kesehatan Kerja
   Surveilans oleh OHN mencakup pengamatan berbasis indikator dan kejadian. Indikator utamanya meliputi:Indikator Proses: Persentase pekerja yang mengikuti pemeriksaan kesehatan (awal, berkala, dan khusus) dan pelaporan bahaya.Indikator Dampak (Diteksi Dini): Angka insiden dan prevalensi Penyakit Akibat Kerja (PAK), angka Penyakit Akibat Hubungan Kerja (PAHK), dan absenteisme (ketidakhadiran) terkait masalah kesehatan.Indikator Lingkungan: Pemantauan data pajanan (biologis, fisik, kimia, ergonomi) yang terintegrasi dengan status kesehatan pekerja.
2. Frekuensi Surveilans Kesehatan
   Frekuensi pengumpulan data dan skrining kesehatan dilakukan sesuai standar:Rutin/Berkala: Dilakukan minimal 1 kali dalam setahun sesuai dengan regulasi K3 nasional.Khusus: Dilakukan lebih sering (spesifik) untuk pekerja yang terpajan risiko tinggi, pekerja yang baru kembali dari cuti sakit/absen panjang, atau pekerja yang akan ditempatkan di posisi baru.Pemantauan Data (Analisis): Dilakukan secara continuously (terus-menerus) oleh OHN untuk tren kunjungan klinik harian dan data absensi.
3. Ambang Rujukan (Medical Referral)
   Hasil skrining dianggap abnormal dan harus dirujuk (Need Referral) jika memenuhi kriteria berikut:Ditemukannya indikasi Penyakit Akibat Kerja (PAK) atau Penyakit Akibat Hubungan Kerja (PAHK).Hasil pemeriksaan fisik, laboratorium, atau fungsi fisiologis melewati nilai ambang batas normal dan memerlukan evaluasi lanjutan oleh dokter spesialis (Occupational Health Physician atau spesialis lainnya).Adanya penurunan kapasitas kerja yang menyebabkan pekerja tidak Fit to Work (tidak layak kerja) sementara maupun permanen di posisinya saat ini.
4. Mekanisme Tindak Lanjut Hasil Abnormal
   OHN memiliki kewenangan dan prosedur dalam menangani temuan klinis abnormal:Notifikasi dan Konseling: Menginformasikan hasil abnormal kepada pekerja secara privat dan memberikan edukasi kesehatan.
   Rujukan Klinis: Merujuk pekerja ke fasilitas kesehatan yang lebih kompeten atau dokter spesialis okupansi untuk diagnosis pasti (bila tidak dapat ditangani oleh klinik perusahaan).
   Investigasi Tempat Kerja: OHN melakukan investigasi bersama ahli keselamatan (Higiene Industri) untuk menilai apakah kelainan disebabkan oleh bahaya di lingkungan kerja.
   Penyesuaian Pekerjaan (Return to Work / Accomodation): Memberikan rekomendasi pembatasan aktivitas kerja, rotasi, atau modifikasi tugas (Light Work / Restricted Duty) selama masa pemulihan.Pencatatan dan Pelaporan: Mendokumentasikan status kesehatan, rujukan, dan tindakan korektif sesuai peraturan perundang-undangan (termasuk laporan ke instansi terkait jika memenuhi kriteria PAK).

Metode Assessment yang Digunakan OHN dalam Health Surveillance:

Metode Assessment	Deskripsi & Tujuan
1. *Pre-employment Medical Examination*	Pemeriksaan kesehatan sebelum kerja untuk memastikan kesesuaian pekerja dengan tugasnya dan mengetahui kondisi kesehatan dasar
2. *Periodic Medical Examination*	Pemeriksaan berkala (rutin) untuk mendeteksi perubahan status kesehatan akibat paparan bahaya kerja
3. *Special Medical Examination*	Pemeriksaan khusus untuk kasus tertentu dengan risiko tinggi (misalnya paparan kimia, noise, debu)
4. *Biological Monitoring*	Pengukuran tingkat paparan bahan kimia dalam tubuh melalui darah, urin, atau jaringan lainnya
5. *Biological Effect Monitoring*	Pemantauan efek biologis dini dari paparan bahaya kerja terhadap tubuh

	pekerja
6. *Health Effects Monitoring*	Pemantauan gejala dan keluhan kesehatan terkait pekerjaan melalui wawancara symtoms enquiry
7. *Workplace Inspection*	Pemeriksaan lingkungan kerja untuk mengidentifikasi dan mengevaluasi bahaya kesehatan
8. *Review of Records & Occupational History*	Analisis rekam medis dan riwayat pekerjaan pekerja untuk mengidentifikasi tren kesehatan

Proses Assessment OHN:

1. **Observasi dan Assessment independen** – OHN mampu mengobservasi serta melakukan assessment terhadap kesehatan pekerja secara independen
2. **Pengumpulan data sistematis –** Data medis, absensi, kecelakaan kerja, kompensasi, dan lingkungan kerja dikumpulkan
3. **Analisis epidemiologi** – Menggunakan metode deskriptif dan/atau analitik untuk menghasilkan informasi sesuai tujuan surveilans
4. **Analisis tren kesehatan** – Mengidentifikasi pola dan trend hasil surveillance untuk tindak lanjut
5. **Follow-up kasus abnormal** – Prosedur penanganan kasus dengan hasil pemeriksaan abnormal

Sistem ini diatur dalam Peraturan Menteri Kesehatan RI No. 45 Tahun 2014 tentang Surveilans Kesehatan, yang mendefinisikan surveilans sebagai kegiatan pengamatan sistematis dan terus-menerus terhadap data kesehatan untuk pengendalian penyakit.

E. Clinical Care dan MERP Metode Assessment yang Digunakan OHN

Untuk Clinical Care (pelayanan klinis) dan MERP (Medical Emergency Response Plan/Tanggap Darurat Medis), berikut adalah metode assessment yang digunakan Occupational Health Nurse (OHN):

I. Clinical Care – Metode Assessment OHN

Metode Assessment	Deskripsi & Tujuan
Clinical Audit	Review proses, praktik, atau hasil pelayanan terhadap standar yang telah ditetapkan; bertujuan meningkatkan mutu pelayanan klinis
Nursing Assessment (Workplace-Based)	Observasi langsung kemampuan klinis OHN: riwayat kesehatan, pemeriksaan fisik, komunikasi, pengambilan putusan klinis
DOPS (Directly Observed Procedural Skills)	Observasi langsung keterampilan teknis prosedur klinis dengan prinsip aseptic
Mini-PAT / MPT	Penilaian kompetensi teamwork, perilaku profesional, dan multiple area keperawatan
Clinical Health Care Assessment	Fokus pada "what is really done" dalam praktik sehari-hari, dibandingkan dengan standar/guidelines
Evidence-Based Practice in Nursing (EBPN) Assessment	Pendekatan kualitatif deskriptif untuk mengeksplorasi pengalaman dan implementasi praktik berbasis bukti
Long Case	Evaluasi kasus lengkap dengan sintesis diagnosis, perencanaan, dan evaluasi

5 Tahap Clinical Audit:

1. **Preparing for audit** – Definisi tujuan, identifikasi sumber daya
2. **Selecting audit criteria** – Memilih kriteria dari guidelines/standar
3. **Measuring level of performance** – Pengumpulan & analisis data
4. **Making improvements** – Disseminasi hasil & perubahan perilaku
5. **Sustaining improvement** – Audit berkala untuk mempertahankan mutu

II. MERP (Medical Emergency Response Plan) – Metode Assessment OHN

Metode Assessment	Deskripsi & Tujuan
MERRAT (Medical Emergency Response Readiness Assessment Tool)	Instrument untuk mengetahui dan menilai kesiapan Unit Operasi dalam menghadapi kegawatdaruratan medis termasuk evakuasi medis
MER-RAT Self Assessment Checklist	Assessment mandiri berbasis checklist untuk menilai kesiapan tanggap darurat medis
Risk Assessment (Health Risk Assessment)	Identifikasi faktor risiko yang berpotensi menjadi sumber kegawatdaruratan untuk perencanaan efektif
Medical Emergency Drill Assessment	Evaluasi pelaksanaan simulasi MERP berkala untuk mengukur kesiapan tim
Assessment Capable Hospital	Penilaian rumah sakit rujukan untuk memastikan kelayakan rujukan kasus darurat
Site Verification (Illness Fatality)	Kunjungan lapangan untuk validasi dan pendalaman kasus illness fatality
Follow-up Assessment	Penilaian penyelesaian rekomendasi dari evaluasi latihan/insiden
Route Assessment	Evaluasi jalur evakuasi medis untuk memastikan akses cepat

Komponen MER-RAT Assessment Checklist:

- **People** – Kesiapan personel dan tim darurat
- **Plant** – Kesiapan fasilitas dan infrastruktur
- **Tools** – Ketersediaan peralatan medis darurat

Dasar Pelaksanaan MERP di Pertamina:

1. Pedoman Tanggap Darurat Medis No. A04-003/S00000/2021-S0
2. Pedoman Pengelolaan Kesehatan Kerja No. A04-001/S00000/2022-S9
3. Surat Edaran Direktur Utama tentang Pencegahan Illness Fatality

Integrasi Kedua Assessment oleh OHN

OHN mampu **mengobservasi dan melakukan assessment independen** terhadap:

- Kualitas pelayanan klinis (clinical audit)
- Kesiapan tanggap darurat medis (MERRAT)
- Risiko kesehatan kerja (HRA)
- Follow-up kasus abnormal dari kedua sistem

Kedua assessment ini merupakan bagian dari **10 Elemen Kesehatan Kerja IOGP** dan **Leading Health Performance Indicators** untuk mencegah illness fatality.

H. Compliance & Policy Metode Assessment yang Digunakan OHN

Sebagai **Occupational Health Nurse (OHN)**, dalam domain **Compliance & Policy** (Kepatuhan & Kebijakan), terdapat beberapa **metode assessment** yang digunakan untuk memastikan kepatuhan terhadap regulasi K3 dan efektivitas implementasi kebijakan kesehatan kerja:

Metode Assessment	Deskripsi & Tujuan
1. Compliance Audit (Audit Kepatuhan)	Audit sistematis untuk mengevaluasi kepatuhan terhadap regulasi K3 (Permenkes No. 66/2016, Perpres No. 50/2012), standar IOGP, dan kebijakan internal perusahaan
2. Policy Implementation Assessment	Penilaian implementasi kebijakan OHS (Occupational Safety and Health) dari tahap perencanaan hingga evaluasi, termasuk pembentukan komite K3RS
3. Internal OSHMS Audit	Audit internal Sistem Manajemen K3 Rumah Sakit/Perusahaan untuk memantau dan evaluasi kinerja K3 secara berkala
4. Workplace Inspection & Observation	Observasi langsung dan pemeriksaan lingkungan kerja untuk memastikan kepatuhan penggunaan APD, prosedur keselamatan, dan praktik K3
5. K3 Compliance Behavior Assessment	Pengkajian perilaku kepatuhan perawat/pekerja dalam menerapkan protokol K3 (cuci tangan, penggunaan APD, pencegahan infeksi)
6. Document Review & Studi Dokumentasi	Analisis dokumen kebijakan, SOP, rekam medis, laporan kecelakaan, dan bukti kepatuhan administrasi
7. Wawancara Mendalam (In-depth Interview)	Pengumpulan data primer melalui wawancara dengan komite K3, kepala layanan, dan pekerja untuk menilai pemahaman dan implementasi kebijakan
8. Risk Assessment & Hazard Screening	Pengkajian kesehatan dan bahaya untuk identifikasi risiko yang berpotensi melanggar kebijakan K3
9. Training & Education Compliance Assessment	Evaluasi kepatuhan pelaksanaan pelatihan K3 berkala (in-house training 1 bulan sekali) dan partisipasi pekerja
10. LLIS (Lessons Learned from Incidents) Assessment	Penilaian tindak lanjut dari evaluasi insiden/latihan untuk memastikan rekomendasi implementasi

5 Tahap Proses Compliance Management System:

1. **Planning** – Perencanaan sistem K3 yang komprehensif
2. **Implementing** – Pelaksanaan program K3 sesuai regulasi
3. **Measuring** – Pengukuran kinerja melalui audit dan assessment
4. **Supervising** – Pemantauan berkelanjutan kepatuhan
5. **Improving** – Perbaikan sistem berdasarkan hasil audit

Instrumen Assessment Compliance yang Umum Digunakan:

A. Checklist Audit Kepatuhan K3RS:

Berdasarkan **Government Regulation No. 50 of 2012**:

- Kebijakan OHS (keberadaan komite K3RS)
- Perencanaan K3 (identifikasi hazard)
- Implementasi kontrol hazard
- Monitoring & evaluasi (audit internal)
- Tindak lanjut perbaikan

B. K3 Behavior Assessment Instrument:

Mengukur 4 komponen:

Komponen	Kategori	Contoh Indikator
Knowledge	Adequate/Inadequate	Pengetahuan tentang K3 machinery, equipment
Attitude	Sufficient/Insufficient	Sikap terhadap protection sources
Action	Sufficient/Insufficient	Tindakan penggunaan APD
Implementation	Sufficient/Insufficient	Penerapan protokol K3 (67.3% sufficient)

C. Compliance Training Record Assessment:

- Pelatihan in-house 1 bulan sekali
- Jaminan sosial (BPJS untuk PNS, KIS daerah untuk TKK)
- Pembudayaan perilaku K3 (coaching kepatuhan APD)

Dasar Hukum Compliance Assessment OHN di Indonesia:

Regulasi	Fokus Assessment
Permenkes No. 66/2016	Implementasi OHS di rumah sakit jurnal.htp.ac
Perpres No. 50/2012	Sistem Manajemen K3 (OSHMS) jurnal.unprimdn +1
Permenkes No. 27/2017	Pencegahan & pengendalian infeksi e-journal.unair
Permenkes No. 45/2014	Surveilans Kesehatan scribd
SKKNI 143/2022	Metode penilaian kepatuhan (tertulis, lisan, praktik, pengamatan) zinsari.wordpress

Integrasi dengan Domain Lain:

OHN melakukan assessment independen yang mengintegrasikan:

- Compliance → Audit kebijakan & kepatuhan regulasi
- Clinical Care → Clinical audit pelayanan
- Health Surveillance → Periodic medical examination compliance
- MERP → MERRAT readiness assessment
- QHWL → Quality of Nursing Work Life compliance

Kedua assessment ini merupakan bagian dari 10 Elemen Kesehatan Kerja IOGP untuk mencegah illness fatality dan memastikan Leading Health Performance.

I.Wellness & Education Metode Assessment yang Digunakan OHN

Berikut adalah instrumen dan sumber rujukan tervalidasi di bidang wellness dan pendidikan, yang disajikan dengan sitasi formal untuk menggantikan repositori informal:

Kategori Instrumen	Nama Instrumen & Deskripsi	Sitasi/Sumber Akademik Tervalidasi
Kesehatan Mental (Umum)	**MHC-SF (Mental Health Continuum-Short Form)** Mengukur kesejahteraan emosional, psikologis, dan sosial dari sudut pandang positif.	Keyes, C. L. M. (2002). The mental health continuum: From languishing to flourishing in life. *Journal of Health and Social Behavior*, 43(2), 207-222.
Kesehatan Mental (Klinis)	**DASS-21 (Depression Anxiety Stress Scales)** Instrumen multidimensi untuk mendeteksi tingkat keparahan gejala depresi, kecemasan, dan stres.	Lovibond, P. F., & Lovibond, S. H. (1995). The structure of negative emotional states: Comparison of the Depression Anxiety Stress Scales (DASS) with other measures of depression. *Behaviour Research and Therapy*, 33(3), 335-343.
Kesejahteraan Psikologis	**RPWB (Ryff's Psychological Well-Being Scale)** Mengukur enam dimensi kesejahteraan: otonomi, penguasaan lingkungan, pertumbuhan pribadi, hubungan positif, tujuan hidup, dan penerimaan diri.	Ryff, C. D. (1989). Happiness is everything, or is it? Explorations on the meaning of psychological well-being. *Journal of Personality and Social Psychology*, 57(6), 1069-1081.
Validasi Media Pembelajaran	**LORI (Learning Objects Review Instrument) v1.5** Standar evaluasi kualitas multimedia dan objek pembelajaran digital.	Nesbit, J. C., Belfer, K., & Leacock, T. (2007). *Learning Object Review Instrument (LORI). Version 1.5.* E-Learning Research and Assessment Network.
Pendidikan & Pembelajaran	**Model Evaluasi Pembelajaran** Panduan dan formulir baku untuk menilai kelayakan, kepraktisan, dan keefektifan produk media/modul ajar.	Chaeruman, U. A. (2015). Pedoman Pengembangan Media Pembelajaran. *Direktorat Pembelajaran dan Kemahasiswaan Kemenristekdikti.*

Sebagai Occupational Health Nurse (OHN), dalam domain Wellness & Education (Kesejahteraan & Pendidikan Kesehatan), terdapat berbagai metode assessment yang digunakan untuk mengukur status wellness pekerja dan mengevaluasi efektivitas program pendidikan kesehatan:

Wellness & Education – Metode Assessment yang Digunakan OHN

A. WELLNESS ASSESSMENT

Metode Assessment	Deskripsi & Tujuan
1. Six Dimensions of Wellness Self-Assessment	Instrumen self-assessment untuk mengukur 6 dimensi wellness: Emotional, Occupational, Physical, Social, Intellectual, Spiritual dengan skala 1-5
2. Perceived Wellness Assessment (PWA)	Instrumen yang divalidasi untuk mengukur wellness yang dirasakan pekerja dalam berbagai dimensi
3. Wellness Counseling Assessment	Model wellness counseling berorientasi PBC untuk meningkatkan Self-Support System (SSS) pekerja
4. Work Ability Risk Management Analysis	Assessment persepsi OHN terhadap manajemen risiko kemampuan kerja untuk identifikasi faktor pendukung & penghambat

(WARMA)	
5. Health & Hazard Screening	Pengkajian kesehatan dan bahaya untuk identifikasi risiko penyakit akibat kerja pada pekerja
6. Health Risk Assessment (HRA)	Penilaian risiko kesehatan untuk merencanakan program wellness preventif (primer, sekunder, tersier)
7. Physical Activity Assessment	Estimasi aktivitas fisik menggunakan IPAQ untuk mengukur kecocokan dengan rekomendasi 150 menit/minggu
8. Workplace Wellness Program Assessment	Evaluasi program wellness yang customized untuk matching occupational health goals dengan company goals

6 Dimensi Wellness untuk Assessment:

Dimensi	Fokus Assessment	Indikator Contoh
Emotional	Akceptasi perasaan & kemampuan mengelola emosi	"I love and accept myself", "I can manage emotional response"
Occupational	Kepuasan kerja & work-life balance	"My work reflects values", "I have good work-life balance"
Physical	Aktivitas fisik, nutrisi, tidur	"150 min activity/week", "5 servings fruits/vegetables"
Social	Kontribusi komunitas & hubungan	"Loving supportive relationships", "Strong sense of belonging"
Intellectual	Learning sepanjang hayat	"Continual learning opportunities", "Stay informed"
Spiritual	Makna & tujuan hidup	"Life has direction/meaning", "Prayer/meditation regular"

Skala Assessment: 1 = Almost Never, 2 = Rarely, 3 = Sometimes, 4 = Often, 5 = Almost Always

B. EDUCATION ASSESSMENT

Metode Assessment	Deskripsi & Tujuan
1. Pre-test & Post-test Evaluation	Mengukur peningkatan pemahaman sebelum & setelah pendidikan kesehatan (pre-test: 49.80 â†' post-test: 79.70) journal.ummat.ac
2. Knowledge-Attitude-Action (KAA) Assessment	Mengukur 3 komponen: Knowledge (adequate/inadequate), Attitude (sufficient/insufficient), Action (sufficient/insufficient) ejurnal.politeknikpratama.ac
3. readiness Assessment for Information	Identifikasi kesiapan & kemampuan menerima informasi kesehatan sebelum edukasi scribd
4. Health Education Plan Evaluation	4 jenis evaluasi: Formative, Process, Outcome, Impact evaluation untuk program promkes scribd
5. Learning Outcome Assessment	Evaluasi hasil belajar melalui: essay, MEQ, checklist, OSCE, DOPS pmc.ncbi.nlm.nih+1
6. Motivation & Barrier Assessment	Identifikasi motivasi individu untuk memulai program olahraga & hambatan yang ada scribd
7. Health Behavior Change Assessment	Evaluasi perubahan perilaku hidup bersih & sehat setelah edukasi jurnal.unmabanten.ac
8. Training Compliance Assessment	Evaluasi kepatuhan pelaksanaan training K3 in-house annually & partisipasi pekerja etd.repository.ugm.ac

4 Jenis Evaluation dalam Health Education:

Jenis Evaluation	Waktu	Tujuan
Formative	During development & implementation	Memberi info untuk mencapai tujuan program & perbaikan
Process	During implementation	Assess type, quantity, quality aktivitas program
Outcome	Short & long-term	Demonstrate perubahan kondisi kesehatan, kualitas hidup, perilaku
Impact	After program	Assess effect pada participants (awareness, knowledge, attitude, behavior, skills)

11 Aktivitas Edukasi Kesehatan OHN:

Observasi:

1. Identifikasi kesiapan & kemampuan menerima informasi
2. Identifikasi faktor meningkatkan/menurunkan motivasi PHBS
3. Identifikasi pemahaman kondisi kesehatan saat ini

Terapeutik:

4. Sediakan materi & media pendidikan kesehatan
5. Berikan kesempatan untuk bertanya
6. Lakukan penguatan potensi pasien/keluarga untuk menerima informasi

Edukasi:

7. Jelaskan faktor risiko yang mempengaruhi kesehatan
8. Ajarkan perilaku hidup sehat
9. Ajarkan strategi untuk meningkatkan PHBS
10. Berikan informasi alur, leaflet, atau gambar

Kolaborasi:

11. Kolaborasi dengan ahli gizi tentang cara meningkatkan asupan makanan

---

Integrasi dengan Domain OHN Lainnya:

OHN melakukan assessment yang mengintegrasikan:

- **Wellness** → Six Dimensions assessment, HRA, wellness counseling
- **Education** → Pre-post test, KAA assessment, evaluation types
- **Clinical Care** → Edukasi manajemen nyeri, energi, latihan fisik
- **Health Surveillance** → Edukasi follow-up hasil pemeriksaan
- **Compliance** → Training compliance assessment

Dasar Hukum Education & Wellness OHN di Indonesia:

Regulasi	Fokus Assessment
Permenkes No. 66/2016	Pendidikan kesehatan & promosi kesehatan di RS
Perpres No. 50/2012	Program wellness & pelatihan K3 berkala
Permenkes No. 27/2017	Edukasi pencegahan & pengendalian infeksi
Permenkes No. 45/2014	Edukasi surveilans kesehatan

Urgensi untuk OHN



Figure 1 : OHN Expertice

Aspek	Manfaat
Primary Prevention	Mencegah PAK sebelum terjadi melalui identifikasi risiko dini bphn +1
Secondary Prevention	Penemuan dini PAK melalui pemeriksaan pra-kerja & berkala bphn
Legal Protection	Dokumen assessment melindungi hak pekerja (kompensasi BPJS) & OHN secara hukum bphn +1
Surveillance	Data assessment menjadi bagian surveilans kesehatan pekerja bphn +1
Evidence-Based	Intervensi berbasis data objektif (MSDS, pengukuran lingkungan, biomonitoring)

Kesimpulan

Diagnostic Assessment oleh OHN untuk menentukan risiko PAK harus mengacu pada 7 langkah diagnosis Permenkes 56/2016 yang dilengkapi dengan HRA, nursing diagnosis (NANDA-I), dan assessment 6 kategori risiko occupational. Ini adalah fondasi evidence-based practice untuk pencegahan PAK, penemuan dini, dan perlindungan hukum pekerja dan OHN di Indonesia.

Occupational Health Nurses' Perceptions in Work Ability Risk Management and Analysis

Category	Main results
Attitudes of OHNs regarding the management and analysis of work ability risks	Important and useful work: • Cost-effectiveness • Effectiveness • Work in which more time should be invested
OHNs' experiences of managing and analyzing work ability risks	Central core work of occupational health care: • Cornerstone of occupational health care • The way to understand the root causes behind the factors that threaten the ability to work • Uncertainty Individual-level and organizational-level WARMA: • Knowing and interpreting both levels helps in managing and analyzing work ability risks
Factors promoting the management and analysis of work ability risks	Electronic tools: • Regular use • Timeliness • Correct allocation of measures • Ease of use and reliability Time resources: • Allocating time in advance to the calendar Occupational health cooperation: • Sped up and streamlined processes Multi-professional cooperation: • Regular meetings • Jointly agreed practices • Support and help from colleagues Experience: • Certainty accrues • Competence increases • The work goes smoothly
Factors hindering the management and analysis of work ability risks	Insufficient time resources: • Haste • Many customer organizations Productivity pressures: • Performance targets • Unclear billing processes • Lack of supplementary training • Lack of process descriptions

OHN INTERVENTION

Intervensi OHN (Occupational Health Nurse/Perawat Kesehatan Kerja) adalah serangkaian tindakan keperawatan yang dirancang untuk mencegah risiko kesehatan pekerja, melindungi dari kecelakaan kerja, serta meningkatkan dan memelihara status kesehatan & kesejahteraan pekerja di lingkungan industri/kerja.

Jenis & Bentuk Intervensi OHN

Level Intervensi	Bentuk Intervensi	Contoh Kegiatan
Preventif (Pencegahan)	Surveilans kesehatan lingkungan	Pemantauan bahaya kerja, uji lingkungan K3 scribd
	Pencegahan kecelakaan & penyakit akibat kerja	Program K3, edukasi hazard scribd
Promotif (Promosi Kesehatan)	Promosi kesehatan pekerja	Program wellness, edukasi gizi, olahraga scribd+1
	Konseling kesehatan	Konseling individual/kelompok scribd
Kuratif (Pengobatan)	Direct care untuk kasus akut	Penanganan cedera/pasien di tempat kerja scribd+1
	Pertolongan pertama	Organisasi bantuan pertama scribd
Rehabilitatif	Rehabilitasi pekerja	Program pemulihan pasca-sakit/cedera scribd
Krisis	Krisis intervensi	Penanganan situasi darurat kesehatan

scribd

12 Fungsi Utama OHN dalam Intervensi

Menurut Doward (1993), fungsi intervensi OHN mencakup: surveilans, pencegahan kecelakaan/sakit, pengobatan, bantuan pertama, promosi kesehatan, konseling, rehabilitasi, pencatatan/laporan, kerjasama internal-eksternal, administrasi unit kesehatan, dan penelitian.

Pendekatan Evidence-Based

Intervensi OHN modern mengutamakan Evidence-Based Practice (EBPN) — program dan kegiatan khusus berbasis bukti ilmiah untuk risiko kesehatan populasi pekerja.

Intervensi ini disesuaikan dengan kondisi spesifik tempat kerja dan mencakup program promotif, preventif, kuratif, dan rehabilitatif.

CASE TIMELINE

Garis waktu (timeline) yang sistematis sangat krusial dalam menyusun case report Occupational Health Nurse (OHN). Visualisasi ini menyatukan narasi klinis dan manajerial menjadi ringkasan komprehensif bagi manajemen atau tim medis.Berikut adalah rekomendasi format timeline komprehensif yang diurutkan kronologis untuk laporan kasus:

1. Hari 0: Pajanan atau Insiden AwalAktivitas: Paparan bahaya (kimia, biologi, fisik) atau kejadian cedera terjadi di lingkungan kerja.Detail Kunci: Lokasi kejadian, penggunaan Alat Pelindung Diri (APD), serta durasi dan sifat pajanan.
2. Hari 0-1: Onset Gejala & Penilaian AwalAktivitas: Pekerja mulai merasakan gejala atau langsung dievaluasi pasca-insiden.Detail Kunci: Pelaporan cedera, tindakan P3K (Pertolongan Pertama pada Kecelakaan), dan tanda-tanda vital.
3. Hari 1-3: Penilaian Klinis & Pemeriksaan PenunjangAktivitas: Rujukan ke fasilitas klinis okupasi untuk tes spesifik.Detail Kunci: Pemeriksaan laboratorium/radiologi, diagnosis awal, serta identifikasi Hazards (bahaya).
4. Hari 3-14: Intervensi dan Modifikasi PekerjaanAktivitas: Penanganan medis dan langkah mitigasi bahaya.Detail Kunci: Pemberian terapi, pembatasan fisik, dan diskusi perawat dengan manajer terkait penyesuaian tugas (light-duty work) atau pengendalian lingkungan.
5. Hari 14-30: Evaluasi Return-To-Work (RTW)Aktivitas: Penilaian kesiapan pekerja untuk kembali ke fungsi normal.Detail Kunci: Tanggal pasti RTW, evaluasi batasan kerja, dan penilaian ergonomi atau higienitas industri.
6. Hari 30+: Follow-up dan MonitoringAktivitas: Pemantauan berkelanjutan pasca-RTW untuk mencegah kambuh atau keparahan.Detail Kunci: Evaluasi fungsi fisiologis, wawancara kenyamanan pekerja, dan peninjauan ulang kontrol bahaya.

Table 2. **Clinical case timeline**

Time	Clinical Event	ICD10	Treatment	Outcome
Day 0	PAK/ OH Ilness			
Day 1/2	RTW			
Follow-up	FFT			

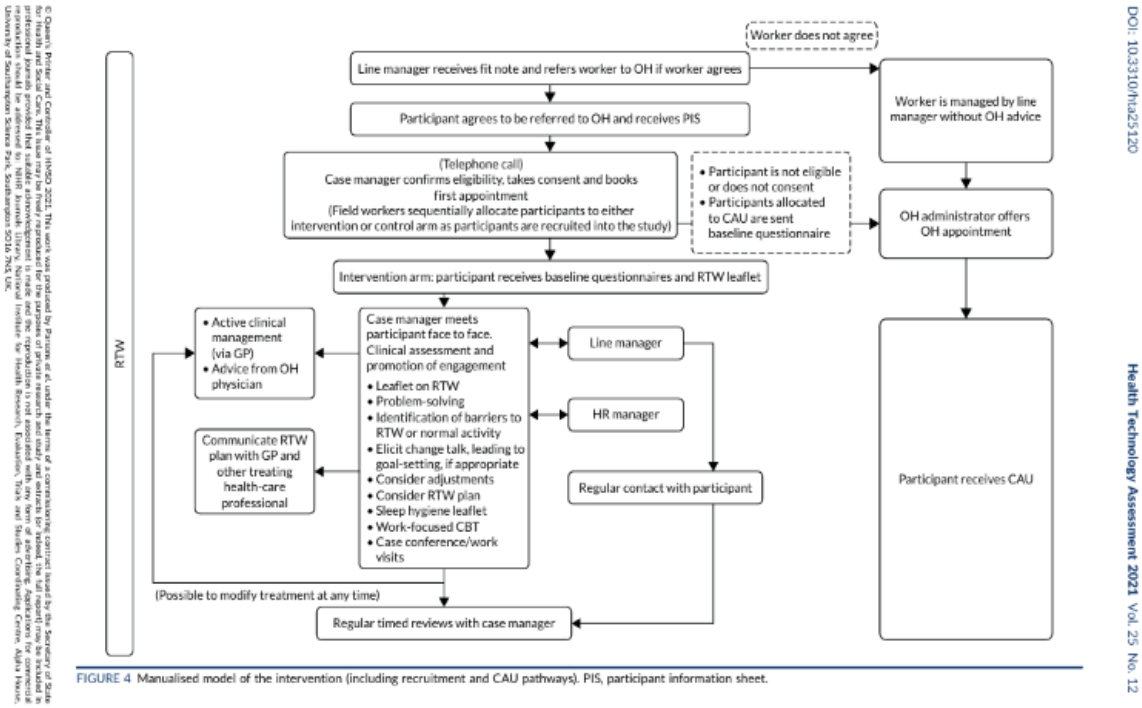


FIGURE 4 Manualised model of the intervention (including recruitment and CAU pathways). PIS, participant information sheet.

OUTCOME AND FOLLOW-UP

Berikut adalah **outline lengkap** untuk menyusun **Program Outcome & Follow-up** dan **Clinical Case Report** dalam Occupational Health Nursing (OHN), plus contoh **clinical case report nyata** dari literatur dan **outcome/follow-up program berbasis RCT** yang relevan dengan konteks Anda sebagai OHN Indonesia.

1. Clinical Case Report OHN (Contoh Nyata)

Case: Hepatitis B akibat Needle Stick Injury pada Sanitarian

Komponen	Detail
Patient	Male, 37-year-old sanitarian di hospital
Incident	April 2021: pricked by used needle saat handling medical waste tanpa PPE, tidak lapor ke unit OH
Risk Factor	Tidak ada riwayat vaksinasi Hepatitis B, HBsAg negative di MCU 2020
Diagnosis	Hepatitis B (HBsAg reactive) tanpa gejala klinis, ditemukan di MCU
Occupational Diagnosis	7 Steps of Occupational Diagnosis : Occupational Disease karena kegagalan OHSS system
Outcome	Work-related disease confirmed
Follow-up Intervensi	- Regular training OHSS- PPE provision adequate- SOP peningkatan untuk incident reporting- Continuous monitoring

Relevansi untuk OHN Indonesia: Kasus ini menunjukkan pentingnya **sistem reporting kecelakaan kerja** yang masih lemah di banyak RS Indonesia (SOP ada tapi tidak semua nurse paham, reporting masih verbal, tidak ada form).

Case Study OHN: Chemical Exposure & Reproduction Risk

Komponen	Detail
Patient	Leslie, 23-year-old woman, new job
Concern	Possible chemical exposure yang bisa harm reproduction
Symptoms	Vague physical complaints
OHN Intervensi	1. Health history taken, confidentiality reassured 2. Refer untuk pregnancy test & doctor 3. Industrial hygiene evaluation work area
Care Plan	- Evaluate health concerns- Determine pregnancy status- Assess chemical exposure levels- Ensure safe workplace for future pregnancies via policies/restrictions

2. Program Outcome & Follow-up (Berdasarkan RCT)

Workplace Interventions untuk Healthcare Workers: Outcome & Follow-up

Review 108 RCTs menunjukkan **intervensi efektif** dengan outcome dan follow-up:

Outcome Domain	Intervensi Efektif	Outcome Post-Program	Follow-up
Work Ability	High-intensity strengthening exercises + group coaching (female nurses)	Better work ability index	3 months
	Psychosocial coaching (nurses with MSD)	Better work ability regarding physical demands	11 & 22 weeks, disappear at 24 months
	Aerobic fitness + strength exercises (10 weeks)	Improved current work ability (back/upper body MSD)	10 weeks
Well-Being	Strengthening exercises + group coaching	Enhanced well-being	Short-term
	6-week stretching/strengthening/aerobic/balance exercises	Enhanced well-being	6 weeks
	8-week mindfulness-based stress reduction	Enhanced well-being	8 weeks
	Digital mindfulness-based self-practices (unguided)	Small effect size	Short-term
Burnout	8-week mindfulness-based intervention (ICU nurses)	Reduced emotional exhaustion & depersonalization; increased personal accomplishment	1 & 3 months
	4-week brief mindfulness-based intervention	Decreased emotional exhaustion & depersonalization	3 months
	6-week mindfulness stress reduction (elderly care nurses)	Reduced burnout	6 weeks & 3 months post
	6-month team-based support group	Reduced emotional exhaustion &	6 months

		depersonalization	
	6 sessions positive psychology coaching (3 months)	Reduced burnout	Up to 6 months follow-up
Job Satisfaction	Positive psychology coaching (6 sessions/3 months)	Improved job satisfaction	Up to 6 months
	Supervised high-intensity strengthening exercises	Improved job satisfaction (female healthcare workers)	Post-intervention
Sickness Absence	Neuromuscular exercises + counselling (6 months, lower back pain)	Fewer sickness absence days	6 months
	Strengthening/endurance/coordination exercises (6x/week during work)	Fewer days off work karena back pain	During work hours
	ACT therapy (2 weeks)	Fewer days off work karena work-related injuries	2 weeks
Occupational Injuries	Needle safety devices + workshop	Reduced self-reported needle stick injuries	Post-intervention (not officially registered)

📌 Barriers Follow-up Program OHN pmc.ncbi.nlm.nih

Barrier	Deskripsi
Inadequate staff	Kurangnya tenaga
High workload	Beban kerja tinggi
Time pressures	Tekanan waktu
Lack of manager support	Tidak ada dukungan manajer
Scheduling outside work hours	Program di luar jam kerja
Lack of motivation	Motivasi rendah

DISCUSSION

Pembuatan Clinical Case Report Occupational Health Nursing (OHN) di Indonesia

Berikut adalah diskussion framework lengkap untuk pembuatan clinical case report OHN di Indonesia, mencakup konteks, tantangan, metodologi, dan rekomendasi berdasarkan literatur terbaru dan studi kasus nyata di Indonesia. Konteks & Urgensi OHN Case Report di Indonesia "Karena belum adanya teori ajar yang aplikatif berbasis EBPN, para freshgraduate dan praktisi senior OHN menjalankan secara Learning by doing.

Dalam clinical case report, Occupational Health Nurse (OHN) menguji efektivitas intervensi baru dengan membandingkan temuan kasus atau hasil pengembangan template (seperti dokumen pengkajian atau protokol keselamatan) terhadap literatur terkait. Evaluasi ini menyoroti validitas klinis, kendala di lapangan, serta integrasi pemecahan masalah ke dalam kebijakan perusahaan.Kerangka kerja penulisan untuk membandingkan temuan dengan literatur hingga implikasi praktik mencakup langkah-langkah berikut:Perbandingan Temuan dan Literatur: Bandingkan data klinis (misalnya, tingkat penurunan cedera atau respons pekerja terhadap template) dengan studi atau panduan yang ada. Uraikan apakah hasil Anda sejalan,

mendukung, atau justru menunjukkan deviasi dari konsensus literatur terdahulu.Penjelasan Mekanisme Teoritis: Uraikan alasan ilmiah atau teori keperawatan di balik hasil kasus tersebut (seperti Job Demand-Resource Model atau prinsip ergonomi) untuk menjelaskan mengapa intervensi atau template yang dikembangkan efektif (atau tidak efektif) dalam memodifikasi perilaku K3 pekerja.Keterbatasan: Akui kelemahan dalam pelaporan kasus, seperti kendala kepatuhan pekerja, bias pelaporan mandiri, kurangnya data historis, atau keterbatasan ruang lingkup template ketika diterapkan pada kelompok demografi atau industri yang berbeda.Implikasi Praktik: Jelaskan bagaimana hasil pengembangan ini memberikan nilai tambah. Uraikan rekomendasi konkret untuk mengubah SOP perusahaan, memperbaiki sistem pencatatan kesehatan, atau meningkatkan kurikulum edukasi keselamatan bagi tenaga kerja.

Clinical Case Report OHN dapat:

1. Menjadi data empiris untuk develop teori aplikatif berbasis EBPN
2. Meningkatkan reporting accuracy dari 50% → 100%
3. Standardize OHN practice di industri Indonesia
4. Support OHN Master's program development (trend 2026)
5. Improve evidence-based decision making dalam OHN intervention

Mengapa OHN Case Report Penting di Indonesia?

Aspek	Fakta di Indonesia
OHN sebagai profesi strategis	OHN rapidly developing di sektor industri Indonesia, didorong awareness peluang kerja di industri
Risiko tinggi pada perawat	WHO: occupational exposure pada tenaga kesehatan masih tinggi, perawat kelompok paling rentan
Insiden kerja yang tidak dilaporkan	RSUD Bajawa: 4 kasus work accidents, tapi 2 tidak dilaporkan (2018)
EBPN implementation rendah	Implementasi EBPN masih rendah di OHN Indonesia karena: limited time, access to literature, institutional support
Trend 2026	Discourse on professional OHN Master's programs via industry-university collaboration

Kesimpulan

Aspek	Status di Indonesia	Rekomendasi
Sistem reporting	❌ Bermasalah (SOP tidak dipahami, reporting verbal)	✅ Sosialisasi SOP + sediakan form `e-journal.unair`
APD availability	❌ Kurang fasilitas, kebiasaan tidak pakai	✅ Sediakan APD cukup + pelatihan `jos.unsoed`
EBPN implementation	❌ Masih rendah	✅ Kolaborasi praktisi-akademik + OHN Master's `jurnal.optimaluntuknegeri`
OSH policy	❌ Tidak optimal (Permenkes 48/2016)	✅ Dukungan Dinkes Kabupaten `thejnp`
Peran kepala ruangan	⚠️ Belum optimal	✅ Direction, motivation, reminder, supervision `jos.unsoed`

Implikasi untuk Penelitian OHN di Indonesia

Untuk studi deskriptif kualitatif tentang EBPN OHN Anda:

1. Case report dapat menjadi data sekunder untuk explore experiences & implementation of evidence-based practices
2. OHN case report dapat integrasikan ke monitoring & evaluation healthcare services (industri klinis) yang Anda lakukan
3. Outcome metrics: reporting rate, intervention compliance, clinical outcomes
4. Follow-up: 3, 6, 12 months tracking untuk sustainability

Pendidikan OHN vs Field Practice

Ideal	Realita di Indonesia jurnal.optimaluntuknegeri
OHN education relevant dengan field practice	**General clinical curriculum** lebih prioritas, OHN courses subtopics di "Community Nursing & Management Nursing (K3 & Patient Safety)" jurnal.optimaluntuknegeri
Professional OHN Master's program	**Belum ada** (tapi trend 2026: discourse mulai muncul) jurnal.optimaluntuknegeri
EBPN implementation optimal	**Implementasi masih rendah** karena barriers jurnal.optimaluntuknegeri

REKOMENDASI STRATEGIC

Rekomendasi 1: Kolaborasi Akademisi-Praktisi

- Synergy tanpa conflicts of interest
- Prioritize EBPN implementation
- Develop mata ajar OHN aplikatif berbasis EBPN

Rekomendasi 2: Perbaikan Sistem Reporting

- Sosialisasi SOP thoroughly ke semua nurses
- Sediakan form recording di semua room
- Alokasi budget khusus untuk recording & reporting

Rekomendasi 3: Peningkatan Safety Culture

- Kepala ruangan: Direction, Motivation, Reminder, Supervision
- Manajemen RS: Sediakan APD cukup, pelatihan, meningkatkan safety culture

Rekomendasi 4: OHN Master's Program

- Industry-university collaboration
- Develop konsentrasi OHN di M.Kep Indonesia

Core Responsibility OHN				
HRA	**Clinical Care**	**Health Surveillance**	**Compliance & Policy**	**Wellness & Education**

CONCLUTION

Implementasi manajemen keperawatan oleh Occupational Health Nurses (OHN) di klinik perusahaan Indonesia terbukti krusial dalam menekan angka Penyakit Akibat Kerja (PAK). Keberhasilan ini dicapai melalui pendekatan case management yang komprehensif, menggabungkan promosi kesehatan, pencegahan cedera, manajemen kuratif, dan rehabilitasi untuk meningkatkan produktivitas pekerja. Pembuatan clinical case report yang aplikatif berdasarkan praktik berbasis bukti oleh Occupational Health Nurse di Indonesia merupakan urgensi strategis yang tidak dapat diabaikan, Implikasi Praktik Clinical case report yang prospektif berbasis EBPN dapat Evaluasi kasus potensial berdasarkan panduan terkini, Mengsinergikan kebutuhan industri dalam implementasi SMK3, Meningkatkan kualitas pelayanan & keselamatan pasien, Memberikan bukti hukum bila terjadi kesalahan medis dan Kontribusi efektif terhadap perkembangan ilmu penyakit. Dengan adanya clinical case report yang aplikatif berbasis evidence-based practice, OHN di Indonesia dapat berkembang dari profesi yang masih 'learning by doing' menjadi profesi strategis sektor industri yang terstandar, terintegrasi, dan berkontribusi efektif terhadap keselamatan pekerja, keselamatan pasien, serta perkembangan ilmu kesehatan kerja nasional.

REFERENCES

Albyn, D. F., Warseno, A., & Aulia, M. (2026). STUDI FENOMENOLOGI: URGENSI PENDIDIKAN OCCUPATIONAL HEALTH NURSE BERBASIS EBPN YANG APLIKATIF SESUAI DENGAN KEBUTUHAN INDUSTRI. Trend And Issue In Healthcare.

Devanda Faiqh Albyn, Tan Malaka, Ambar W. Roestam, Rochmayanti, 2026; Original Research: EVIDENCE-BASED PRACTICE AMONG OCCUPATIONAL HEALTH NURSES IN INDONESIA: A QUALITATIVE DESCRIPTIVE STUDY, International Journal of Patient Safety and Quality, UNAIR, E-ISSN 3062-7117

Setiawan, Dadang Purnama, 2026; PENERAPAN ASUHAN KEPERAWATAN KESEHATAN KERJA UNTUK MENINGKATKAN PENGETAHUAN K3 PADA PEKERJA HOME INDUSTRY TAHU EEN, Sawala: Jurnal pengabdian Masyarakat Pembangunan Sosial, Desa dan Masyarakat, Volume 7 Nomor 1 Januari 2026, Halaman 55-62, e ISSN: 2716-4705, doi: https://doi.org/10.24198/sawala.v7i1.68319

Simpson SJ, Purdy LS. Strategies for comprehensive nurse managed occupational health services: focusing on work related health problems while maintaining comprehensive care delivery. AAOHN J. 1997 Oct;45(10):491-5. PMID: 9384003.

STUDI DESKRIPTIF KUALITATIF TENTANG EBPN OCCUPATIONAL HEALTH NURSING. (2026). Jurnal Pengabdian Kepada Masyarakat Bidang Ilmu Keperawatan "Optimal", 3(1). https://doi.org/10.5281/zenodo.19876969

MODUL PENYAKIT AKIBAT KERJA (PAK), SISTEM KEDOKTERAN KOMUNITAS PSPD FKK UMJ 2018

https://idki.org/wp-content/uploads/2023/08/Form-Investigasi-PAK-IDKI.pdf

Sirkka J, Suhonen R, Liira J, Stolt M. Occupational Health Nurses' Perceptions in Work Ability Risk Management and Analysis. J Occup Rehabil. 2025 Jun;35(2):423-433. doi: 10.1007/s10926-025-10282-7. Epub 2025 Mar 15. Erratum in: J Occup Rehabil. 2025 Jun;35(2):434. doi: 10.1007/s10926-025-10292-5. PMID: 40088413; PMCID: PMC12089217.

Devanda Faiqh Albyn', Denny Achkanul Hak2, Didit Ribowo3, " Qualitatif Research : The Needs Urgency Occupational Health Nurse (OHN) Manpower to support Health and Wellness Programe at Indonesian Company", Medical : Jurnal Kesehatan Dan Kedokteran, Vol. 1 No. 2, Desember, 2024, hlm. 62-67.

Satiman, Hasrullah Djabbar, Devanda Faiqh Albyn, 2025; Original Research : @ohnurseedu Digital Platform healthcare innovation OHN education opens up a paradigm of job opportunities for nurses in companies based on Evidence Base Practice Healthcare OHN practice and services in Indonesia. Journal of Nursing Innovation Volume 4, No 2, 58-63, Juli 2025, © The Author(s) 2025, E-ISSN: 2962-8946

Titik Suhartini, 2023; Original Article: Implementasi Standar Diagnosis Keperawatan Indonesia Berdasarkan Aspek Motivasi Kerja, Beban Kerja, Supervisi, Model Kepemimpinan Dan Organisasi, Fasilitas Layananan Terhadap Pendokumentasian Asuhan Keperawatan, Vol. 8 No. 2 (2023): JURNAL KEPERAWATAN MUHAMMADIYAH, DOI: https://doi.org/10.30651/jkm.v8i2.18387

GAMBARAN PELAKSANAAN PENDOKUMENTASIAN ASUHAN KEPERAWATAN BERBASIS EMR (ELECTRONIC MEDICAL RECORD) DI RSUD ARIFIN ACHMAD PROVINSI RIAU. (2025). Jurnal Ilmu Keperawatan, 14(2), 224-237. https://doi.org/10.35328/sgetws46

https://blog.appskep.id/occupational-health-nurse-perawat-di-tempat-kerja-perusahaan-industri/

Eko Prasetyo, Ulya, T., David Laksamana Caesar, Ervi Rachma Dewi, & Livana PH. (2025). Implementation of Occupational Safety and Health (OSH) Office Program in Community Health Center. Journal Of Nursing Practice, 8(3), 675–687. https://doi.org/10.30994/jnp.v8i3.812

I Made Melvin Risma Putra, Ni Wayan Rusni, Ni Made Hegard Sukmawati, 2022; Hubungan Sikap Kerja dengan Low Back Pain (LBP) pada Pegawai Bank X di Kabupaten Gianyar, e-Journal AMJ (Aesculapius Medical Journal), Vol. 2 No.2 | Agustus | 2022 | Hal. 82 - 90, E ISSN: 2808-6848, ISSN: 2829-0712

Nabylla Sharfina Sekar nurriwanti. (2025). Perubahan Pengetahuan Risiko LBP Sebelum dan Sesudah Penyuluhan pada Kelompok Wanita Tani Ngori. Jurnal Ilmiah Kedokteran Dan Kesehatan, 4(2), 16–22. https://doi.org/10.55606/klinik.v4i2.3852

https://isafetymagazine.com/pelaporan-penyakit-akibat-kerja-masih-kecil-di-indonesia/

https://ugm.ac.id/id/berita/angka-kecelakaan-kerja-tembus-400-ribu-kasus-dosen-ugm-sebut-budaya-k3-belum-mengakar-kuat/

https://rskemenkessurabaya.go.id/artikel-kesehatan/penyakit-akibat-kerja-kenapa-banyak-orang-tidak-menyadarinya-

https://www.abohn.org/

https://www.aaohn.org/

Aeshah Bader Ali Masmali, et.al., 2024; Medical Nurses in Occupational Health: Ensuring

Workplace Wellness, ESIC 2024 , Posted: 26/10/2024, ESIC | Vol. 8.2 | No. S3 | 2024,

Evolutionary Studies in Imaginative Culture

American Association of Occupational Health Nurses. (2023). Occupational Health Nursing:

Scope and Standards of Practice. American Nurses Association.

American Board for Occupational Health Nurses. (2024). Certification and Recertification

Requirements. ABOHN.

GBD 2016 Occupational Risk Factors Collaborators. Global and regional burden of disease and injury attributable to selected occupational risk factors, 1990–2016: a systematic analysis for the Global Burden of Disease Study 2016. Occupational and Environmental Medicine. 2018;75(6):414–424. Available from: https://pubmed.ncbi.nlm.nih.gov/28733964/

European Agency for Safety and Health at Work (EU-OSHA). Work-related diseases. Available from: https://osha.europa.eu/en/themes/work-related-diseases

Encyclopaedia Britannica. Occupational disease: Disorders due to chemical agents. Available from: https://www.britannica.com/science/occupational-disease/Disorders-due-to-chemical-agents

World Health Organization. Occupational health: health workers. Available from: https://www.who.int/news-room/fact-sheets/detail/occupational-health--health-workers

Perhimpunan Spesialis Kedokteran Okupasi Indonesia. Pedoman Klasifikasi Diagnosis Penyakit Akibat Kerja. Edisi ke-1. Jakarta: PERDOKI; 2021.

Perhimpunan Spesialis Kedokteran Okupasi Indonesia. Pelayanan Kedokteran Okupasi di Rumah Sakit pada Kasus Penyakit Akibat Kerja atau Kecelakaan Kerja. Jakarta: PERDOKI; 2023.

Merita Yumna Nisrina,et.al., 2025; STUDI KASUS DERMATITIS KONTAK ALERGI AKIBAT KERJA PADA PEKERJA BANGUNAN, Volume 6, Nomor 2, Juni 2025, ISSN : 2774-5848 (Online)ISSN : 2777-0524 (Cetak)JURNAL KESEHATAN TAMBUSAI, Vol. 6 No. 2 (2025): JUNI 2025, ISSN : 2774-5848 (Online)ISSN : 2777-0524 (Cetak)

Albyn, D. F., & Pradana, L. G. (2024, August). Paper's Literature Review: Urgency making OHN Sciences at Indonesian Nursing Institution to preparation Profetionality of OHN Manpower. In Proceeding of International Conference of Religion, Health, Education, Science and Technology (Vol. 1, No. 1, pp. 15-25).

Anny, A. W. M., Faiqh, A. D., Suhendi, D., & Riyadi, S. (2025). Qualitative Research: Phenomenological Study of The Development of OHN From The Perspective of OHN Practitioners In Indonesia And OHN Diaspora. Journal of Nursing Innovation, 4(1), 1-7.

Albyn, D. F., Harianto, D. C., Widodo, A. W., Nurdiansyah, Y., Hak, D. A., Wibowo, T. S., ... & Rifanto, E. A. (2023). Fenomenology Study: The role of Occupational Health Nurses (OHN) in Emergency and Disaster Services. Babali Emergency and Disaster Research, 1(2).

Tukayo, I. J. H., & Hardy, S. (2020). The comparison of work productivity between nurses with insight of occupational health nursing (OHN) and of those without it. Jurnal Keperawatan, 11(2), 127-134.

Hardy, S., Tukayo, I. J., Afzal, R., & Hadi, N. (2021). Theoretical Perspectives Of Occupational Health Nurses (OHN) Career In Indonesia: A Critical Review And Future Exploration. Jurnal Berita Ilmu Keperawatan, 14(2), 102-112.

Puspita, A. P. W., Karra, A. K. D., Aridamayanti, B. G., Albyn, D. F., Malik, M. Z., Amalia, I. N., & Nuari, N. A., 2026; Bunga Rampai: Tren dan Inovasi Pendidikan Keperawatan: Kurikulum, Praktik Klinik, dan Pengembangan Profesional Ner di Indonesia, ISBN: 978-634-7556-49-3

de Jager, N., Nolte, A. G., & Temane, A. (2016). Strategies to facilitate professional development of the occupational health nurse in the occupational health setting. health sa gesondheid, 21, 261-270.

Yamase, Y., Nobuchika, H., & Ishimatsu, N. (2001). The present situation of occupational health nursing education and how to apply it to the fundamental nursing system. Journal of UOEH, 23(2), 203-215.

Tiwari, R. R., Sharma, A., Zodpey, S. P., & Patel, S. (2015). Occupational health nursing course in India: Stakeholder's perspective. J Environ Occup Sci, 4(2), 111-113.

Burgel, B. J., Wallace, E. M., Kemerer, S. D., & Garbin, M. (1997). Certified occupational health nursing: job analysis in the United States. AAOHN journal, 45(11), 581-591.

Strasser, P. B., Maher, H. K., Knuth, G., & Fabrey, L. J. (2006). Occupational health nursing: 2004 practice analysis report. AAOHN Journal, 54(1), 14-23.

Burkeen, O., Corsico, R. J., & Harris, A. W. (1984). The American Board for Occupational Health Nurses' role delineation and validation project. Occupational Health Nursing, 32(10), 522-525.

Verrall, A. B. (1997). Certification and Occupational Health Nursing: An Historical Perspective. AAOHN journal, 45(6), 283-289.

Harris, A. M. (1974). American Board for Occupational Health Nurses, Inc.—A Progress Report. Occupational Health Nursing, 22(8), 28-30.

Georgia Knuth, M. S. (2006). Occupational Health Nursing. Workplace Health & Safety, 54(1), 14.

Tukayo, I. J. H., Saljan, M., Swastika, I. K., & Hardy, S. (2021). The Occupational Health Nursing Education Components Most Influenced by Informatics Technology Based on Gamification and Fogg's Models: a Case Study in Indonesia. International Journal of Advanced Health Science and Technology, 1(2), 53-60.

Carlson, L. Board Certified Occupational Health Nurses: Advocating for the Workforce & Healthy Work Environments.

Hardy, S., Tukayo, I. J. H., Fahruddin, A., & Afzal, R. (2022). Determination of Fit to Work Status for Thyroid Cancer Survivor: A Case Study in Occupational Health Setting. Journal of Public Health for Tropical and Coastal Region, 5(1), 10-19.

PERATURAN MENTERI KESEHATAN REPUBLIK INDONESIA NOMOR 56 TAHUN 2016 TENTANG PENYELENGGARAAN PELAYANAN PENYAKIT AKIBAT KERJA

Donham, K. J., & Venzke, J. K. (2021). Agricultural occupational health nurse training and certification: addressing the need for occupational health professionals in agricultural environments. In Agricultural Health and Safety (pp. 105-116). CRC Press.

Donham, K. J. (2021). Agricultural Occupational Health Nurse Training and Certification: Addressing the Need. Agricultural Health and Safety: Recent Advances, 105.

Weinsier, S., & Garcia-Cameron, J. (2025). Tips for Occupational Health Nurses on How to Ace Your Scholarship or Grant Application. Workplace Health & Safety, 73(4), 203-210.

Lanzi, M. C., Billings, R., Schexnayder, J., & Markaki, A. (2026). Identifying Core Competencies for Occupational and Environmental Health Nurse Practitioners: An Integrative Review. Workplace Health & Safety, 21650799261449262.

García, V. R. (2020). Enfermería ocupacional, más allá del cuidado. CuidArte, 7(13), 50-57.

ESPINOZA, E. R. B. (2024). TURNING TO A NEW HORIZON: THE LIVED EXPERIENCES OF OCCUPATIONAL HEALTH NURSES IN THE CEMENT INDUSTRY.

Black, B. (2022). Professional nursing-e-book: concepts & challenges. Elsevier Health Sciences.

Batterman, S. A., Finkel, A. M., McCullagh, M. E., Neitzel, R. L., O'Neill, M. S., Sarter, N. B., ... & Zellers, E. T. (2023). The University of Michigan Education and Research Center.

Zulfikar Lating, Ira Deseilla Pawa, & Ira Sandi Tunny. (2024). Gambaran Perilaku Perawat Dalam Penerapan Kesehatan Dan Keselamatan Kerja. Termometer: Jurnal Ilmiah Ilmu Kesehatan Dan Kedokteran, 2(3), 87–97. https://doi.org/10.55606/termometer.v2i3.4064

CARPINO-PETTEGROW, E. L. A. I. N. E. (2020). CHAPTER ELEVEN OCCUPATIONAL AND ENVIRONMENT HEALTH NURSING ELAINE CARPINO-PETTEGROW, RN, MPH, COHN-S. The Many Roles of the Registered Nurse, 96.

Thornberry, A., Garcia, T. J., Peck, J., & Sefcik, E. (2020). Occupational health nurses' self-efficacy in smoking cessation interventions: An integrative review of the literature. Workplace health & safety, 68(11), 533-543.

Njemanze, B. C. (2024). Implementation of an Evidence-Based Ergonomic Protocol to Decrease Patient Injuries in an Occupational Health Setting (Doctoral dissertation, Aspen University).

Teixeira Machado, V. M., Monteiro, F. D. S. P., João, M., Helena de Oliveira Penaforte, M., & Costa Pereira Rodrigues, V. M. (2022). OCCUPATIONAL NURSING IN PORTUGAL: CONTEXT AND PERSPECTIVES. Revista Baiana de Enfermagem, 36.

Weinsier, S., & Garcia-Cameron, J. (2025). Tips for Occupational Health Nurses on How to Ace Your Scholarship or Grant Application. Workplace Health & Safety, 73(4), 203-210.

Tomlinson, J. (2021). Tribute to Editorial Board Member and Occupational Health Nurse Leader. Workplace Health & Safety, 69(11), 542-542.

MODULE, C. (2026). CE Module: A Systematic Narrative Review of Stable Staff and Trainers' Occupational Health and Well-Being in Thoroughbred Horse Racing: An International Perspective. Workplace HealtH & Safety, 74(4).

O'Keefe, L. (2025). CE Module: Multicomponent Workplace Tobacco Cessation Interventions: A Scoping Review. Workplace Health & Safety, 73(1), 21-21.

Pompeii, L. (2020). Workplace Health & Safety is Going Digital!. Workplace Health & Safety, 68(1), 5-5.

MODULE, C. (2022). CE Module: Identifying and Decreasing Sharps Injuries Through Root Cause Analysis in a Large Urban Hospital System. Workplace HealtH & Safety, 71(6).

MODULE, C. (2022). CE Module: Fluid Intake and Hydration Status Among North Carolina Farmworkers—A Mixed Methods Study. Workplace HealtH & Safety.

O'Keefe, L. (2024). CE module: respiratory symptoms and psychological distress in farmers living with chronic obstructive pulmonary disease. Workplace Health & Safety, 72(10), 420-420.

MODULE, C. (2025). CE Module: Collaboration in Occupational Health Nursing. Workplace HealtH & Safety, 73(4).

MODULE, C. (2022). CE Module: Using Occupational Health Histories to Assess Heat Exposure in Undocumented Workers Receiving Emergent Renal Dialysis in Georgia. Workplace Health & Safety, 70(5).

MODULE, C. (2020). Obesity Prevention Worksite Wellness Interventions for Health Care Workers.

MODULE, C. (2022). CE Module: Physician Flow at Work. Workplace HealtH & Safety.

Olszewski, K., & Wolf, D. (2023). Total Worker Health: It's Not Just Another Wellness Program. Workplace Health & Safety, 71(1), 4-4.

Olszewski, K. A., Wolf, D. M., & Wenskovitch, J. (2021). Exploring occupational health professionals understanding and needs in regard to Total Worker Health (TWH). Workplace Health & Safety, 69(7), 296-305.

Hardy, S., Tukayo, I. J., Afzal, R., & Hadi, N. (2021). Theoretical Perspectives Of Occupational Health Nurses (OHN) Career In Indonesia: A Critical Review And Future Exploration. Jurnal Berita Ilmu Keperawatan, 14(2), 102-112.

Putri, D. R. A., & Albyn, D. F. (2026). Literature Review: Peran Kelengkapan Sumber Daya Manusia (SDM) Keselamatan Dan Kesehatan Kerja (K3) Dalam Meningkatkan Efektivitas Sistem Manajemen Keselamatan Pertambangan (SMKP) Risiko: Kelengkapan Sumber Daya Manusia (SDM) Keselamatan Dan Kesehatan Kerja (K3). Medical: Jurnal Kesehatan dan Kedokteran, 3(1), 1-30.

Sivaram Shanmugam, 2023; The Role of Occupational Health Nurses in Employee Health and Safety, Volume 8, Issue 4, Department of Physiotherapy and Paramedicine, Glasgow Caledonian University, Glasgow, International Journal of Public Health and Safety, ISSN: 2736-6189

https://repositori-ditjen-nakes.kemkes.go.id/582/1/Modul%20Pelatihan%20Surveilans%20Epidemiologi%20bagi%20Petugas%20Puskesmas.pdf

file:///C:/Users/think/Downloads/Pertemuan_5_EAK3_Pemeriksaan_Kesehatan.pdf

https://www.betterwork.org/wp-content/uploads/751-2-89-permen02-1980ttgpemeriksaankesehatantk1.pdf

https://lmsspada.kemdiktisaintek.go.id/pluginfile.php/548467/mod_resource/content/0/Modul-2-Surveilans-Kesehatan-Kerja-KKK355.pdf

https://bphn.go.id/data/documents/16pmkes056.pdf

https://prodiaohi.co.id/diagnosis-penyakit-akibat-kerja

https://keslan.kemkes.go.id/view_artikel/787/penyakit-akibat-kerja-pak

https://digitalcommons.wku.edu/cgi/viewcontent.cgi?article=1050&context=nurs_fac_pub

https://nusamed.co.id/web/berita-detail-377-Health-Risk-Assessment,-Solusi-Perusahaan-Mencegah-Penyakit-Kantoran-pada-Karyawan.html

https://journals.sagepub.com/doi/pdf/10.1177/216507999003800302

file:///C:/Users/think/Downloads/Permenkes%20Nomor%2011%20Tahun%202022%20(2).pdf

https://etd.repository.ugm.ac.id/penelitian/detail/205650

Syaifoel Hardy MN, 2012;PARADIGMA BARU MANAJEMEN OCCUPATIONAL HEALTH NURSING

DALAM PEMBELAJARAN COMMUNITY OF NURSING, JURNAL KEPERAWATAN, ISSN 2086-3071, Volume 3, Nomor 2

Purnawati Rahayu E, Harnani Y, Makomulamin M. Analysis of the Implementation of Occupational Safety and Health Management System in Pekanbaru Hospital. J Keskom [Internet]. 2025 Jul. 31 [cited 2026 Jun. 9];11(2):251-6. Available from: https://jurnal.htp.ac.id/index.php/keskom/article/view/2176

Ferina Kartika & Sri Lestari Ramadhani Nasution, 2024; ORIGINAL ARTICLE: Assessing the implementation of occupational safety and

health management system in the hospital, J Prima Med Sains (2024) 6(2):244-250 doi.org/10.34012/jpms.v6i2.6364

van der Molen HF, Visser S, Alfonso JH, Curti S, Mattioli S, Rempel D, Roquelaure Y, Kuijer PPFM, Tamminga SJ. Diagnostic criteria for musculoskeletal disorders for use in occupational healthcare or research: a scoping review of consensus- and synthesised-based case definitions. BMC Musculoskelet Disord. 2021 Feb 11;22(1):169. doi: 10.1186/s12891-021-04031-z. PMID: 33573616; PMCID: PMC7879660.

https://nursesinoccupationalhealth.weebly.com/overview-of-nursing-role.html

Roio LCD, Mizutani RF, Pinto RC, Terra-Filho M, Santos UP. Work-related asthma. J Bras Pneumol. 2021 Aug 11;47(4):e20200577. doi: 10.36416/1806-3756/e20200577. PMID: 34406224; PMCID: PMC8352763.

Ayu Tri Yuningsih & Herdi Herdi, 2023 ; Adaptasi dan Validasi Instrumen The Perceived Wellness Survey (PWS) pada Peserta Didik SMA

di Indonesia, GUIDENA: Jurnal Ilmu Pendidikan, Psikologi, Bimbingan dan Konseling, ISSN: 2088-9623 (Print) - ISSN: 2442-7802 (Online), DOI: http://dx.doi.org/10.24127/gdn.v13i4.8350, Vol 13, No 4 (2023) Page: 837 – 844

Enik Nurkholidah, 2021; MODEL WELLNESS COUNSELING BERORIENTASI POSITIVE BEHAVIOR

CHANGE UNTUK PENINGKATAN SURVIVAL-SAFETY SKILLS REMAJA

DI DAERAH ISTIMEWA YOGYAKARTA , Desertasi,PROGRAM STUDI BIMBINGAN DAN KONSELING

PROGRAM MAGISTER DAN DOKTOR

UNIVERSITAS PENDIDIKAN INDONESIA

Sirkka J, Suhonen R, Liira J, Stolt M. Occupational Health Nurses' Perceptions in Work Ability Risk Management and Analysis. J Occup Rehabil. 2025 Jun;35(2):423-433. doi: 10.1007/s10926-025-10282-7. Epub 2025 Mar 15. Erratum in: J Occup Rehabil. 2025 Jun;35(2):434. doi: 10.1007/s10926-025-10292-5. PMID: 40088413; PMCID: PMC12089217.

Rohmani, N., Nirmalasari, N., & Lestari, R. (2023). Peningkatan Keselamatan Kerja Melalui Pencegahan Penyakit Akibat Kerja Pada Perawat di Rumah Sakit. Jurnal Pengabdian Pada Masyarakat, 8(2), 490-498. Retrieved from https://jurnal.unmabanten.ac.id/index.php/jppm/article/view/346

https://nationalwellness.org/wp-content/uploads/2022/06/NWI_Six-Dimensions-of-Wellness-Self-Assessment_2022.pdf

Angela Tesalonika Oktavera & Innaha Ilma Wardaya, 2023; ORIGINAL ARTICLE : Relationship of Compliance of Personal Protective Equipment Usage and

Housekeeping with Near Miss among Nurses, The Indonesian Journal of Occupational Safety and Health

2023, 12 (2): 176-184p ISSN: 2301 8046, e ISSN: 2540 7872, http://doi.org10.20473/ijosh.v12i2.2023.176-184

KEMNEKER RI, NO. 143 TAHUN 2022: SKKNI

(This research protocol has been reviewed and approved by the Health Research Ethics Committee of the Makassar Health Polytechnic (Approval Number 0309/M/KEPK-PTKMS/II/2026).

THE EFFECT OF ABDOMINAL STRETCHING EXERCISE ON REDUCING THE INTENSITY OF MENSTRUAL PAIN (DYSMENORRHEA) IN PHYSIOTHERAPY STUDENTS AT THE MAKASSAR MINISTRY OF HEALTH POLYTECHNIC.

Nadya Cahyani[a], Sri Saadiyah Leksonowati[b], Andi Halimah[c], Yonathan Ramba[d], Aco Tang[e]
[a,b,c,d]Makassar Ministry of Health Polytechnic

**Corresponding author: po714241224009@poltekkes-mks.ac.id*

Abstract

Background: Dysmenorrhea is menstrual pain caused by increased prostaglandins and uterine contractions, which can disrupt activities, concentration, and the learning process of female students. Many students still tend to ignore menstrual pain or manage it with temporary pharmacological approaches. Therefore, abdominal stretching exercise is urgently needed as a simple, safe, low-cost, and non-pharmacological intervention that can be practiced independently to reduce pain through increased muscle flexibility, blood circulation, and endorphin release. **Methods**: This study used a pre-experimental one-group pretest-posttest design involving 38 physiotherapy students at Poltekkes Kemenkes Makassar who experienced primary dysmenorrhea and met the inclusion criteria. The sample consisted of all eligible respondents from 43 screened students. The independent variable was abdominal stretching exercise, while the dependent variable was menstrual pain intensity measured using the Numeric Rating Scale (NRS). Pain was measured at pre-test and post-tests 1 to 4. Normality was assessed using the Shapiro-Wilk test, and differences in pain intensity were analyzed using the Wilcoxon signed-rank test because the data were not normally distributed. **Results**: The Shapiro-Wilk test showed that pain intensity data were not normally distributed ($p<0.05$), so the results were presented using median pain categories. The median pain category decreased from severe pain at pre-test to moderate pain at post-tests 1 to 3 and mild pain at post-test 4. The Wilcoxon test showed $p<0.001$ for each measurement comparison, indicating a significant reduction in menstrual pain after abdominal stretching exercise. **Conclusion**: Abdominal Stretching Exercise has a significant effect on reducing the intensity of menstrual pain, making it a safe, easy, and effective non-pharmacological therapy alternative for female students experiencing dysmenorrhea.

Keywords: Abdominal Stretching Exercise, Dysmenorrhea, Menstrual Pain, Numeric Rating Scale (NRS).

INTRODUCTION

Adolescence is a developmental phase toward adulthood that encompasses mental, emotional, social, and physical maturity. This period is marked by the maturation of the reproductive organs and readiness for reproduction. One manifestation of puberty in females is the first menstrual experience, known as menarche. Indonesia is currently undergoing a shift in the structure of its population pyramid. The demographic pattern observed in Indonesia resembles that of developed countries, characterized by a decline in the proportion and number of children, accompanied by a significant increase in the adolescent population (Haid & Putri, 2023).

Menstruation is a routine physiological phenomenon experienced by women every month throughout their reproductive years. It is characterized by periodic and cyclical bleeding accompanied by the shedding of the inner lining of the uterus, or endometrium, which is then expelled through the vagina in adult women. The menstrual cycle represents regular physiological changes in the female reproductive system regulated by reproductive hormones. This phase is crucial for reproductive function and generally occurs monthly from puberty until menopause. By definition, menstruation is periodic and cyclical uterine bleeding involving the shedding (desquamation) of the endometrium (Swandari, 2022).

Dysmenorrhea is the medical term for pain experienced during menstruation, usually felt in the lower abdomen shortly before or during the menstrual period (Mayangsari & Ayubi, 2024). It is also commonly referred to as menstrual pain or menstrual cramps. This common gynecological problem reported by women of reproductive age is classified into two types: primary and secondary dysmenorrhea (Mayangsari & Ayubi, 2024).

The World Health Organization (WHO) reported that the prevalence of dysmenorrhea among adolescent girls was 42.6% in 2020. This figure increased to 43.2% in 2021 and 43.9% in 2022. In ASEAN countries, particularly the Philippines and Malaysia, the prevalence of menstrual pain was reported to be 38.5% (WHO, 2022).

Based on data from the 2020 Profile of the Ministry of Health of the Republic of Indonesia, the prevalence of dysmenorrhea among adolescent girls was recorded at 41.6%. In 2021, the prevalence increased to 42.5%, and in 2022 it reached 43.1% (Ministry of Health, 2022).

In Indonesia, the incidence of primary dysmenorrhea is reported to be 55%, while the remaining cases are secondary dysmenorrhea. Dysmenorrhea is common among adolescents, with prevalence ranging from 45% to 95%. Approximately 75-85% of these adolescents report mild dysmenorrhea. The estimated incidence of endometriosis among adolescents experiencing pelvic pain is 25-40%. Furthermore, studies show that 75% of adolescents who underwent laparoscopy after failing to respond positively to menstrual pain management were confirmed to have a related condition (Haid & Putri, 2023).

According to data from the South Sulawesi Provincial Health Office, the incidence of menstrual pain among adolescent girls was recorded at 38.4% in 2020. This figure increased to 38.9% in 2021 and rose again to 39.3% in 2022 (South Sulawesi Provincial Health Office, 2022).

Preliminary observation data among female students in the Physiotherapy Department of the Makassar Ministry of Health Polytechnic showed that, of the 43 students who completed the screening questionnaire, 38 experienced primary dysmenorrhea. Common complaints during the first and second days of menstruation included lower abdominal pain, dizziness, and nausea. These conditions interfered with academic activities, including absence from lectures, decreased learning concentration, and disrupted social interaction due to mood changes. Some students tended to ignore the pain, rest without targeted management, or independently use pain-relieving medication. This indicates that students' knowledge, attitudes, and practices in managing dysmenorrhea still need to be directed toward safe, simple, non-pharmacological measures that can be performed independently.

Abdominal stretching exercise is a muscle-stretching activity focused on the abdominal area and performed for approximately 10 to 15 minutes. This exercise is recommended because it is easy to learn, requires no special equipment, can be performed independently, and is relatively safe for adolescent girls with primary dysmenorrhea. Physiologically, stretching can help improve muscle flexibility, enhance blood circulation, reduce muscle tension, and stimulate the release of endorphins, which act as the body's natural analgesics. Based on these considerations, abdominal stretching exercise was selected as the intervention in this study to reduce menstrual pain intensity among female students in the Physiotherapy Department of the Makassar Ministry of Health Polytechnic.

METHODS

Design, Setting, and Time

This study used a pre-experimental design with a one-group pretest-posttest approach. The study was conducted at the Physiotherapy Department Campus of the Makassar Ministry of Health Polytechnic from April to May 2026.

Number and Method of Subject Recruitment

The accessible population in this study consisted of 43 female students from the Physiotherapy Department of the Makassar Ministry of Health Polytechnic who participated in dysmenorrhea screening. The study sample comprised 38 students with primary dysmenorrhea who met the inclusion and exclusion criteria and agreed to participate by signing informed consent. The sample size was not determined using the Slovin formula; instead, it included all respondents from the accessible population who met the study criteria during the research period.

Thus, the final sample consisted of 38 respondents. Purposive sampling was used in accordance with the study criteria because the included respondents were required to have primary dysmenorrhea with moderate to severe pain.

The inclusion criteria were female students of the Physiotherapy Department at the Makassar Ministry of Health Polytechnic who experienced primary dysmenorrhea, had moderate to severe pain based on the Numeric Rating Scale (NRS), and agreed to participate by signing informed consent. The exclusion criteria were students with mild dysmenorrhea and students with diseases or abnormalities of the reproductive system.

Data Processing and Analysis

Data analysis was conducted according to the type of study variable. Age characteristics were presented categorically as frequencies and percentages. Menstrual pain intensity was measured using the Numeric Rating Scale (NRS) and categorized as mild, moderate, or severe. Because the Shapiro-Wilk normality test showed that the data were not normally distributed ($p<0.05$), pain intensity data were presented using the median pain category, while changes in pain intensity before and after the intervention were analyzed using the Wilcoxon signed-rank test.

RESULTS

Univariate Analysis

Based on Table 1, most respondents were in the late-adolescent age group of 18-19 years, totaling 35 individuals (92.1%), while 3 respondents (7.9%) were 20 years old. This age distribution indicates that the respondents were relatively homogeneous and were within the age range from late adolescence to early adulthood.

Table 1. Respondents' Age Characteristics

Age group	f	%
Late adolescence (18-19 years)	35	92,1
Early adulthood (20 years)	3	7,9
Total	38	100,0

Data source: Primary Data, 2026

Bivariate Analysis

Based on Table 2, before the intervention, most respondents experienced severe pain, totaling 30 individuals (78.9%), while 8 individuals (21.1%) experienced moderate pain. After abdominal stretching exercise, pain intensity gradually decreased. At post-test 1, the number of respondents with moderate pain increased to 22 (57.9%), while those with severe pain decreased to 16 (42.1%). At post-test 2, 34 respondents (89.5%) were in the moderate-pain category, while 4 respondents (10.5%) still experienced severe pain. At post-test 3, all respondents were in the moderate-pain category. At post-test 4, 22 respondents (57.9%) experienced mild pain and 16 respondents (42.1%) experienced moderate pain.

Table 2. Analysis of Menstrual Pain Categories

Measurement time	Pain category	f	%
Pre-test	Moderate pain	8	21,1
	Severe pain	30	78,9
Post-test 1	Moderate pain	22	57,9
	Severe pain	16	42,1
Post-test 2	Moderate pain	34	89,5
	Severe pain	4	10,5
Post-test 3	Moderate pain	38	100,0
Post-test 4	Mild pain	22	57,9
	Moderate pain	16	42,1

Data source: Primary Data, 2026

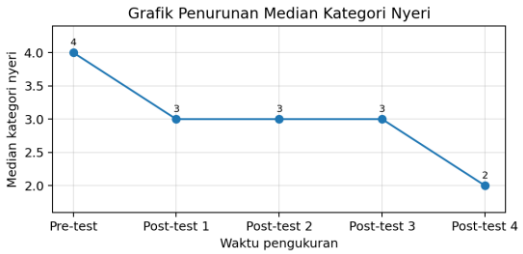
Based on Table 3, the Shapiro-Wilk normality test showed that the pre-test, post-test 1, post-test 2, and post-test 4 data had p-values of <0.001, indicating that the data were not normally distributed. At post-test 3, the normality test could not be calculated because all respondents were in the same pain category. Therefore, pain intensity results were presented using the median pain category, and differences were analyzed using the Wilcoxon test.

Table 3. Normality Test and Median Pain Category

Measurement time	p Shapiro-Wilk	Median pain category	IQR
Pre-test	<0,001	Severe pain	0
Post-test 1	<0,001	Moderate pain	1
Post-test 2	<0,001	Moderate pain	0
Post-test 3	Constant data	Moderate pain	0
Post-test 4	<0,001	Mild pain	1

Data source: Primary Data, 2026

Figure 1. Graph of the Reduction in Median Pain Category



Based on Table 4, the Wilcoxon test showed p-values of <0.001 for all comparisons between measurement times. These results indicate significant differences between the pre-test and post-test 1, post-test 1 and post-test 2, post-test 2 and post-test 3, and post-test 3 and post-test 4. Thus, abdominal stretching exercise had a significant effect on reducing dysmenorrhea intensity at each measurement time.

Table 4. Wilcoxon Test Results for Dysmenorrhea Intensity

Comparison of measurement times	n	Z	p-value
Post-test 1 vs Pre-test	38	-5,109	<0,001
Post-test 2 vs Post-test 1	38	-4,564	<0,001
Post-test 3 vs Post-test 2	38	-3,945	<0,001
Post-test 4 vs Post-test 3	38	-5,458	<0,001

Data source: Primary Data, 2026

DISCUSSION

Before the intervention, most respondents experienced dysmenorrhea categorized as severe pain. The high pain intensity may have been influenced by increased prostaglandin levels that trigger uterine contractions, abdominal muscle tension, and respondents' suboptimal methods of managing menstrual pain. In addition to physiological factors, limited knowledge and the habit of ignoring pain may also worsen the impact of dysmenorrhea on learning activities, concentration, and respondents' comfort during lectures.

After abdominal stretching exercise, dysmenorrhea intensity gradually decreased from severe pain at the pre-test to moderate pain during several initial measurements and then to mild pain at post-test 4. This change indicates that repeated exercise can help respondents manage menstrual pain more effectively. The Wilcoxon test showed p-values of <0.001 for each comparison between measurement times, indicating that the reduction in pain was statistically significant.

The pain-reduction mechanism of abdominal stretching exercise can be explained by increased stretching of the abdominal muscles, improved blood circulation, reduced muscle tension, and increased endorphin release. Endorphins act as natural analgesics that can reduce pain perception and improve comfort. Therefore, abdominal stretching exercise can serve as an easy, inexpensive, non-pharmacological alternative that does not cause medication dependence among female students experiencing dysmenorrhea (Sutrisni, Sri Lestari, Arsy Widyatriastuti, Gunawan, 2022).

Light physical activity in the form of abdominal stretching also helps respondents become more relaxed and more aware of their physical condition during menstruation. This exercise requires no special equipment and can therefore be performed on campus or at home. These advantages support the recommendation of abdominal stretching exercise as a self-care measure to reduce primary dysmenorrhea among adolescent girls and female university students.

The findings of this study are consistent with research conducted by Ummah et al. (2023). That study used an experimental method with a one-group pretest-posttest design. A total of 32 adolescent girls were included as the sample and selected using simple purposive sampling. Before the intervention (pre-test), the data showed that most respondents, namely 9 individuals (28.1%), experienced category 1 pain (mild pain). Statistical analysis using the dependent t-test produced a p-value of 0.000 ($p<0.05$). After the intervention, post-test data from the 32 respondents indicated that most respondents, namely 10 individuals (31.2%), experienced category 0 pain (no pain). These findings demonstrate that abdominal stretching exercise is effective in reducing dysmenorrhea pain (Ilmiah & Kesehatan, 2023).

Based on the research results of Casebella et al. (2024), Table 4.3 shows that the Wilcoxon test conducted before and after abdominal stretching exercise yielded a significance value of 0.00. Because the p-value was <0.05, H0 was rejected and Ha was accepted, indicating that abdominal stretching exercise affected the reduction of dysmenorrhea pain among adolescent girls at State Senior High School 5 Bandar Lampung.

CONCLUSION

Thus, this study demonstrates that abdominal stretching exercise had a significant effect on reducing menstrual pain intensity (dysmenorrhea) among female students in the Physiotherapy Department of the Makassar Ministry of Health Polytechnic. Therefore, H_0 was rejected and H_1 was accepted, indicating a significant difference in pain intensity before and after abdominal stretching exercise. These findings show that continuously performed abdominal stretching exercises are effective in reducing menstrual pain intensity (dysmenorrhea).

RECOMMENDATIONS

1. For Students: Female students experiencing dysmenorrhea are advised to use abdominal stretching exercise as a non-pharmacological measure to reduce menstrual pain. The exercise can be performed routinely before or during menstruation according to the correct procedure to obtain optimal benefits.
2. For the Institution: The Makassar Ministry of Health Polytechnic is expected to strengthen education on non-pharmacological management of dysmenorrhea through health promotion activities, counseling, and practical training in abdominal stretching exercise. This will enable students to gain the knowledge and skills needed to manage menstrual pain independently without relying on pharmacological therapy.
3. For Researchers: Future studies are expected to use stronger research designs, such as quasi-experimental studies or randomized controlled trials (RCTs) with a control group, so that the effects of the intervention can be compared more objectively. In addition, the sample size may be increased and the observation period extended to improve the generalizability of the findings. Future research is also advised to consider other factors that may influence dysmenorrhea intensity, such as body mass index, level of physical activity, stress level, sleep patterns, dietary patterns, age at menarche, duration of menstruation, and family history.

ACKNOWLEDGMENTS

The authors express their gratitude to all parties who provided support and assistance during the implementation of this study, particularly the female students who agreed to participate as respondents, the academic supervisors, and everyone who contributed to the successful completion of this research.

REFERENCES

Abdominal, P., Exercise, S., Penurunan, T., & Nyeri, I. (2022). Fakumi medical journal. 2(5), 344–352.

Ajar, B., Fisioterapi, I., & Kasus, P. (n.d.). Intervensi Fisioterapi pada Kasus Dismenore.

Alghani, S. R., Sari, R. D. P., Septiani, L., & Utama, W. T. (2024). Gangguan Siklus Menstruasi. Medical Profession Journal of Lampung, 14(3), 587–592.

B, A. (2018). Buku ajar intervensi fisoitrapi pada kasus dismenore. 1–59.

Casebella, J. C., Kusumadewi, R. R., & Surakarta, U. A. (2024). Pengaruh Abdominal Stretching Exercise terhadap Penurunan Nyeri Dismenore pada Remaja Putri Menurut data yang diperoleh oleh World Health Organization teradapat angka kejadian digunakan untuk mengurangi nyeri haid / dysmenorrhea (Silviani et al ., 2020). Latihan. 3.

Haid, N., & Putri, R. (2023). PENGARUH KOMPRES HANGAT DENGAN NYERI HAID KECAMATAN CURIO KABUPATEN THE EFFECT OF WARM COMPRESS WITH MENTAL PAIN IN ADOLESCENT WOMEN IN PEBALORAN VILLAGE CURIO DISTRICT , DISTRICT ENREKANG PENDAHULUAN Masa remaja adalah proses tumbuh menuju ke arah kemata. 2(May), 17–27.

Ilmiah, J., & Kesehatan, I. (2023). 1,2 1 , 2. 11(3), 587–596.

Itani, R., Soubra, L., Karout, S., Rahme, D., Karout, L., & Khojah, H. M. J. (2022). Primary Dysmenorrhea: Pathophysiology, Diagnosis, and Treatment Updates. Korean Journal of Family Medicine, 43(2), 101–108. https://doi.org/10.4082/kjfm.21.0103

Juntu, P., & Ananta, G. (2023). Sriwijaya Journal of Obstetrics and Gynecology (SJOG). 27–29.

Khadijah, S., Astuti, T., Widaryanti, R., & Ratnaningsih, E. (2020). Buku Ajar Anatomi & Fisiologi Manusia. Universitas Respati Yogyakarta, 1–342.

M, L. M., & Galaupa, R. (2022). The Effect of Giving Cinnamon Aromatherapy on Primary Dismenore in Adolescent ’ s Class 3 Junior High School in SMPN 1 Bekasi City. 1(6), 1003–1006.

Mayangsari, A., & Ayubi, D. (2024). Perilaku Swamedikasi Remaja Putri Mengatasi Nyeri Menstruasi : Literatur Reviu Self-Medication Behavior of Adolescents to Reduce Menstrual Pain (Dysmenorrhea): Literature Review. Journal of Midwifery Science and Women’s Helath, 5, 63–78. https://doi.org/10.36082/jmswh.v5i1.1974

Murtiningsih, M., Solihah, L., & Yuniarti, S. (2019). the Effect of Abdominal Stretching Exercise on Dysmenorrhea in Adolescent Girls. Journal of Maternity Care and Reproductive Health, 2(3), 67–72. https://doi.org/10.36780/jmcrh.v2i3.104

Nurhidayah, Hasnah, J. (2022). Jurnal life birth. 3(April). Life Birth, 6(3), 148–160.

Pada, D., Putri, R., Muaro, D. N., Pada, D., Putri, R., & Muaro, D. N. (2023). Berdasarkan tabel diatas didapatkan bahwa sebagaian besar responden yang yang. 12(2), 0–4.

Pinzon, R. T. (2016). Buku Pengkajian Nyeri. In Buku pengkajian nyeri.

Sari, E., Silvia, E., & Handayani, W. (2022). Combination of Gymnastics and Warm Compresses for Reducing Menstrual Pain (Dismenore) in Young Girls at SMA 1 West Pasaman. 10(5).

Sutrisni, Sri Lestari, Arsy Widyatriastuti, Gunawan, N. S. (2022). Pengaruh Abdominal Stretching Exercise Terhadap Penurunan Dismenore Pada Mahasiswa Kebidanan. BidanPintar, 3(1), 1–10.

Suwondo, B. S., Meliala, L., & Sudadi. (2023). <i>Konsep Nyeri (fisiologi nyeri, sejarah nyeri)<i/>. In Perkumpulan Nyeri Indonesia (Vol. 1, Issue 4).

Swandari Atik. (2023). Intervensi_Fisioterapi_Pada_Kasus_Dismenenorhea.

Optimal Journal Clinical Case Report, Volume 01, No.01,July 2026, (Page. 189-200)
ISSN 3164-872X

ENHANCING FAMILY AUTONOMY IN MANAGING RISING BLOOD PRESSURE AMONG FAMILY MEMBERS THROUGH THE IMPLEMENTATION OF BRISK WALKING EXERCISE

Haris [a*], Early Bella Waliantika[b]

[a]Kaltara Polytechnic, Jalan Pulau Lumpuran Kampung 1 Skip, Tarakan City, 77112, North Kalimantan
[b]Kaltara Polytechnic, Jalan Pulau Lumpuran Kampung 1 Skip, Tarakan City, 77112, North Kalimantan

**Corresponding author: hariskasuhe@gmail.com*

Abstract

Background: Hypertension is a noncommunicable disease whose prevalence continues to rise and can lead to various chronic conditions if not properly managed. Various efforts to control hypertension, in addition to pharmacological treatment, include engaging in regular and measured physical activity through brisk walking. In the context of family nursing, brisk walking is part of a family's self-management of hypertension. **Case Summary**: The client participating in this case study, a woman and single parent, had had her blood pressure measured at rest, yielding an initial baseline reading of 170/89 mmHg. The client has had elevated blood pressure for the past 5 years but has not started treatment five months ago because she did not experience any bothersome symptoms and was still carrying out her daily activities as usual. Investigation and **Diagnosis**: The client has Grade II hypertension; the nursing diagnosis identified was: ineffective health management. **Management**: The case study was conducted using a family nursing care approach, with an emphasis on achieving the family's primary tasks (TUK) by focusing on the family's independence in performing brisk walking exercises. Interventions were conducted four times a week, with each brisk walking session lasting 30 minutes. The interventions were not performed consecutively but with a 1-day interval. **Outcome**: Blood pressure measurements were taken twice, before and after the intervention. Blood pressure was measured using a digital sphygmomanometer with the client in a seated position and performed by the same nurse. The results showed a decrease in blood pressure; the baseline was 170/89 mmHg, and on the blood pressure reached 119/74 mmHg. The family gained independence in performing brisk walking exercises. **Conclusion**: Conducting a case study through family nursing care, in which the family independently performs brisk walking exercises, can help gradually lower blood pressure gradually.

Keywords: brisk walking exercise; family autonomy, Family Nursing Care; Hypertension;

INTRODUCTION

Hypertension is a noncommunicable disease that can lead to other health conditions if not properly managed. It is one of the most common risk factors for mortality in Indonesia. This condition can persist throughout a person's lifetime and often presents no noticeable symptoms, leading many people to remain unaware of it or even tend to ignore it. Consequently, hypertension leads to heart problems, narrowing of blood vessels, heart attacks, impaired kidney function, kidney failure, and stroke (Masadah et al., 2021).

According to the World Health Organization (WHO), by 2025, 1.5 billion people worldwide will suffer from hypertension, meaning one in three people will be diagnosed with this condition. The number of people with hypertension will continue to rise each year. Furthermore, hypertension is estimated to cause approximately 10.44 million deaths annually and is the leading cause of death globally (Ardi et al., 2023).

In Indonesia, based on the results of the 2023 Indonesian Health Survey (SKI), the prevalence of hypertension among people aged ≥15 years was recorded at 30.8%, with the total number of cases reaching approximately 63.3 million people. Of this number, the death toll reached 427,218 people, or about 10.2%, making it the fourth leading cause of death. Hypertension is also a major contributor to the high rate of disability—reaching 22.2% (affecting vision, hearing, and mobility)—in Indonesia. In North Kalimantan, the prevalence is slightly lower at around 33.02%. Meanwhile, in the city of Tarakan, the prevalence of hypertension for the same age group is even lower, at 30.21% (Ministry of Health, 2024).

People with hypertension generally need to take medication regularly to control their blood pressure. Although there are many medication options for treating hypertension, pharmacological therapy often takes a long time and can cause side effects. Therefore, supportive therapy—specifically complementary therapy—is necessary (Ningrum et al., 2024). The WHO recommends engaging in regular physical activity each week, such as light exercise, which can serve as an initial step in managing hypertension before considering medication-based treatment (Yingxiang et al., 2021).

Exercise proven to be effective in lowering blood pressure and suitable for patients with hypertension is moderate-intensity aerobic exercise. One example is Brisk Walking Exercise, performed routinely using a brisk walking technique for 30 minutes per session at a speed of approximately 4 km/h—or about 2 km in 30 minutes—four times a week (Dewi et al., 2023). Brisk walking exercise stimulates muscle contraction and increases oxygen intake, which are functions of the sympathetic nervous system. After physical activity, the body releases endorphins along with sweat, leading to a more relaxed state and a reduced workload on the heart. Brisk walking differs from ordinary walking in that it is performed with the goal of covering a specific distance within 30 minutes (Utami & Silvitasari, 2025).

During aerobic exercise such as brisk walking, performed regularly, blood flow to the blood vessel walls increases due to mechanical stimulation that activates endothelial nitric oxide synthase (eNOS), which in turn stimulates the production of nitric oxide (NO) by the endothelial cells lining the blood vessels. This NO activates cyclic guanosine monophosphate (cGMP), which leads to vasodilation, thereby reducing total peripheral vascular resistance (TPR) and consequently lowering blood pressure (Liang et al., 2024). A case study conducted by Samsuri & Diana Dayaningsih (2021) showed that blood pressure decreased after brisk walking. In Subject I, systolic blood pressure decreased by an average of 3.71 mmHg and diastolic blood pressure decreased by 1.71 mmHg. Subject II experienced an average decrease of 4.41 mmHg in systolic blood pressure and

1.71 mmHg in diastolic blood pressure. Another study showed that brisk walking performed 3–4 times per week can lower blood pressure from 140/90 mmHg to 110/73 mmHg (Lestari et al., 2022). These three studies were conducted with varying frequencies ranging from 3 to 4 times per week and showed consistent results indicating that brisk walking can help lower blood pressure in individuals with hypertension.

The family is the most important element and an integral part of the nursing process. One of the family's functions that must be fulfilled is maintaining the health of family members. Family self-reliance is a goal that must be achieved by nurses working at Community Health Centers (puskesmas) that have families under their care. This family autonomy serves as a key indicator of a family's health status (Haris et al., 2020). The indicators of family autonomy, established by the Ministry of Health, consist of seven criteria. Families must be able to recognize hypertension and decide to actively participate in the nursing care process to manage hypertension in family members. One approach that can support pharmacological therapy for patients with hypertension is brisk walking exercise. This case study involves families in the implementation of a brisk walking exercise program to control blood pressure in family members with hypertension.

CASE PRESENTATION

The client in this case study is Mrs. A, a 49-year-old woman, widowed, who serves as the head of the household (single parent). Her highest level of education is junior high school (SMP). and currently works as a self-employed individual. Based on anthropometric measurements, Mrs. A weighs 63 kg and is 149 cm tall, with a Body Mass Index (BMI) of 28.38; according to the WHO, this BMI falls into the "overweight" category. During the vital signs assessment, the client's health status showed a blood pressure of 170/89 mmHg, a pulse rate of 81 beats per minute, a body temperature of 36.0°C, and a respiratory rate of 18 breaths per minute. The family assessment utilized the family nursing process theory approach by Friedman (Friedman et al., 2014) and was integrated with the family nursing care assessment format from the Indonesian Ministry of Health (Juniarti et al., 2018).

1) Family History and Developmental Stages

Currently, the family is in the adult or middle stage of family development. One unmet developmental task is the child's ongoing education, which has not yet been completed. The family has high hopes that once the child finishes school, they will be able to start working immediately and contribute to the family's economy.

2) Nuclear Family Health History

The client stated that all family members are currently in good health, except for herself, who has been suffering from hypertension for the past 5 years. The client complained of pain in the nape of the neck, heart palpitations, dizziness, blurred vision, and fatigue.

3) Previous Family Health History

The client has had hypertension for 5 months; she rarely undergoes health checkups at the community health center and last sought treatment 5 months ago. The client usually visits the community health center when symptoms such as dizziness, pain in the nape of the neck, a heavy feeling in the shoulders, heart palpitations, and fatigue begin to become increasingly bothersome. The client stated that as long as they do not experience these symptoms, they do not seek treatment because there are no complaints that interfere with their daily activities.

4) The Role of Family Healthcare

a) Regarding health issues, the family demonstrated a sufficient understanding of hypertension but did not fully understand the other causes of hypertension besides genetic factors and an unhealthy diet.
b) Regarding decision-making, Mrs. A stated that she does not yet understand the consequences of hypertension if she does not undergo regular treatment. The consequences of hypertension include heart attacks, strokes, and kidney.
c) failure.
d) Caring for a sick family member: The family does not yet understand how to manage hypertension, particularly through non-pharmacological methods.
e) Modifying the environment: The client has not actively taken steps to prevent hypertension; she has only limited her intake of processed foods but has not adopted other healthy lifestyle habits, such as maintaining a healthy weight and managing stress.
f) Utilizing healthcare facilities: The client only visits the community health center when experiencing bothersome symptoms. The client last visited the center about 5 months ago and received hypertension medication, but did not return for a follow-up checkup after the medication ran out.

5) Assessment of the ill family member

Mrs. A, a 49-year-old woman, is the family member currently experiencing health issues. The client's general condition is fully conscious (compos mentis) with a GCS score of 15. Vital sign

measurements show blood pressure of 170/89 mmHg, respiratory rate of 18 breaths per minute, body temperature of 36°C, pulse rate of 81 beats per minute, and no abnormalities were found in the circulatory system. The respiratory system shows no signs of serious impairment. Regarding the urinary system, the client is able to urinate independently, with a frequency of 3–4 times per day, and the urine is not foamy. Regarding the digestive system, there are no complaints regarding eating habits; the client is able to digest food well and consumes up to 4–5 glasses of water per day. A musculoskeletal examination revealed no fractures, tremors, or muscle weakness. Muscle strength was good, posture was normal, and there were no signs of paralysis. The client performed all activities independently.

6) Family Independence Level

The level of family independence is measured based on the Ministry of Health's criteria, which consists of 4 levels with 7 criteria (Juniarti et al., 2018). Mrs. A's family independence level is at Level 1, meeting five criteria: the family is willing to accept the presence of a nurse, and the family accepts health services in accordance with the nursing care plan. However, the family has not yet actively taken preventive measures and lacks the knowledge or awareness to independently carry out promotive efforts to maintain the family's health. During the implementation of the intervention, the family must meet criteria indicating their level of independence by involving one family ember in each intervention. In this case study, the client's child consistently accompanied her and was actively involved throughout the intervention.

CLINICAL REASONING

The nursing diagnosis, based on the Indonesian Nursing Diagnosis Standards (PPNI, 2017) and consistent with the assessment, is "ineffective health management"—a pattern in which the regulation and integration of health problem management into daily living habits are insufficient to achieve the desired health status. This diagnosis also aligns with that established by NANDA. 80% of the major criteria have been met, namely:

Subjective: expressing difficulty adhering to the treatment plan; Objective: failure to take actions to reduce risk factors; failure to adhere to the treatment plan; and ineffective daily living activities in meeting health goals.

DIAGNOSTIC ASSESSMENT

Table 4. Summary of relevant diagnostic findings

Examination	Result	Clinical Interpretation
Blood Pressure Measurement	170/89 mmHg	Classified as Grade II Hypertension

The client did not undergo a complete blood count, chest X-ray, or ECG because these are follow-up tests performed at a referral hospital, whereas the client was being examined at a community health center.

THERAPEUTIC INTERVENTION

The recommended treatment for the client's hypertension is amlodipine 5 mg once daily. However, the client has not attended regular follow-up appointments for approximately 5 months because they have not experienced or reported any bothersome symptoms. The client is still able to carry out daily activities. The client's blood pressure measurements indicate Grade II hypertension according to the AHA classification (Johnson et al., 2025). Non-pharmacological interventions were implemented to complement the pharmacological intervention. The client resumed taking amlodipine from their

existing medication supply. After the fifth visit, once the client understood the management and prevention of hypertension, they returned to the community health center for a follow-up examination.

THERAPEUTIC SEQUENCE

Family nursing interventions focus on achieving the family's primary tasks (TUK), which include the family's ability to recognize hypertension-related issues, make decisions regarding hypertension care, care for a sick family member through brisk walking exercises, modify the environment, and utilize health care facilities. Brisk walking exercises are performed 6 hours before or 18 hours after taking amlodipine. This is to prevent the immediate effects of the medication from affecting the client's blood pressure. Before starting the brisk walking exercise, the nurse ensures the client does not experience headaches, chest pain, or shortness of breath while walking. The stages of intervention using the family nursing care approach align with the implementation guidelines at the Community Health Center (Puskesmas), as shown in Table 2 below:

Nursing Diagnoses	Gener al Goal	Specific Objectives (Family for the family)	Standard Indicators	Interventions
Ineffective health management	After conducting visits over the course of 6 visits, health management is expected to improve based on the following outcome criteria: -Taking actions to reduce risk factors risk factors Increased implementation of compliance programs Daily living activities that effectively meet health goals	TUK 1 Understanding Hypertension 1.1. Understanding the definition of hypertension Understanding the causes of hypertension Understanding the signs and symptoms of hypertension	Hypertension is a condition in which blood pressure rises above normal limits, with a systolic pressure of more than 140 mmHg and a diastolic pressure of more than 90 mmHg (Wahyuni et al., 2023). List 4 of the 6 causes of hypertension (Agustina et al., 2024) 1.Eating foods that Are high levels of salt 2.Genetic/hereditary 3.Stress 4.Smoking 5.Age 6.Alcohol consumption List 3 of the 5 signs and Symptom of hypertension (Sugiarto & Waluyo, 2025): 1.Dizziness 2.Headache/pain in the back of the neck 3.Heart palpitations 4.Blurred vision 5. Chest pain	Discussing the definition of hypertension Encouraging the family to express their feelings Praise the family's abilities Identifying the family's understanding of the causes of hypertension Discussing the causes and signs and symptoms of hypertension Giving the family an opportunity to ask questions Encouraging the family to identify the causes and signs and symptoms of hypertension Helping families identify the causes and signs and symptoms of hypertension Praise the family for their understanding
		TUK 2 Making decisions	List 3 and 4 consequences that may arise if hypertension is left untreated (Paschalia & Juwana, 2024):	a.1 Explaining the consequences that may occur if the family does not make a decision

		2.1 regarding the effects/complications of hypertension 2.2 together with the family, make a decision to participate in a treatment/ care	1. Stroke 2. Heart attack 3. Premature death 4. Kidney failure Making the right decision to treat	to treat hypertension 2.a.2 Giving family members the opportunity to ask questions 2.a.3 Encouraging the family to reiterate the explanations that have been provided 2.a.4 Praise the family for their capabilities.
		TUK 3 Caring for a sick family member "Teaching and practicing bris k walking exercises	How to demonstrate complementary therapy by performing the Brisk Walking Exercise: 1. Maintain proper posture: while walking, lift your chin and look straight ahead. Keep your back straight, your chest lifted, and your shoulders relaxed. 2. Use your arms: your arms should be at a 90º angle. Gently bend your elbows; avoid clenching your fists. Next, swing your arms from front to back, not from side to side. Make sure your arms stay in front of you and do not cross over." 3. Take small steps: Walk short steps, while maintaining good posture. Use your arms and legs in a balanced way to make each step easier. 4. Push off with your toes: Roll your foot from heel to toe as it touches the ground. Start from the ball of your foot and continue moving forward. 5. Engage your core and glutes: While walking, make sure to keep your back straight and tilt your pelvis properly. 6. Don't think of it as a strenuous walk: Avoid swinging your arms with steps that are too wide.	3.a.1 Exploring the family's experience managing hypertension so far 3.a.2 Praise the family for the efforts they've made so far 3.a.3 Discuss with the family how to manage hypertension 3.a.4 Encouraging the family to restate how to manage hypertension at home 3.a.5. Praising the family for correct answers 3.b.1 Demonstrating the Brisk Walking Exercise to manage hypertension 3.b.2 Giving the family an opportunity to ask questions 3.b.3 Motivating the family to participate in the demonstration 3.b.4 Praise the family for their skills 3.b.5 Encouraging the family to try the Brisk Walking Exercise to lower high blood pressure 3.b.6 Asking about the effectiveness of *the Brisk Walking Exercise* that has been taught.

		TUK 4 Modifying the environment	List at least 3 of the 5 ways to prevent hypertension from recurring: 1. Reducing salt intake 2. Getting enough rest 3. Check blood pressure regularly 4. Avoiding stress 5. Exercise on a regular basis	4.b.1 Discuss with your family ways to prevent hypertension 4.b.2 Encourage your family to restate ways to prevent high blood pressure 4.b.3 Praise the family for correct answers
		TUK 5 Utilizing health care facilities	Healthcare facilities that families can use to prevent hypertension: 1. Hospitals 2. Community health centers 3. Private practices 4. Clinics	5.a.1 Discuss the types of health care facilities available in the family's community 5.a.2 Helping families utilize health care facilities appropriate for their situation 5.a.3 Encouraging families to utilize health of their choice.

CASE TIMELINE

Table 3. Clinical case timeline

Time	Treatment	Outcome
Pre-intervention	1. Discussed with the family to understand hypertension, including its definition, causes, signs, and symptoms (TUK1) 2. Discuss with the family the impact and complications if hypertension is left untreated, and encouraging the family to decide to follow the care and treatment program (TUK 2)	The family listened enthusiastically to the explanation, actively asked questions, and identified and described their experiences regarding the causes and the signs and symptoms they were experiencing
Day 1	1. Teaching and practicing *brisk walking exercises* accompanied by family members 2. The nurse checks blood pressure before the brisk walking exercise using a digital blood pressure monitor while the patient is seated, in accordance with AHA recommendations 3. Performed *a warm-up for* about 5 minutes	Pre-exercise BP: 170/89 mmHg Post-exercise BP: 156/91 mmHg Family autonomy level 1

	4. Performing *the brisk walking exercise* together 5. Performed *a cool-down* 6. Rest for 10 minutes 7. Measuring blood pressure again	
Day 2	Follow the same steps as on Day 1 with the same nurse and blood pressure cuff	Pre-test BP: 133/81 mmHg Post-test BP: 128/78 mmHg Family autonomy level 2
Day 3	Performed the same steps as on Day 1 with the same nurse and blood pressure monitor	Pre-measurement BP: 129/81 mmHg Post-measurement BP: 125/78 mmHg
Day 4	Monitor the client's *brisk walking exercise technique*, with family members present	Pre-exercise BP: 126/80 mmHg Post-exercise BP: 119/74 mmHg Family autonomy level 2
Monitoring	Monitoring the client's *brisk walking exercise technique*, accompanied by family members	Pre-exercise BP: 121/75 mmHg Post-exercise BP: 118/74 mmHg Family autonomy level 3
Follow-up	1. Discuss with the family the preventive measures taken to control blood pressure: maintaining a healthy lifestyle (TUK 4) 2. Discussing health facilities or health resources that the family can utilize (TUK 5)	The family was very enthusiastic and able to list the preventive measures they are taking as well as the health resources available to them

OUTCOME AND FOLLOW-UP

The family-centered nursing intervention was implemented based on the family's primary tasks (TUK) 1 through 5 and focused on achieving TUK 3—specifically, the family's ability to care for a family member with hypertension by performing brisk walking exercises as the primary intervention, repeated over 4 days. The family's self-reliance also improved during the implementation of the family-centered nursing intervention. During the visits, the family demonstrated positive progress, beginning with accepting the nurse's presence, then receiving care in accordance with the provided plan, accurately articulating their concerns, properly utilizing health facilities, performing brisk walking exercises according to the jointly established program, and taking active preventive measures for the patient by reducing foods high in salt and engaging in physical activity. The family has been taking hypertension medication regularly and will have the patient's blood pressure checked at the community health center. The client has also begun taking active preventive measures within the family, such as providing healthy meals and reducing food sources or processed foods containing excessive salt, such as salted fish, instant noodles, and unhealthy snacks.

DISCUSSION

The results of this case study show a change in blood pressure following the intervention, from an initial reading of 170/89 to 119/74 on the fourth day. Blood pressure measurements were taken before and after each exercise session to assess the changes that occurred. Based on Table 3 above, during the first session, the initial blood pressure of 170/89 mmHg decreased to 156/91 mmHg after a 30-minute exercise session, indicating a decrease of 14 mmHg in systolic pressure and 15 mmHg in

diastolic pressure. Overall, the changes in blood pressure from the first to the fourth day ranged from 7 to 14 mmHg for systolic pressure and from 3 to 6 mmHg for diastolic pressure.

Overall, during the 4-day exercise period, brisk walking had a positive effect on lowering both systolic and diastolic blood pressure. A decrease approaching normal blood pressure levels was already evident on the third day, with a post-exercise blood pressure reading of 125/78 mmHg, and on the fourth day, 119/74 mmHg. Overall, over the 4-day period, there was a 51-point decrease in systolic pressure and an 18-point decrease in diastolic pressure.

The results of this case study align with the research by Simanjuntak and Purba (2024) on two different families with members suffering from hypertension; after performing brisk walking exercises three times a week, their systolic blood pressure decreased by 10–20 points. Similarly, research by Effendi, Anggreini, and Ovari (2023) demonstrated changes in blood pressure following brisk walking exercises conducted over 3 sessions lasting 15–20 minutes each, resulting in a reduction of 30 points in systolic pressure and 20 points in diastolic pressure.

This reduction in blood pressure is attributed to the blood vessels becoming more relaxed following the release of nitric oxide, decreased sympathetic nervous system activity after physical activity, and the release of endorphins—which occurs alongside sweating during physical activity—all of which allow the heart to function more efficiently after brisk walking (Rachmatullah, 2022).

Family autonomy increased in tandem with home visits, with the autonomy level rising from 1 to 3. This aligns with Haris's (2022) study, which showed that the frequency of home visits alters families' perceptions of the nursing process and increases family involvement in home care, thereby enabling families to take to actively prevent hypertension, even to the point of actively engaging in health promotion efforts.

The implementation of brisk walking exercises as part of the family intervention involves not only the client as an individual but also the support of the family as a system in the care process for family members with hypertension. This is what distinguishes the intervention when brisk walking exercises are conducted in a group setting or within the community. The family plays a significant role in achieving the intervention's goal: family self-reliance in managing hypertension at home.

The implications of this case study are that community nurses working at community health centers (Puskesmas) can implement hypertension management using a family nursing care approach. Brisk walking exercises can serve as one alternative to help families increase their self-reliance in managing hypertension. Conducting home visits as a promotive and preventive measure against hypertension within families is a core responsibility of Puskesmas nurses.

DIAGNOSTIC CHALLENGE

Determining a family nursing diagnosis presents its own challenges; data is required that demonstrates conditions consistent with the major criteria standards in the SDKI/NANDA. Establishing this diagnosis requires more specific reasoning.

LIMITATIONS

In conducting this study, the researcher acknowledges several limitations that may affect both the process and the final results of the research. The case study approach used—particularly for patients with hypertension and the nursing diagnosis of Ineffective Health Management—has limitations regarding the generalizability of the findings. This case study is limited to a single subject and lacks a comparison group (control).

Because this study focused solely on an individual case, the results cannot be directly generalized as representative of a population of patients with hypertension. This case study also has limitations in that it focuses only on specific variables and is highly susceptible to confounding variables that may influence the results. Additionally, limitations arise from patient subjectivity, varying levels of family

involvement, and the possibility of uncontrollable external factors during the intervention process, such as environmental conditions and stress levels.

Hypertension management through routine medication is not fully effective unless supported by a healthy lifestyle on the part of the client and their family. Thus, a brisk walking exercise regimen is not the only intervention to lower blood pressure, but it serves as an alternative to support the patient's hypertension treatment so that blood pressure can be controlled more effectively.

LEARNING POINTS

Providing family nursing care requires extra effort. Implementation must be adapted to the family's schedule and circumstances. Systematic and continuous implementation demonstrates positive progress in family members' health. Brisk walking is a care strategy for family members with hypertension that families can perform while the patient is undergoing treatment. This brisk walking exercise is not intended to replace the medication taken by the client but serves as a complementary intervention to improve health, better control the client's blood pressure, enhance quality of life, and prevent more severe complications that may be experienced by individuals with hypertension.

CONCLUSION

Based on this case study, brisk walking for 4 days helped lower blood pressure from 170/89 mmHg to 119/76 mmHg, and family nursing care interventions helped increase the family's autonomy in managing a family member's hypertension, raising their self-management level from 1 to 3.

ETHICAL CLEARANCE

Ethical approval for this study was not sought, as the nursing care process coincided with students' field practice in family nursing; therefore, permission was obtained only from the Community Health Center (Puskesmas) to provide family nursing care within the center's service area.

PATIENT CONSENT

The client and family have given their consent for the case study, with the client's identity remaining confidential in the publication of this scientific article.

CONFLICT OF INTEREST

The author and the patient are not related, and there were no conflicts of interest during the conduct of the case study.

FUNDING SOURCE

All funding for this case study was provided independently by the two authors

AUTHORS' CONTRIBUTIONS

Authors 1 and 2 collaborated on the preparation of this case study and complemented each other's work. Author 1 focused on conceptual development and analysis, while Author 2 was responsible for data collection from the family and provided support to the family throughout the intervention process.

DATA AVAILABILITY

The data in this case study are based on the actual conditions of the client and family, and nearly all of the data have been reconfirmed with the client and family.

ACKNOWLEDGMENTS

We would like to thank the client and family for their permission and for taking the time to participate in this case study; the Community Health Center (Puskesmas) for granting permission and providing guidance in managing one of the families under its care; and the educational institution for granting permission to conduct this case study.

LIST OF ABBREVIATIONS

Askep: Nursing Care

SDKI : Indonesian Nursing

Diagnosis Standards SLKI : Indonesian Nursing Outcome Standards

FIGURE AND TABLE LEGENDS

Table 5 Changes in Blood Pressure and Family Independence

Variable	Result	Notes
Blood Pressure	From Grade 2 Hypertension to Normal Blood Pressure	Brisk walking should not replace medical treatment but should complement it
Family Independence	Family independence improved from Level 1 to Level 3	Home visits can improve family self-reliance

REFERENCES

Agustina, H., Ginting, B., Khairunisa, S., Purba, B., Azura, R., Gurusinga, E., Syifa, F.,Nasution, A., Anjani, W., Sembiring, B., & Shandy, B. (2024). Analysis of Factors Causing Hypertension at the Nila Merah Elderly Health Post in Belawan Bahari Village Neighborhood I.

Ardi, A., Hidayat, R., & Nurman, M. (2023). WORKING AREA OF THE AIR TIRIS COMMUNITY HEALTH CENTER (UPT PUSKESMAS) IN 2023. 2, 166–171.

Dewi, A. A. S. R. K., Rahayu, E. S., Rasdini, I. A., & Yasa, I. D. P. Gede P. (2023). The Effect of Brisk Walking Exercise on Blood Pressure in Older Adults with Hypertension.

2(1), 29–36. https://doi.org/10.56922/mhc.v2i1.321

Friedman, M. M., Bowden, V. R., & Jones, E. G. (2014). Family Nursing Textbook: Research, Theory, and Practice (E. Tiar (ed.); 5th ed.). EGC.

Haris, Herawati, L., Norhasanah, & Irmawati. (2020). The Effect of Home Visits on the Healthy Family Index (IKS) and Family Independence Levels. Media Karya Kesehatan, 3(2), 221–238. https://www.researchgate.net/publication/345240167%0AHaris:

Johnson, H. M., Shimbo, D., Abdalla, M., Altieri, M. M., Bress, A. P., Carter, J., Commodore-Mensah, Y., Egan, B., Melnyk, B. M., Ogunniyi, M. O., Schott,

S. L., Watson, K. E., & Williamson, J. D. (2025). Guideline for the Prevention, Detection, Evaluation, and Management of High Blood Pressure in Adults: A Report of the American College of Cardiology/American Heart Association Joint Committee on Clinical Practice Guidelines. In AHA/ACC/AANP/AAPA/ABC/ACCP/ACPM/AGS/AMA/ASPC/NMA/PCNA/SGI M

(Vol. 152, Issue 11). https://doi.org/10.1161/CIR.0000000000001356

Juniarti, N., Yamin, A., Lukman, M., Sari, S. P., Sari, C. W. M., Yani, D. I., & Haroen,

H. (2018). Nursing Center, Sentra Keperawatan: A Model for Community Nursing and Family Nursing Applications. Unpad Press.

Ministry of Health. (2024). The Dangers of Hypertension, Efforts to Prevent and Control Hypertension. https://kemkes.go.id/id/bahaya-hipertensi-upaya-pencegahan-dan-pengendalian-hipertensi

Lestari, D. D., Handayani, T. S., & Rahmawati, D. T. (2022). Brisk Walking Exercise Technique. Journal of Nursing and Public Health, 10(2), 168–177.

Liang, C., Song, Z., Yao, X. Z., Xiao, Q., Fu, H., & Tang, L. (2024). Exercise interventions for the effect of endothelial function in hypertensive patients: A systematic review and meta-analysis. Journal of Clinical Hypertension, 26(6), 599–614. https://doi.org/10.1111/jch.14818

Masadah, M., Wiantari, D. A., & Sulaeman, R. (2021). The effect of brisk walking exercise on blood pressure changes in patients with hypertension.

Ningrum, U. C., Hartutik, S., & Haryani, N. (2024). Application of Slow Deep Breathing Exercise on Blood Pressure in Hypertension Patients in Joyotakan Village. 7(7), 2717–2722. https://doi.org/10.56338/jks.v7i7.5814

Paschalia, Y. P. M., & Juwana, E. (2024). ACUTE PAIN AT ENDE REGIONAL GENERAL

HOSPITAL Faculty Member

DIII Nursing Program, Ende, NTT, Indonesia Student, DIII Nursing Program, Ende, NTT, Indonesia Abstract INTRODUCTION Hypertension is a condition in which a person experiences elevated blood pressure. 3(2), 312–323.

PPNI. (2017). Indonesian Nursing Diagnosis Standards: Definitions and Diagnostic Indicators. Central Executive Board of the Indonesian National Nurses Association. http://inna-ppni.or.id

Samsuri, S., & Ns. Diana Dayaningsih. (2021). Application of Brisk Walking Exercise Therapy for Elderly Patients with Hypertension at the Ambarawa Community Health Center. International Journal of Health Science, 1(3), 37–

48. https://doi.org/10.55606/ijhs.v1i3.34

Sugiarto, H., & Waluyo, U. N. (2025). Education on foot reflexology as an effort to reduce signs and symptoms of hypertension in the Walitelon Utara Temanggung community. 8, 27–32.

Utami, N. S. P., & Silvitasari, I. (2025). The Effect of a Brisk Walking Exercise Program on Blood Pressure Reduction in Patients with Hypertension.

Mandira Cendikia Journal of Health Sciences, 4(7), 50–59. https://doi.org/10.33024/hjk.v15i2.4697

Wahyuni, Majid, Y. A., & Pujiana, D. (2023). The Effect of Hypertension Exercise on Blood Pressure in Elderly Patients with Hypertension. Jurnal Inspirasi Kesehatan, 1(1), 65–71.

Yingxiang, Y. U., Chang, C., Yifan, W. U., Guo, C., & Xie, L. (2021). Dose-effect relationship between brisk walking and blood pressure in a Chinese occupational population with sedentary lifestyles: Exercise and blood pressure. Journal of Clinical Hypertension, 23(9), 1734–1743. https://doi.org/10.1111/jch.14340

OJCCR
Optimal Journal of Clinical Case Report

Optimal Journal Clinical Case Report is a national open-access journal with a primary focus on the fields of health sciences and medicine, particularly in the publication of clinical case reports, case series, and evidence-based clinical discussions. The journal serves as a dedicated platform for healthcare professionals, clinicians, researchers, and academics to share unique clinical findings, diagnostic challenges, therapeutic approaches, patient management experiences, and lessons learned from real-world medical and health practice.

Journal Clinical Case Report welcomes manuscripts covering various areas of health and medicine, including but not limited to general medicine, nursing, midwifery, pharmacy, public health, dentistry, laboratory sciences, clinical specialties, and other related health disciplines. By promoting the dissemination of well-documented clinical cases, the journal aims to support scientific communication, improve clinical decision-making, and contribute to the advancement of knowledge and practice in the healthcare sector.

Committed to academic integrity and a rigorous peer-review process, **Journal Clinical Case Report** strives to ensure the quality, relevance, and originality of every published article. Published biannually, in January and July, the journal invites researchers, practitioners, and healthcare professionals to actively contribute to the development of medical and health sciences through the publication of meaningful and educational clinical case reports.

ISSN 3164-872X
9 773164 872004