

Eco-Education Based Nursing Care to Improve Type 2 Diabetes Self-Management

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ABSTRACT

Background: Type 2 Diabetes Mellitus (T2DM) is a chronic metabolic disorder characterized by elevated blood glucose levels resulting from insulin resistance and impaired insulin secretion. The increasing prevalence of T2DM has become a major global health concern due to its association with high morbidity and various complications, including infections, impaired skin integrity, nephropathy, neuropathy, and vascular disorders. This condition aligns with the **Sustainable Development Goals (SDGs), particularly Goal 3: Good Health and Well-Being**, which aims to ensure healthy lives and promote well-being for all at all ages. In addition, the implementation of **Eco-Education**, through continuous health education and lifestyle awareness, is essential to encourage patients to adopt healthier behaviors and improve disease management. **Methods:** This case study applied the nursing process approach, including assessment, nursing diagnosis, planning, implementation, and evaluation. Nursing care was provided to Mrs. R, a patient diagnosed with Type 2 Diabetes Mellitus and hospitalized in the VIP Ward of Latersia General Hospital Binjai in 2025. Data were collected through interviews, physical examinations, observations, and medical record reviews. **Objective:** To implement comprehensive medical-surgical nursing care in order to improve glycemic control, enhance skin integrity, and increase patient adherence to treatment and healthy lifestyle practices. **Results:** Assessment findings revealed a blood glucose level of 347 mg/dL and an HbA1c value of 13.4%, accompanied by fatigue, polyuria, polydipsia, and an infected wound on the left calf. Nursing diagnoses included unstable blood glucose levels, impaired skin integrity, and noncompliance. Interventions consisting of hyperglycemia management, wound care, health education, and insulin therapy collaboration contributed to improvements in the patient's condition. **Conclusion:** Comprehensive nursing care supported by Eco-Education-based health promotion can improve the quality of life of patients with T2DM and contribute to achieving SDGs health targets.

Keywords: Type 2 Diabetes Mellitus, Nursing Care, SDGs, Eco-Education, Hyperglycemia.

INTRODUCTION

Type 2 Diabetes Mellitus (T2DM) is one of the most significant non-communicable diseases and a major global health concern. It is a chronic metabolic disorder characterized by elevated blood glucose levels resulting from defects in insulin secretion, insulin action, or both. Type 2 Diabetes Mellitus is the most common form of diabetes, accounting for approximately 90–95% of all diabetes cases. This condition is primarily caused by insulin resistance accompanied by a progressive decline in pancreatic β -cell function, resulting in the body's inability to maintain normal blood glucose levels (American Diabetes Association, 2025).

The increasing prevalence of Type 2 Diabetes Mellitus has become a global challenge due to its association with various acute and chronic complications, including diabetic neuropathy, nephropathy, retinopathy, cardiovascular diseases, and impaired skin integrity that may progress to diabetic ulcers and severe infections. Uncontrolled blood glucose levels can also delay wound healing, increase hospitalization rates, disability, and mortality, thereby negatively affecting patients' quality of life (Lewis, 2021)

According to the International Diabetes Federation (IDF), the number of people living with diabetes continues to rise each year, and Indonesia is among the countries with the highest number of diabetes cases worldwide (International Diabetes Federation, 2025). This condition is closely related to the achievement of the Sustainable Development Goals (SDGs), particularly Goal 3: Good Health and Well-Being, which aims to ensure healthy lives and promote well-being for all at all ages. One of the SDG targets is to reduce premature mortality from non-communicable diseases through prevention, treatment, and effective health promotion strategies (Tim Pokja SIKI DPP PPNI, 2023)

To support the achievement of these goals, an Eco-Education approach is needed. Eco-Education emphasizes health education that promotes awareness among individuals, families, and communities to adopt sustainable healthy lifestyles. Health education delivered through innovative educational media has been shown to improve self-efficacy and encourage positive behavioral changes, thereby supporting patients in maintaining healthy lifestyles and disease prevention (Sinaga, 2026). Previous studies have demonstrated that health education significantly improves health knowledge and encourages positive behavioral changes, supporting patients to adopt healthier lifestyles and participate actively in disease prevention programs (Sinaga, 2022). In patients with Type 2 Diabetes Mellitus, Eco-Education can be implemented through education on healthy dietary practices, regular physical activity, medication adherence, blood glucose monitoring, and proper wound care. This approach not only enhances patients' knowledge but also encourages long-term behavioral changes that support effective disease management (Purwanto, 2025). Previous studies also demonstrated that community-based health promotion and educational innovation significantly improve health literacy and community participation in disease prevention (Manurung HR, Sinaga R, Sinaga SN, 2024). Continuous educational interventions are essential to improve patients' awareness, strengthen self-care practices, and support long-term disease management, particularly in individuals with chronic illnesses (Sinaga R, 2022).

Nurses play a crucial role as educators, caregivers, and motivators in providing comprehensive nursing care for patients with Type 2 Diabetes Mellitus (Prabowo, & Pranata, 2024). Nursing care includes assessment, nursing diagnosis, planning, implementation, and evaluation aimed at controlling blood glucose levels, preventing complications, improving treatment adherence, and enhancing patients' quality of life. Based on the case study of Mrs. R with Type 2 Diabetes Mellitus, several nursing problems were identified, including unstable blood glucose levels, impaired skin integrity due to an infected wound on the left calf, and non-adherence to treatment.

Therefore, the implementation of comprehensive medical-surgical nursing care integrated with SDG principles and the Eco-Education approach is essential to address these health problems, promote patient self-management, and improve overall health outcomes (Muttaqin, 2023)

METHODS

This study employed a descriptive case study design to examine the implementation of Medical-Surgical Nursing Care integrated with Service Excellent Nursing and Eco-Education in a patient with Type 2 Diabetes Mellitus. (Rosmani Sinaga, 2022) The study was conducted in the VIP Ward of Latersia General Hospital Binjai in 2025 during the clinical nursing practice program. The participant of this study was Mrs. R, a patient diagnosed with Type 2 Diabetes Mellitus accompanied by unstable blood glucose levels, impaired skin integrity due to an infected wound on the left calf, and non-adherence to treatment. The subject was selected using a purposive sampling technique based on specific criteria that were consistent with the objectives of the study and the implementation of service excellence and Eco-Education approaches.

Several nursing interventions were implemented to address the patient's health problems, including blood glucose monitoring, hyperglycemia management, wound care, medication adherence education, dietary management, and collaboration with the healthcare team in administering insulin therapy. In addition, Eco-Education was applied through continuous health education focusing on healthy lifestyle modification, self-care management, blood glucose monitoring, medication compliance, and diabetic wound prevention. Service excellence principles, including empathy, responsiveness, professionalism, therapeutic communication, and patient-centered care, were consistently integrated into the nursing process to enhance patient satisfaction and therapeutic outcomes (Chughtai, B Kaplan, 2022). The implementation of health education in this study was developed based on participatory educational principles that emphasize community involvement, innovation, and sustainable health promotion as recommended (Manurung HR, 2024)

Data were collected through interviews, direct observation, physical examination, review of medical records, and nursing documentation. Data analysis was conducted using a descriptive qualitative approach by comparing the findings obtained during the assessment, implementation, and evaluation stages with relevant nursing theories and previous studies. This analysis aimed to evaluate changes in Mrs. R's condition following nursing interventions and to assess the effectiveness of integrating Medical-Surgical Nursing Care, Service Excellence, and Eco-Education in improving glycemic control, enhancing skin integrity, increasing treatment adherence, and promoting overall quality of life. (Chen, Wei, 2025) Family support has an important role in improving treatment adherence among patients with chronic diseases. Strong family involvement encourages patients to comply with medication, lifestyle modification, and regular health monitoring, which are essential components of chronic disease self-management (Imran Saputra Surbakti, Siti Nurmawan Sinaga, 2026)

RESULT

Based on the nursing assessment in the case study "Service Excellent Medical-Surgical Nursing via Eco-Education for Mrs. R with Type 2 Diabetes Mellitus," Mrs. R, a 62-year-old female, was admitted to the VIP Ward at Latersia General Hospital Binjai diagnosed with Type 2 Diabetes Mellitus. She has a ten-year history of diabetes mellitus alongside chronic kidney

disease (CKD). The assessment also highlighted her inconsistent medical check-ups and poor compliance with prescribed treatments.

During the assessment, the patient reported pain from an infected left calf wound, which originated from a mosquito bite about two weeks prior. Clinical observation revealed localized edema, erythema, warmth, and purulent discharge. The pain was described as intermittent and sharp, rated at 6 out of 10. Concurrently, she experienced fatigue and weakness. Laboratory testing confirmed uncontrolled hyperglycemia with a random blood glucose level of 347 mg/dL. The patient also exhibited common diabetic symptoms, notably reduced physical stamina and restricted daily functioning (Andarmoyo, 2023) (Amaeda, R. A., Langitan and Wahyuni, 2021) Physical examination showed that the patient was conscious (*compos mentis*) but appeared weak. Vital signs revealed a blood pressure of 150/95 mmHg, pulse rate of 90 beats/minute, respiratory rate of 21 breaths/minute, and body temperature of 37°C. Assessment of the integumentary system demonstrated an open wound on the left calf measuring approximately 3 cm × 2 cm × 2 cm, accompanied by edema, redness, warmth, pain on palpation, and purulent drainage, suggesting local infection. The patient also expressed anxiety regarding the delayed wound healing process and her long-standing diabetes condition.

Based on the assessment findings, the primary nursing diagnoses were identified as unstable blood glucose levels, impaired skin integrity related to diabetic wound infection, and non-adherence to therapeutic management. Nursing interventions were implemented through hyperglycemia management, blood glucose monitoring, wound care, medication adherence education, dietary counseling, and collaboration in insulin administration (Aspiani, 2024). Eco-Education was embedded into health education initiatives centered on self-management, healthy living habits, medication and diabetic diet adherence, alongside wound care prevention. Simultaneously, the core tenets of Service Excellent Nursing—namely empathy, responsiveness, professionalism, therapeutic communication, and patient-centered care—were systematically incorporated across all stages of the nursing process.

Evaluation results indicated a marked enhancement in the patient's overall condition. The patient demonstrated an enhanced grasp of diabetes management, higher compliance with treatment plans, greater engagement in self-care routines, and decreased illness-related anxiety. Concurrently, the wound showed steady healing, characterized by a reduction in pain, inflammation, and exudate. The patient was also more driven to regulate blood glucose levels through proper medication, dietary discipline, and healthy living habits. Overall, these outcomes imply that combining Service Excellent Medical-Surgical Nursing with Eco-Education favorably influences glycemic control, wound recovery, therapeutic adherence, and the quality of life for Type 2 Diabetes Mellitus patients..

CONCLUSION

The implementation of Service Excellent Medical-Surgical Nursing integrated with the Eco-Education approach for Mrs. R, a patient with Type 2 Diabetes Mellitus treated in the VIP Ward of Lattersia General Hospital Binjai, demonstrated beneficial outcomes. The systematic application of the nursing process, encompassing assessment, nursing diagnosis, planning, implementation, and evaluation, was effective in addressing the patient's health problems. The major nursing issues identified included unstable blood glucose levels, impaired skin integrity caused by an infected wound on the left calf, and insufficient adherence to therapeutic recommendations (Zaidin, 2021).

Nursing care focused on blood glucose regulation, hyperglycemia management, wound treatment, health education regarding medication adherence, nutritional counseling, and collaborative insulin therapy (Bano, Khan, 2025). These interventions were supported by Eco-Education principles that emphasized the development of patient knowledge, self-care competence, healthy lifestyle behaviors, and sustained commitment to treatment. Moreover, the consistent application of service excellence values, such as empathy, responsiveness, professionalism, therapeutic communication, and patient-centered care, strengthened the effectiveness of the nursing interventions (Wahyuni, 2024).

The evaluation results indicated positive progress in the patient's condition. Improvements were observed in the patient's understanding of diabetes management, compliance with prescribed medications and dietary recommendations, participation in self-care activities, and wound healing outcomes. In addition, the patient demonstrated increased awareness and motivation to maintain blood glucose control and reduce the risk of future complications (Tim Pokja SLKI DPP PPNI, 2023).

Therefore, the integration of Service Excellent Nursing and Eco-Education proved valuable in enhancing glycemic control, supporting wound recovery, improving treatment adherence, and promoting overall well-being. This approach also contributes to the achievement of the Sustainable Development Goals (SDGs), particularly Goal 3 (Good Health and Well-Being), through the promotion of quality healthcare services, disease prevention, health literacy, and sustainable management of chronic illnesses.

SUGGESTION

Nurses and other healthcare professionals should continue incorporating Service Excellent Nursing and Eco-Education into the care of patients with Type 2 Diabetes Mellitus to strengthen patient participation, self-management skills, and adherence to treatment plans. Continuous educational interventions regarding balanced nutrition, regular physical activity, medication compliance, blood glucose monitoring, and diabetic wound prevention should remain a priority.

Healthcare institutions are encouraged to establish comprehensive and patient-centered educational programs that support long-term diabetes management. Active family involvement should also be promoted, as family support significantly influences patients' adherence to therapy and maintenance of healthy lifestyle practices. Additionally, further research is recommended to examine the long-term impact of integrating Service Excellent Nursing and Eco-Education on clinical outcomes, self-management behaviors, and quality of life among individuals living with chronic diseases, particularly Type 2 Diabetes Mellitus.

APPRECIATE

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