Implementation of Diabetes Self-Management Education (DSME) for fulfilling self-actualization needs in diabetes mellitus patients

Ningsih Angrianis Ge'e[1]*, Olfa Maria Telaumbanua[2], Maika[3], Ramona Elvionita[4], Ester Lamudur Br Silaban[5]

[1,2,3,4,5]Nursing Profession, Faculty of Nursing and Midwifery, Universitas Prima Indonesia

Email: ningsihgee09@gmail.com

ABSTRACT

Diabetes Mellitus is a serious chronic disease that occurs when the body cannot effectively utilise insulin, or when the pancreas fails to produce a sufficient amount of this hormone. Global prevalence continues to escalate annually, making it a major public health concern. Diabetes Self-Management Education (DSME) is an evidence-based educational intervention designed to improve clinical outcomes and quality of life in patients with Diabetes Mellitus. This study aimed to describe the implementation of DSME nursing care in fulfilling self-actualization needs of a Diabetes Mellitus patient at RSU Royal Prima Medan. A descriptive case study design was used. Primary data were collected directly from the patient through interview, observation, and physical examination; secondary data were obtained from family members. Nursing visits were conducted for 45 minutes per day over three consecutive days (May 2–4, 2026). Prior to intervention, the patient (Tn. A, 56 years) presented with an unstable blood glucose level (RBG 255 mg/dL), complaints of fatigue, polydipsia, polyuria, and ineffective health management due to inadequate knowledge and limited family support. Following DSME implementation, blood glucose decreased to 169 mg/dL, and both the patient and family demonstrated improved knowledge and self-management capability. DSME is effective as a nursing strategy for stabilising blood glucose and promoting self-actualization in Diabetes Mellitus patients. It is recommended as a standard educational component in DM nursing care.

Keywords: Diabetes Self-Management Education (DSME), Diabetes Mellitus, Self-Actualization

INTRODUCTION

Diabetes mellitus (DM) is a chronic metabolic disorder characterised by persistent hyperglycaemia resulting from defects in insulin secretion, insulin action, or both (World Health Organization [WHO], 2021). Uncontrolled DM can lead to a spectrum of serious complications including retinopathy, nephropathy, peripheral neuropathy, cardiovascular disease, and lower-extremity ulcers (Ariyani, 2020). These complications not only diminish patients' physical capacities but also profoundly impair their psychological well-being, social functioning, and overall quality of life.

According to the International Diabetes Federation (IDF, 2019), the global burden of diabetes is rapidly escalating. By 2030, an estimated 578 million adults are projected to live with diabetes, rising further to approximately 700 million by 2045. Indonesia ranks among the ten countries with the highest DM burden worldwide, with approximately 10.7 million individuals diagnosed in 2019. This epidemiological reality underscores the urgent need for effective and scalable management strategies, particularly those that empower patients and families.

PERKENI (2020) identifies four pillars of type 2 DM management: education, medical nutrition therapy, physical activity, and pharmacological treatment. Of these, patient education is

regarded as the cornerstone. Diabetes Self-Management Education (DSME) is a structured, evidence-based programme that enables patients to acquire the knowledge, skills, and confidence necessary to self-manage their condition effectively (American Diabetes Association [ADA], 2020). DSME has been shown to improve glycaemic control, medication adherence, self-efficacy, and health-related quality of life.

In the nursing context, DSME aligns with the concept of self-actualization within Maslow's hierarchy of needs. Self-actualization refers to the realisation of one's full potential, encompassing personal growth, goal-setting, autonomy, and a sense of purpose (Shalahuddin et al., 2022). For patients with DM, achieving self-actualization means being empowered to manage their disease confidently and effectively, rather than feeling constrained by it.

Culture, family, socioeconomic status, and the environment exert significant influence on health behaviours (Ariyani, 2021). The family unit plays a pivotal role in supporting DM management: members can reinforce dietary adherence, accompany patients to health visits, and provide emotional support. Fatimah (2020) affirms that nurses must engage the family as an active component of the care plan to prevent complications and promote adherence.

This study aimed to describe the implementation of DSME nursing care in fulfilling self-actualization needs of a patient with Diabetes Mellitus at RSU Royal Prima Medan, and to evaluate its impact on blood glucose control and health management behaviour.

METHODS

This study employed a descriptive case study design. The approach involved comprehensive documentation of a single patient's nursing care trajectory, allowing in-depth analysis of assessment findings, diagnosis, planning, implementation, and evaluation in the context of DSME application.

The study was conducted at RSU Royal Prima Medan, North Sumatra, Indonesia. The participant was one patient (Tn. A), a 56-year-old male with a confirmed diagnosis of type 2 Diabetes Mellitus who was admitted on May 1, 2026, and had been living with DM for approximately five years. Inclusion criteria included: (1) confirmed DM diagnosis, (2) willingness to participate, and (3) presence of a family member as secondary informant

Primary data were collected directly from the patient through structured interviews, systematic observation, and standardised physical examination. Secondary data were obtained from family members and the patient's medical records. Nursing assessments were performed daily for 45 minutes per session over three consecutive days (May 2–4, 2026), guided by the nursing process framework and the Standar Diagnosis Keperawatan Indonesia (SDKI, 2020).

DSME was delivered in three structured home visit sessions. Each session integrated educational content (DM pathophysiology, complications, self-monitoring techniques), dietary counselling, medication adherence reinforcement, and physical activity guidance. A booklet was used as the educational media. Family members were included in all sessions to reinforce learning and social support. The four pillars of DM management—education, diet, medication, and physical activity—served as the guiding framework for the intervention content.

Informed consent was obtained from the patient and his family prior to commencement of the nursing care study. All data were collected and reported in accordance with nursing ethics principles, including beneficence, non-maleficence, autonomy, and justice. Patient identity was de-identified in reporting (referred to as 'Tn. A').

RESULTS AND DISCUSSION

Nursing Assessment

a. Patient Profile and Clinical Findings

Nursing assessment was performed on May 2, 2026 through direct interview, observation, and physical examination of Tn. A and his family. The assessment process ran smoothly due to the cooperative attitude of both the patient and his family. Table 1 presents a comprehensive summary of clinical and biographical characteristics

Table 1. Patient Clinical Profile and Reference Values

Characteristic	Data	Reference Value
Name	Tn. A	—
Age	56 years	—
Diagnosis	Diabetes Mellitus Type 2	—
Duration of DM	± 5 years	—
Family DM History	Mother (positive)	—
Blood Pressure	135/88 mmHg	< 130/80 mmHg
Pulse	92 times/minute	60–100 times/min
Respiration	22 times/minute	16–24 times/min
Temperature	36.5°C	36.0–37.5°C
RBG (Day 1)	255 mg/dL	≤ 200 mg/dL
FBG (Day 1)	180 mg/dL	≤ 126 mg/dL
RBG (Day 3 / Post)	169 mg/dL	≤ 200 mg/dL
Medication	Metformin 500 mg	Oral antidiabetic

The patient's initial RBG of 255 mg/dL significantly exceeded the target of ≤ 200 mg/dL, and his FBG of 180 mg/dL also surpassed the ≤ 126 mg/dL threshold, indicating poorly controlled hyperglycaemia. These findings are consistent with Brunner and Suddarth (2021), who note that consistent non-adherence to treatment—including health education, medication use, and lifestyle modification—results in persistent glycaemic dysregulation.

b. Subjective Complaints and Self-Actualization Deficit

The patient reported the classic DM triad of polyuria, polydipsia, and polyphagia, alongside persistent fatigue and weakness. More significantly, from a self-actualization perspective, Tn. A expressed low confidence in managing his condition, an absence of health-related goals, limited autonomy in decision-making, and a perception that his illness constrained everyday life. These findings align with Shalahuddin et al. (2022), who describe self-actualization deficits in DM patients as characterised by impaired personal growth, reduced self-efficacy, and diminished sense of purpose.

Nursing Diagnoses

Based on systematic data analysis in accordance with SDKI (2020), two priority nursing diagnoses were established for Tn. A:

Diagnosis 1: Blood glucose instability, associated with insulin resistance, as evidenced by RBG 255 mg/dL, FBG 180 mg/dL, easy fatigability, weakness, polydipsia, polyuria, and low self-management confidence. Contributing factors include hereditary predisposition (maternal history of DM).

Diagnosis 2: Ineffective health management, related to inadequate access to information and limited family support, as evidenced by irregular medication use, fear of pharmacological side effects, and absence of structured dietary control.

Nursing Care Plan

The nursing care plan was constructed based on priority diagnoses and informed by PERKENI (2020) and SDKI (2020) guidelines. For Diagnosis 1, the goal was to achieve stable blood glucose after three 45-minute visits, with measurable outcomes: RBG ≤ 200 mg/dL, FBG ≤ 120 mg/dL, and resolution of fatigue, polydipsia, polyuria, and polyphagia. Planned interventions included hyperglycaemia management, blood glucose monitoring, DSME delivery, and collaborative pharmacotherapy with Metformin 500 mg.

For Diagnosis 2, the goal was to improve health management effectiveness, with outcomes including patient and family initiation of risk-reduction behaviours, adherence to the care programme, and maintenance of functional daily activities. Health education constituted the central intervention, incorporating the four pillars of DM management.

Table 2. DSME Implementation Framework: Four Pillars of Diabetes Management

Pillar	Component	Activity / Goal
1. Education	DM definition, pathophysiology, complications	Booklet-based teaching; Q&A session with patient and family
2. Diet	Dietary regulation; carbohydrate counting	Counselling on portion control; recommended & forbidden foods
3. Medication	Oral antidiabetics (Metformin 500 mg)	Reinforce medication adherence; address fears about side effects
4. Physical Act.	Aerobic exercise; daily movement	Encourage 30-min brisk walking ≥ 3x/week; activity monitoring

Nursing Implementation

Nursing interventions were executed over three consecutive days (May 2–4, 2026). Daily implementation for Diagnosis 1 encompassed: monitoring of blood glucose levels, facilitating RBG examinations, delivering structured DSME sessions, coaching the patient on self-monitoring techniques, reinforcing dietary compliance, encouraging physical activity, and administering collaborative pharmacotherapy (Metformin 500 mg once daily).

For Diagnosis 2, implementation included: assessing patient and family readiness to receive information, distributing DM education booklets, conducting scheduled health education sessions by mutual agreement, creating opportunities for family questions, explaining modifiable risk factors, and discussing all four pillars of DM management in detail. Each session built upon the previous one, with reinforcement of key messages and identification of progress.

This approach is consistent with the findings of Rismayanti et al. (2021), who demonstrated that structured diabetes education significantly reduces blood glucose levels in type 2 DM patients by enhancing self-management behaviours and family support mechanisms. Potter and Perry (2021) further emphasise that educational interventions are most effective when tailored to the patient's readiness, learning style, and socio-cultural context. No significant barriers to implementation were encountered; the cooperative engagement of Tn. A and his family facilitated smooth delivery of all planned interventions.

Nursing Evaluation

Nursing evaluation was conducted after three days of DSME implementation, using the SOAP (Subjective, Objective, Assessment, Plan) format. Table 3 presents the consolidated evaluation outcomes for both nursing diagnoses.

Table 3. Nursing Evaluation Outcomes Following Three-Day DSME Implementation

Nursing Diagnosis	Subjective (S)	Objective (O)
Blood Glucose Instability	Tn. A stated he no longer feels fatigued or weak after activities. He understands how to care for his DM to prevent complications. Family members regularly remind him to limit restricted foods. He has been consistently taking Metformin 500 mg once daily as advised.	RBG: 169 mg/dL (Day 3) Improvement of 86 mg/dL from baseline (255 mg/dL). Goal (RBG ≤ 200 mg/dL) achieved.
Ineffective Health Management	Tn. A and family are now able to explain: definition, causes, symptoms, treatment (diet), and prevention of complications of Diabetes Mellitus.	Patient demonstrates adequate understanding of DM management. Family participates actively in care planning.

The evaluation demonstrates that Diagnosis 1 (blood glucose instability) was resolved: RBG decreased from 255 mg/dL to 169 mg/dL (a reduction of 86 mg/dL, or 33.7%), achieving the target of ≤ 200 mg/dL. The patient reported resolution of fatigue and weakness, and confirmed consistent

medication adherence. These outcomes are consistent with Mikhael et al. (2020), who found that DSME significantly improves medication adherence, self-efficacy, and glycaemic outcomes in DM patients through structured education and skill-building.

Diagnosis 2 (ineffective health management) showed partial improvement: the patient and family demonstrated the ability to explain DM definition, aetiology, clinical features, dietary management, and complication prevention. Brunner and Suddarth (2021) highlight that DM management compliance—encompassing health education, pharmacotherapy, and lifestyle modification—is the most reliable predictor of long-term glycaemic stability.

From a self-actualization perspective, Tn. A's improved ability to manage his condition, set health goals, and engage his family as a support system represents a meaningful step toward higher-level need fulfilment. Shalahuddin et al. (2022) affirm that DSME, by building self-efficacy and health literacy, directly facilitates self-actualization in DM patients. The family's active participation further reinforced behavioural changes, consistent with Rosalina (2021), who documented the positive impact of family support on chronic disease management.

CONCLUSION

This case study demonstrated that the implementation of Diabetes Self-Management Education (DSME) as a structured nursing intervention effectively addressed the priority nursing diagnoses of blood glucose instability and ineffective health management in a 56-year-old patient with Diabetes Mellitus at RSU Royal Prima Medan.

The nursing assessment identified an initial RBG of 255 mg/dL, persistent symptomatology (fatigue, polydipsia, polyuria), inadequate health management, and a deficit in self-actualization. Following three days of DSME implementation using a four-pillar framework (education, diet, medication, physical activity), RBG decreased to 169 mg/dL, representing a 33.7% improvement. The patient and family demonstrated significantly improved knowledge and self-management capability.

These findings confirm DSME as an evidence-based, effective nursing strategy for achieving blood glucose stability, improving patient and family health literacy, and supporting self-actualization in DM patients. It is recommended that DSME be consistently integrated as a standard educational component in the nursing management of Diabetes Mellitus patients, with particular emphasis on family engagement as a key enabler of sustained behaviour change.

Future studies should examine the long-term effects of DSME on glycaemic control, self-actualization, and quality of life using larger samples and longitudinal designs, to further establish its efficacy in diverse clinical settings.

REFERENCES

American Diabetes Association. (2020). Standards of medical care in diabetes—2020. Diabetes Care, 43(Suppl. 1), S1–S212. https://doi.org/10.2337/dc20-Sint

Ariyani, R. (2020). Diabetes melitus dan komplikasinya: Tinjauan klinis dan keperawatan. Penerbit Kesehatan Indonesia.

Ariyani, R. (2021). Peran keluarga dalam penatalaksanaan diabetes melitus tipe 2. Penerbit Medika.

Brunner, L. S., & Suddarth, D. S. (2021). Brunner & Suddarth's textbook of medical-surgical nursing (14th ed.). Wolters Kluwer.

Fatimah, R. N. (2020). Asuhan keperawatan keluarga pada pasien dengan diabetes melitus. Nuha Medika.

International Diabetes Federation. (2019). IDF diabetes atlas (9th ed.). International Diabetes Federation. https://www.diabetesatlas.org

IPKKI. (2021). Standar pengkajian keperawatan Indonesia. Ikatan Perawat Keluarga dan Komunitas Indonesia.

Mikhael, E. M., Hassali, M. A., Hussain, S. A., & Shawky, N. (2020). Self-management knowledge and practice of type 2 diabetes mellitus patients in Baghdad, Iraq: A qualitative study. Diabetes, Metabolic Syndrome and Obesity: Targets and Therapy, 13, 1–11. https://doi.org/10.2147/DMSO.S238571

PERKENI. (2020). Pedoman pengelolaan dan pencegahan diabetes melitus tipe 2 dewasa di Indonesia 2019. Perkumpulan Endokrinologi Indonesia.

Potter, P. A., & Perry, A. G. (2021). Fundamentals of nursing (10th ed.). Elsevier.

Rismayanti, I. D. A., Sanjaya, I. N. H., & Swamardika, I. B. A. (2021). Pengaruh edukasi diabetes terhadap penurunan kadar glukosa darah pasien DM tipe 2. Jurnal Keperawatan Medikal Bedah, 9(1), 45–53.

Rosalina, S. (2021). Dukungan keluarga terhadap pengelolaan penyakit kronis pada pasien diabetes melitus. Jurnal Keperawatan Keluarga, 5(2), 88–95.

SDKI. (2020). Standar diagnosis keperawatan Indonesia: Definisi dan indikator diagnostik. DPP PPNI.

SDKI. (2022). Standar diagnosis keperawatan Indonesia: Definisi dan indikator diagnostik (Edisi revisi). DPP PPNI.

Shalahuddin, I., Rosidin, U., & Shalahuddin, N. (2022). Aktualisasi diri pada pasien diabetes melitus dalam perspektif kebutuhan dasar manusia. Jurnal Keperawatan Holistik, 7(1), 22–30.

World Health Organization. (2021). Diabetes mellitus: Key facts. World Health Organization. https://www.who.int/news-room/fact-sheets/detail/diabetes