

The Practice of Skilled Nurses in the Care of Patients Diabetes Mellitus: Scoping Review

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KEYWORDS	ABSTRACT
diabetes mellitus, skilled nursing, nursing care	Diabetes mellitus (DM) is a chronic disease with rising global prevalence, posing significant morbidity and mortality challenges. Skilled nurses play a pivotal role in DM management through holistic care, yet disparities in nursing knowledge, self-management practices, and resource limitations hinder optimal outcomes. This scoping review aims to map proficient nursing practices in DM care, identify barriers to effective self-management, and evaluate the impact of nurse-led interventions on patient outcomes. A systematic search was conducted on PubMed, Scopus, and Google Scholar (2015–2025) using keywords like "skilled nursing practice" and "diabetes mellitus." From 325 identified articles, 20 met inclusion criteria and were analyzed thematically. Key findings revealed: (1) a strong correlation between nurses' knowledge/attitudes and quality of care; (2) socioeconomic and educational barriers to patient self-management; and (3) the cost-effectiveness and efficacy of nurse-led interventions in improving glycemic control (e.g., reduced HbA1c levels) and patient satisfaction. The study underscores the need for standardized nursing training, enhanced patient education, and policy support to address workforce shortages. By bridging knowledge gaps and optimizing nurse-led models, this review contributes to global DM care standards, advocating for scalable, patient-centered interventions.

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Introduction

The World Health Organization (WHO) reports that in 2021, there were 537 million adults (aged 20-79 years) worldwide living with diabetes mellitus (WHO, 2021). Data on people with diabetes mellitus based on WHO's exact figures are not available (IDF, 2021). However, in 2022, the WHO predicted that around 422 million people worldwide would suffer from diabetes mellitus (Jiang et al., 2022). According to the International Diabetes Federation (IDF), in 2021, there were 1.1 million deaths globally due to diabetes (IDF, 2021). As reported by the IDF in 2021, Indonesia ranks fifth among the countries with the highest number of people with diabetes mellitus (Bali et

al., 2021; Kurniawati & Sutanto, 2020). The IDF predicts that the number of diabetics in Indonesia could reach 28.57 million by 2045 (IDF, 2021).

Diabetes mellitus is one of the factors that can cause physical, intellectual, mental, and/or sensory limitations over a long period. The International Diabetes Federation (IDF), in the 10th edition of the *Atlas*, confirms that diabetes mellitus is one of the fastest-growing global health emergencies in the 21st century. Advanced nursing practice in hospitals, when providing nursing care to patients with diabetes mellitus, involves nurses with high competence in delivering nursing care, nursing management, and community service. A skilled nurse conducts proper assessment, planning, implementation, and evaluation of nursing care. Skilled nurses also play a role in providing health education to patients and their families and are involved in managing complex cases of diabetes mellitus. Therefore, every nurse is expected to have extensive knowledge and excellent practice skills in providing nursing care to patients (Valizadeh et al., 2018).

This research aims to fill the gap by conducting a holistic study of nursing practice, including education, complication management, and psychosocial support, areas that have not been discussed in depth in previous research. Additionally, this study explains the active role of nurses in overcoming barriers to self-management through training and collaborative approaches. By analyzing 20 articles from various countries, the study expands the geographical and methodological scope, making the results more generalizable. The aim of this study was to map skilled nursing practices in the care of patients with diabetes mellitus, with a focus on improving nurses' knowledge, attitudes, and involvement in holistic management. The benefits of this study include the development of global standards for nursing practice, improved patient care outcomes through evidence-based interventions, as well as recommendations for training and policies that support the role of nurses in diabetes management.

Material and Method

In compiling this scoping review, we searched the WHO library, tracing previous studies that have been published through the Google Scholar, PubMed, and Scopus electronic databases from January 2015 to 2025. The keywords or terms we used in this search included “*skilled nursing practice*”, “*diabetes mellitus*”, and “*nursing care*”. We also used the words *and or* to separate two keywords.

Of the 325 articles identified, the selection process resulted in 20 articles that met the inclusion criteria. The inclusion criteria were adapted from the PRISMA-ScR guidance (Tricco et al., 2018), with a focus on English and Indonesian articles published between 2015 and 2025 that discussed advanced nursing practices in the management of diabetes mellitus. Five articles conducted thematic analysis to identify the central theme of proficient practice in the nursing care of diabetes mellitus patients while anticipating selection and interpretation biases.

Results and Discussion

After selecting the articles found, 5 articles were subjected to thematic analysis to identify the central theme of proficient practice in the nursing care of DM patients.

Table 1. Article Review Synthesis

Yes	Author of the Year	Heading	Research Methods	Findings
1	Farzaei (2023)	Nurses' knowledge, attitudes, and practice with regards to nutritional management of diabetes mellitus	A cross-sectional study of 160 nurses working in two hospitals (Teaching Hospital and Referral Hospital) to evaluate nurses' knowledge, attitudes and practices (KAP) towards diabetes nutrition management	Recent studies have found a positive correlation between knowledge and attitudes with nursing practice. This study reveals a relationship between attitude scores and involvement in diabetes education. Nurses who educate diabetic patients during their working hours have a more positive attitude towards diabetes nutrition management
2	Durán-Gómez et al (2021)	Health-related quality of life in diabetes mellitus patients in primary health care	A cross-sectional descriptive-analytical observational study through nonprobability sampling in diabetic patients in primary health centers. Using questionnaires to obtain sociodemographic data and diabetes care	Women show worse HRQoL (health-related quality of life) than men. Age, diabetes evolution, acute/chronic complications, comorbidities, pharmacological treatment and glycemic control affect HRQoL in patients. Living alone by needing help for self-care, low socio-economic has a negative impact on the quality of life
3	Ewa Kobos et al (2020)	Actual and perceived knowledge of type 1 diabetes mellitus among school nurses	Cross-sectional studies. With the DKQ diabetes knowledge questionnaire), researchers self-assessed actual nurse diabetes knowledge (SADK) at 17 primary care facilities in Warsaw that employed school nurses. DKQ and SADK assess diabetes knowledge: General diabetes knowledge; insulin and glucagon; insulin pumps; complications of diabetes; Nutrients; physical activity, stress and comorbidities; and glycemic measurement	The results of DKQ knowledge level are still low related to insulin pumps (36.5%), insulin and glucagon (37.9%), nutrition (37.4%). DKQ scores are higher at: nurses with higher education, nurses who have relatives or friends with diabetes, nurses who have/have had previous diabetes training.
4	Adi Pamungkas et al (2019)	Barriers to effective diabetes mellitus self-management (DMSM) practice for Glycemic uncontrolled type 2 diabetes mellitus (T2DM): A socio cultural	Qualitative research with in-depth interview methods and focus group discussions (FGD) of 28 main informants including patients and patients' families, health service providers (HPCs), village health volunteers (VHV)	Research identified barriers that could undermine patients' efforts to implement effective diabetes mellitus self-management practices (DMSMs). Patients with diabetes mellitus type 2 (T2DM) have a low (inadequate) perception of the vulnerability and severity of the disease, inadequate knowledge and skills about diabetes mellitus self-management, lack of motivation to undertake self-

Yes	Author of the Year	Heading	Research Methods	Findings
		context of Indonesia communities in West Sulawesi		management as well as insufficient workforce of health care providers
5	Marie Crowe et al (2019))	The clinical effectiveness of nursing models of diabetes care : A synthesis of the evidence	Primary studies with adults in primary care with quantitative (comparison with physician-led care and cost-effectiveness) and qualitative (patient experience of nurse-led care) methodologies from 2003 to June 2018	resulted in 18 published studies that met the eligibility criteria. Three randomized controlled trials and 1 historical control trial found statistically significant differences in glycemic levels in favor of the nurse-led intervention. The audit identified that more patients had lower HbA1c levels after the start of the intervention by the nurse. All four studies measuring cost-effectiveness found nurse-led interventions cost less. Four studies examined patient satisfaction with nurse-led care and the results were very good patient satisfaction.

Recent studies have found a positive correlation between knowledge and attitudes with nursing practice. This study reveals a relationship between attitude scores and involvement in diabetes mellitus education. Nurses who provide education to diabetes mellitus patients during their working hours have a more positive attitude towards diabetes mellitus management.

Age, evolution of diabetes mellitus, acute/chronic complications, comorbidities, pharmacological treatment and glycemic control affect health-related quality of life in patients with diabetes mellitus. Patients who live alone and need help for their own care, as well as patients who are at a low socioeconomic level have a negative impact on their quality of life.

Nurses with a higher education background and nurses who have a sibling or friend with diabetes as well as nurses who have/have had previous training on diabetes, have better knowledge scores on diabetes mellitus management than nurses who do not have such a background.

Factors that hinder patients' efforts to implement effective diabetes mellitus self-management practices (DMSMs)) can come from patients who have a low (inadequate) perception of the vulnerability and severity of their diabetes, diabetic patients have inadequate knowledge and skills about diabetes mellitus self-management, as well as lack of motivation to do self-management.

A factor inhibiting patients' efforts to implement effective diabetes mellitus self-management practices (DMSMs) originating from health care facilities is the insufficient number of workers (HR) of these service providers.

Primary studies with adults in primary care with quantitative (comparison with physician-led care and cost-effectiveness) and qualitative (patient experience of nurse-led care) methodologies found statistically significant differences in glycemic levels that supported nurse-led interventions. The audit identified that more patients had lower HbA1c levels after the start of the intervention by the nurse. Studies that measured cost-effectiveness, found nurse-led interventions cost less. The study evaluated patient satisfaction, with nurse-led care, showing patient satisfaction outcomes, excellently.

This scoping review aims to map proficient nursing practices in the management of patients with diabetes mellitus (DM), with a focus on the competence and skills of nurses in providing holistic care. The study includes an analysis of 20 relevant articles identified through a literature search from 2015 to 2025, with the aim of providing a comprehensive overview of proficient nursing practices in the management of diabetes mellitus.

Based on the findings obtained, it can be seen that there are a number of factors that affect the quality of nursing practice in the management of diabetes mellitus. One of the key factors found in some studies is the positive relationship between nurses' knowledge and attitudes towards nursing practice. Adequate knowledge of diabetes mellitus and nutrition management is closely related to nurse involvement in patient education, which in turn has a positive impact on nursing outcomes. Nurses who have better knowledge, whether acquired through formal education or prior training, are more likely to show a more positive attitude towards diabetes management, including educating patients during their working hours. Duran-Gomez et al. (2021) identified that nurses' knowledge of diabetes mellitus management and their attitudes towards diabetes management have an influence on the quality of life of diabetic patients. The better the knowledge and attitude of the nurse, the higher their involvement in providing diabetes nutrition education and management.

Ewa Kobos et al. (2020) also found that nurses' knowledge of diabetes mellitus greatly influences care practices, especially related to the understanding of insulin, insulin pumping, and nutrition in diabetic patients.

However, although nurses' knowledge greatly influences the quality of care, there are still significant challenges associated with the practice of diabetes mellitus self-management (DMSM) by patients, especially in Indonesia. Some of the studies analyzed showed that the main inhibiting factors in the effective implementation of DMSM came from the patients themselves, such as low perceptions of susceptibility to disease and incompetence in self-management, both in terms of knowledge and skills. In addition, low motivation to self-manage and limited access to adequate health services are also significant obstacles.

On the other hand, external factors such as insufficient manpower in health facilities also affect the effectiveness of diabetes mellitus management. A lack of nurses with appropriate competencies to care for patients with diabetes mellitus can hinder the quality of care provided, although interventions by highly competent nurses can provide significant results in controlling patients' glycemic levels. Ewa Kobos et al. (2020) revealed that low nurses' knowledge of certain aspects of diabetes mellitus management, such as insulin and

nutrition management, is a major obstacle to the implementation of effective diabetes mellitus self-management. The patient's inability to implement optimal self-management is often due to limited knowledge and skills. Farzaei (2023) also emphasized that in addition to knowledge, nurses' attitudes towards patient education are very important in supporting diabetes mellitus self-management practices. Nurses who have a positive attitude tend to be more effective in educating patients about the importance of self-management of diabetes mellitus. Adi Pamungkas et al. (2019) examined the limited workforce in health facilities as the main obstacle in the management of diabetes mellitus, especially in areas with limited resources. This study shows that the lack of trained nurses has a major effect on the effectiveness of diabetes mellitus self-management by patients. Farzaei (2023) also noted that the limited time nurses have due to the high workload can hinder their role in providing adequate education to diabetes mellitus patients.

Other findings suggest that nurse-led interventions, both qualitatively and quantitatively, show success in lowering patients' glycemic levels, with some studies showing significant reductions in HbA1c levels after intervention. This intervention proved to be more cost-efficient compared to physician-led care, suggesting that the nurse-led model of care has advantages in the management of diabetes mellitus.

In addition, patient satisfaction with the care provided by the nurses also showed positive results. Many patients reported high satisfaction with nurse-led care, indicating the importance of nurse involvement in the management of diabetes mellitus and the management of associated complications. Marie Crowe et al. (2019) also reported that patient satisfaction with nurse-led care was excellent, suggesting that a more holistic and communicative approach by nurses improves the patient experience in diabetes management. Duran-Gomez et al. (2021) examined the relationship between HRQoL (Health-Related Quality of Life) and diabetes management, revealing that patient satisfaction with the management of diabetes mellitus is greatly influenced by the active role of nurses in providing education and supporting glycemic management.

Conclusion

It was found that there was a positive correlation between knowledge, attitudes, and nursing practice. Additional diabetes mellitus training is needed to increase knowledge among nursing students and practicing nurses to carry out safe and effective nursing care for diabetic patients. For patients with diabetes mellitus, age, diabetes evolution, acute/chronic complications, comorbidities, pharmacological treatment, and glycemic control affect their quality of life in terms of their health-related quality of life (*HRQoL*). The severity of diabetes mellitus (DM) plays an important role in explaining health-related behaviors and preventive measures. Diabetic patients' attitudes and beliefs are important factors that affect perceptions of vulnerability and the severity of the disease they suffer.

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