Vol. 5. No.1. 2027 E-ISSN 2987- 2081

Holistic Nursing PLUS
Pillars, Longevity, Ubiquitary, Solicitude

SAKU
SAHABAT PUBLIKASI KUU

Effectiveness Of Nursing Education On Self-Care Adherence In Patients With Type 2 Diabetes Mellitus: A Literature Review

[1]Fajar Haikal Fadly, [2]Johan Budhiana, [3]Rosliana Dewi

Bachelor of Nursing Study Program, Sukabumi School of Health Sciences (STIKes Sukabumi), Jl. Karamat No. 36, Sukabumi City, West Java, 43111, Indonesia, **haikalboy2917@gmail.com**

Editor: Yafi Sabila Rosyad

Received: 07 September 2026
Accepted: 17 November 2026
Published: 27 November 2026

Publisher's Note: HNP stays neutral with regard to jurisdictional claims in published maps and institutional affiliations.\

Copyright: © 2026 by the authors. Submitted for possible open access publication under the terms and conditions of the Creative Commons Attribution (CC BY) license (https://creativecommons.org/licenses/by/4.0/)

Abstract

Type 2 Diabetes Mellitus (T2DM) is a chronic disease requiring lifelong self-management, in which adherence to self-care behavior plays a key role in glycemic control and complication prevention. Low self-care adherence among T2DM patients remains a major challenge in healthcare services, making structured nursing education a key intervention to improve such adherence. This study aimed to analyze the effectiveness of nursing education on self-care adherence in T2DM patients through a PRISMA-based literature review approach, searching Google Scholar, PubMed, and Scopus databases from 2022–2026, resulting in 10 articles selected from 1,410 articles based on inclusion criteria. Synthesis results show that nursing education across various modalities including face-to-face education, video media, social media, and telenursing significantly improves self-care adherence, knowledge, and glycemic control in T2DM patients ($p<0.05$). In conclusion, nursing education is an evidence-based intervention that effectively improves self-care adherence in T2DM patients and needs to be implemented continuously as an integral part of nursing care.

Keywords : Nursing education, adherence, self-care, type 2 diabetes mellitus

Introduction

Type 2 Diabetes Mellitus (T2DM) is a chronic metabolic disease characterized by insulin resistance and hyperglycemia, accounting for more than 90% of all diabetes cases globally (GBD 2021 Diabetes Collaborators, 2023). The International Diabetes Federation (IDF) reported that the number of people with diabetes worldwide reached 537 million in 2021 and is projected to increase to 783 million by 2045, with Indonesia being one of the countries with the highest DM burden in the Asia Pacific region (International Diabetes Federation [IDF], 2021; Sun et al., 2022). Data from the 2023 Indonesian Health

Survey (SKI) show that the prevalence of DM among adults continues to increase, placing DM as a top priority on the national health agenda (Ministry of Health of the Republic of Indonesia, 2023).

Self-care is a core component of T2DM management, encompassing diet regulation, regular physical activity, self-monitoring of blood glucose, adherence to pharmacological therapy, and foot care (American Diabetes Association Professional Practice Committee [ADA], 2026; Davis et al., 2022; Indonesian Endocrinology Association, 2021). Adherence to self-care behavior has been shown to be a major determinant of successful glycemic control and the prevention of long-term DM complications. Nevertheless, self-care adherence among T2DM patients in various countries, including Indonesia, remains low, with the proportion of patients exhibiting poor self-care adherence reaching more than half of the population in several studies (Rahman, 2023; Tamiru et al., 2023). This low adherence is closely related to knowledge deficits, low self-efficacy, and limited access to adequate health education.

Nursing education is a key intervention carried out by nurses as educators to improve the knowledge, skills, and motivation of T2DM patients in carrying out self-care independently and consistently. Nurses hold a strategic role as diabetes educators given their high intensity of contact with patients compared with other health professionals, whether in inpatient, outpatient, or community settings (Nurdinilah et al., 2024; Dailah, 2024). Various modalities of nursing education have been developed and studied for their effectiveness, ranging from conventional face-to-face education, video and social media-based education, to remote follow-up through telenursing (Rizki et al., 2024 ; Alsahli et al., 2025).

Scientific evidence from various studies at both national and international levels consistently shows that structured nursing education can improve self-care adherence, knowledge, self-efficacy, and glycemic control among T2DM patients (Yu et al., 2022; Sun et al., 2025). Nevertheless, the effectiveness of nursing education may vary depending on the delivery modality, intervention duration, and characteristics of the target population. Comprehensive reviews integrating the latest evidence from national and international studies on the effectiveness of nursing education toward self-care adherence in T2DM patients remain limited, particularly those relevant to the context of nursing services in Indonesia. Based on this background, this study aims to analyze the effectiveness of nursing education

on self-care adherence in patients with type 2 diabetes mellitus through a PRISMA-based literature review approach (Page et al., 2021), using the latest empirical studies from 2022–2026, comprising 5 national and 5 international articles.

Materials and Methods

This study used a literature review design based on the topic "The Effectiveness of Nursing Education on Self-Care Adherence in Patients with Type 2 Diabetes Mellitus" through the following PICO framework: P (Population): adult patients with T2DM; I (Intervention): nursing education in various modalities; C (Comparison): standard care, control group, or pre-intervention condition (pre-test); O (Outcome): improvement in self-care adherence, knowledge, and/or glycemic control. The databases used were Google Scholar, PubMed, and Scopus. The keywords used were "nursing education," "edukasi keperawatan," "adherence," "kepatuhan," "self-care," "type 2 diabetes mellitus," and "diabetes melitus tipe 2," combined with Boolean operators (AND, OR). The complete search string was: ("nursing education" OR "edukasi keperawatan" OR "nurse-led education") AND ("adherence" OR "kepatuhan" OR "compliance") AND ("self-care" OR "perawatan diri") AND ("type 2 diabetes mellitus" OR "diabetes melitus tipe 2" OR "DM tipe 2").

Eligibility criteria. The inclusion criteria used were: (1) articles published between 2022 and 2026; (2) available in full text with open access; (3) written in Indonesian or English; (4) quantitative research designs (quasi-experiment, pre-experimental, randomized controlled trial, meta-analysis, narrative review); (5) research variables consistent with the topic, namely nursing education as the intervention and self-care adherence of T2DM patients as the primary outcome; (6) a combination of national and international articles to provide a comprehensive perspective. The exclusion criteria included: articles in the form of opinions, editorials, or single case reports without primary data; articles studying type 1 DM or gestational DM populations without a clear type 2 DM component; articles that did not report intervention results quantitatively; and articles irrelevant to the research topic after full-text reading.

Data extraction. The article search was carried out systematically through three main databases. Articles that did not meet the inclusion criteria were excluded in stages. Once articles meeting the inclusion criteria were obtained, quality assessment was conducted using the Critical Appraisal Skills Programme (CASP) to ensure that only studies with adequate methodological quality were included

in the synthesis. The search was carried out in two stages: the first stage focused on general criteria (publication year 2022–2026, open-access full text, Indonesian or English language); the second stage focused on conformity with the PICO framework and the balance between national and international articles. Data were extracted using a standardized format covering: researcher's name, year of publication, country/origin of the journal (national/international), study design, sample size, nursing education modality used, self-care adherence measurement instrument (SDSCA or others), and main results (p-value, pre-post mean difference).

Result

The database search of Google Scholar, PubMed, and Scopus identified 1,410 records. After duplicate removal and staged screening based on titles, abstracts, and full-text eligibility, 10 articles met all inclusion criteria and were included in the synthesis, comprising five national and five international articles.

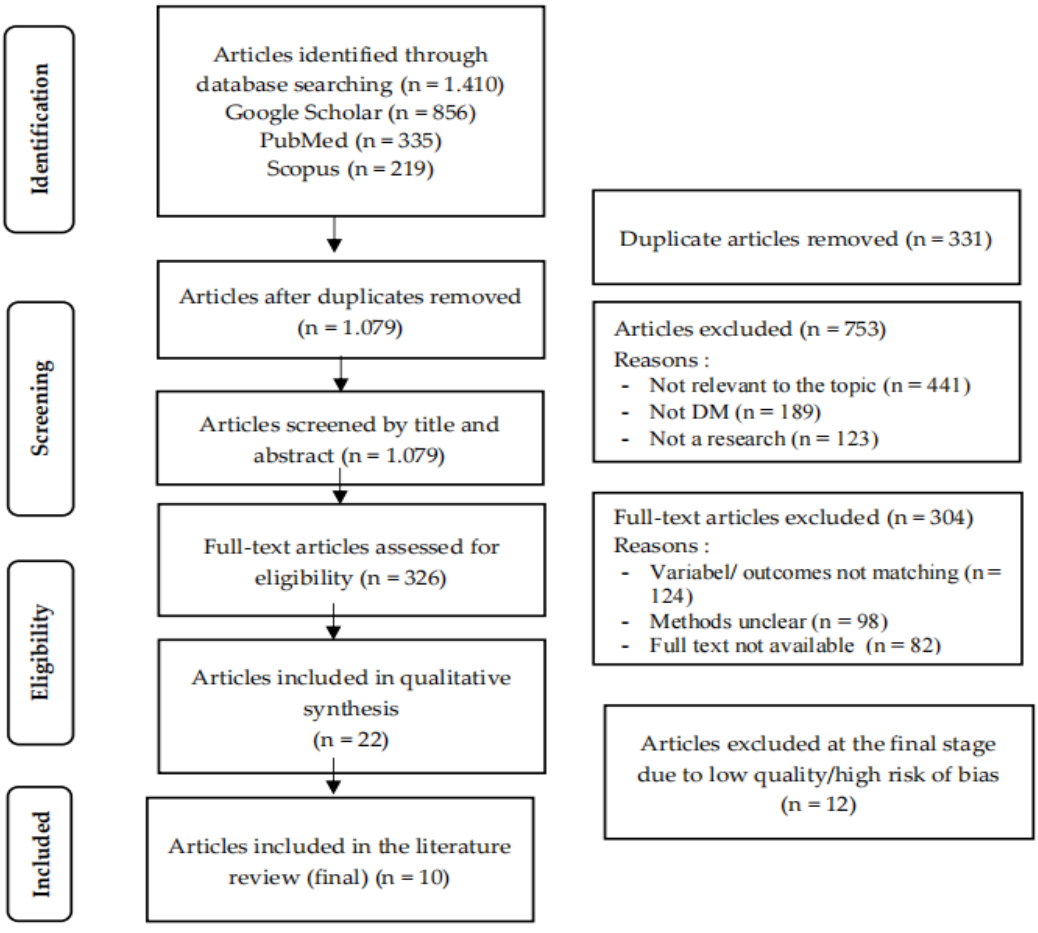


Figure 1. PRISMA flow diagram of the article selection process

Table 1.
Analysis of the Included Articles

No	Topic	Researcher	Design	Population & Sample	Result
1	The Relationship Between the Nurse's Role as Educator and Diet Adherence in Type 2 DM Patients in the Emerald Ward of Kartika Kasih Hospital, Sukabumi City	(Nurdinilah et al., 2024)	Descriptive Correlational, Cross-sectional	T2DM patients in the Emerald Ward of Kartika Kasih Hospital, Sukabumi City	There was a significant relationship between the nurse's role as educator and diet adherence among T2DM patients ($p<0.05$). The more optimal the nurse's educator role, the higher the patients' diet adherence, confirming the importance of nurses' educational competence in DM management.
2	The Effect of Health Education on Self-Care of Patients with Type 2 Diabetes Mellitus	(Rahman, 2023)	Pre-Experimental, One Group Pre-Post Test	34 T2DM patients at RS-BLUD Tanjungpinang City	Health education had a significant effect on self-care among T2DM patients ($p=0.008$), as measured using the SDSCA questionnaire. Good self-care status increased from 38.2% to 58.8% of respondents after education was given.
3	Effectiveness of Social Media & Animation Video Based Education Increasing Knowledge and Self Care Activity of Type 2 Diabetes Mellitus	(Rizki et al., 2024)	Quasi Experiment, One Group Pre-Post Test	30 T2DM patients at a community health center (Puskesmas) in Banda Aceh City	The social media- and animated video-based education package significantly improved knowledge ($p=0.000$) and self-care activity among T2DM patients, with 86% of respondents having good knowledge and 88% having good self-care activity post-intervention.
4	The Effect of Video-Based Foot Care Education on Diabetic Ulcer Prevention Behavior in Patients with Diabetes Mellitus	(Apriani et al., 2024)	Pre-Experimental, One Group Pre-Post Test	33 T2DM patients at Payung Sekaki Community Health Center (Puskesmas)	Video-based foot care education significantly improved diabetic ulcer prevention behavior ($p=0.000$), including increased scores in knowledge, attitude, and adherence to independent foot care practices among DM patients.
5	Improving Diabetes-Mellitus Self-Care Practice Using Educational Video in Preventing Covid-19	(Megayanti & Suantika, 2023)	Quasi Experiment, One Group Pre-Post Test	36 DM patients with ulcers in East Denpasar, Bali	The EPIC-19 educational video significantly improved self-care adherence among DM patients related to COVID-19 infection prevention ($p=0.0001$), as measured using a modified

No	Topic	Researcher	Design	Population & Sample	Result
	(EPIC-19) during the Pandemic				SDSCA questionnaire, confirming the effectiveness of video media as a nursing education tool.
6	The Effects of a Nurse-Led Integrative Medicine-Based Structured Education Program on Self-Management Behaviors Among Individuals with Newly Diagnosed Type 2 Diabetes	(Yu et al., 2022)	Randomized Controlled Trial	128 individuals with newly diagnosed T2DM from four university hospitals, Xi'an, China	The nurse-led structured education program based on integrative medicine significantly improved self-management behaviors ($p=0.005$), reduced HbA1c (β=-0.32%; $p<0.001$), and increased self-efficacy compared with the usual-care control group.
7	The Influence of Nurse-Led Interventions on Diseases Management in Patients with Diabetes Mellitus: A Narrative Review	(Dailah, 2024)	Narrative Review	Clinical studies on nursing interventions in diabetes mellitus patients	Nurse-led interventions, including DSME, consistently improved self-care adherence, diabetes knowledge, glycemic control, and patients' psychological outcomes. Nurse-led clinics were identified as an effective strategy for sustainably improving DM management.
8	Effects of Nurse-Led Diabetes Self-Management Education on Self-Care Knowledge and Self-Care Behavior Among Adult Patients with Type 2 Diabetes Mellitus Attending Diabetes Follow-up Clinic	(Tamiru et al., 2023)	Quasi-Experimental, Institution-based	278 T2DM patients at follow-up clinics, Ababor and Buno Bedelle, Ethiopia	Nurse-led DSME significantly improved knowledge scores and self-care behavior among T2DM patients compared with the control group ($p<0.05$), with the proportion of poor self-care adherence decreasing from 62.7% to 20.6% post-intervention.
9	Effectiveness of Patients' Education and Telenursing Follow-Ups on Self-Care Practices of	(Alsahli et al., 2025)	Quasi Experiment, One Group Pre-Post Test	100 DM patients at Kafr El Sheikh University Hospital, Egypt	Patient education combined with telenursing follow-up significantly improved self-care practice adherence among DM patients who previously had low self-care knowledge, confirming the

No	Topic	Researcher	Design	Population & Sample	Result
	Patients With Diabetes Mellitus				role of telenursing in sustaining long-term adherence.
10	Impact of Nurse-Led Self-Management Education on Type 2 Diabetes: A Meta-Analysis	(Sun et al., 2025)	Meta-Analysis	T2DM patients from various globally selected RCT studies	Nurse-led DSME significantly reduced fasting blood glucose (MD=-0.20; 95% CI: -0.36 to -0.03) and increased self-efficacy (SMD=1.48), confirming that limitations in self-care adherence can be addressed through structured nursing education.

Discussion

The synthesis of the 10 articles analyzed, both from national and international studies, consistently shows that nursing education is effective in improving self-care adherence among T2DM patients ($p<0.05$). The consistency of findings across various educational modalities, populations, and healthcare contexts strengthens the validity of nursing education as an evidence-based intervention in T2DM management.

At the national level, Nurdinilah et al. (2024) at Kartika Kasih Hospital, Sukabumi City, demonstrated that the nurse's role as educator was significantly related to diet adherence among T2DM patients, confirming that nurses' educational competence directly influences patient adherence outcomes. Rahman (2023) at RS-BLUD Tanjungpinang reinforced this finding through a pre-experimental design, showing that health education improved good self-care status from 38.2% to 58.8% of respondents ($p=0.008$) as measured using the SDSCA questionnaire. Rizki et al. (2024) in Banda Aceh added evidence that education modalities based on social media and animated video significantly improved knowledge and self-care activity among T2DM patients, achieving good knowledge in 86% and good self-care activity in 88% of respondents post-intervention.

Apriani et al., (2024) at Payung Sekaki Community Health Center provided specific evidence that video-based foot care education significantly improved diabetic ulcer prevention behavior ($p=0.000$), while Megayanti and Suantika (2023) in Denpasar demonstrated that the EPIC-19 educational video was effective in improving self-care adherence among DM patients with ulcers related to infection prevention during the pandemic ($p=0.0001$). Collectively, these five national studies confirm that media-based nursing

education whether video, social media, or direct face-to-face education is consistently effective in improving self-care adherence among T2DM patients across various healthcare contexts in Indonesia, from private hospitals in Sukabumi to primary care Puskesmas in various regions.

At the international level, evidence from more rigorous methodological designs strengthens the generalizability of these findings. Yu et al. (2022), through a randomized controlled trial on 128 newly diagnosed T2DM patients in China, demonstrated that a nurse-led structured education program based on integrative medicine significantly improved self-management behaviors, reduced HbA1c, and increased self-efficacy compared with the usual-care control group. Dailah (2024), through a comprehensive narrative review, summarized that nurse-led interventions, including DSME and nurse-led clinics, consistently improved self-care adherence, diabetes knowledge, and glycemic control among patients across various care settings.

Tamiru et al. (2023) in Ethiopia, through a quasi-experimental design on 278 patients, demonstrated that nurse-led DSME significantly improved knowledge and self-care behavior compared with the control group, with the proportion of poor adherence decreasing drastically from 62.7% to 20.6%. Alsahli et al. (2025) in Egypt added evidence that combining patient education with telenursing follow-up significantly improved self-care practice adherence among DM patients who previously had low knowledge, highlighting the importance of continued education after the initial intervention to sustain long-term adherence. Sun et al. (2025), through a global-scale meta-analysis, confirmed that nurse-led DSME significantly reduced fasting blood glucose and increased self-efficacy, reinforcing the conclusion that limitations in self-care adherence can be effectively addressed through structured and consistent nursing education.

Overall, the convergence of evidence from the five national and five international studies illustrates that nursing education is a multidimensional intervention that is effective in improving self-care adherence among T2DM patients, with optimal effectiveness achieved through a combination of approaches: the use of varied educational media (video, social media, face-to-face), continuity of education through follow-up (telenursing or routine clinics), and strengthening of nurses' competence as primary educators. National studies highlight the practical application of various educational media within the Indonesian healthcare context, while international studies reinforce the generalizability of findings through more rigorous

methodological designs and larger sample sizes. These findings are also consistent with earlier systematic reviews reporting that diabetes self-management education and self-management interventions improve glycemic control (Al Harbi et al., 2022; Polsook et al., 2023) and with current standards that position diabetes self-management education and support as a foundation of diabetes care (ADA, 2026; Davis et al., 2022).

Conclusion

Based on the synthesis of ten articles, nursing education has proven effective in improving self-care adherence in patients with type 2 diabetes mellitus, with various modalities showing significant results ($p<0.05$). The modalities analyzed include conventional face-to-face education, video- and social media-based education, structured education programs based on integrative medicine, nurse-led DSME, and follow-up through telenursing. Nursing education consistently improved knowledge, self-care adherence, self-efficacy, and glycemic control among T2DM patients across various healthcare contexts. National studies confirm the applicability of various educational modalities within the Indonesian context, from hospitals to primary care services, while international studies reinforce the generalizability of findings through more rigorous methodological designs. These findings underscore the importance of nursing education as a standard component of nursing care for T2DM patients that needs to be implemented continuously and adapted to patients' needs.

Reference

Al Harbi, S. S., Alajmi, M. M., Algabbas, S. M., & Alharbi, M. S. (2022). The comparison of self-management group education and the standard care for patients with type 2 diabetes mellitus: An updated systematic review and meta-analysis. Journal of Family Medicine and Primary Care, 11(8), 4299–4309. https://doi.org/10.4103/jfmpc.jfmpc_2087_21

Alsahli, M., Abd-alrazaq, A., Fathy, D. M., Abdelmohsen, S. A., Gushgari, O. A., Ghazy, H. K., & Abdelwahed, A. Y. (2025). Effectiveness of Patients' Education and Telenursing Follow- Ups on Self-Care Practices of Patients With Diabetes Mellitus: Cross-Sectional and Quasi-Experimental Study. JMIR Nursing, 8, 1–13. https://doi.org/10.2196/67339

American Diabetes Association Professional Practice Committee. (2026). 5. Facilitating positive health behaviors and well-being to improve health outcomes: Standards of care in diabetes—2026. Diabetes

Care, 49(Suppl. 1), S89–S131. https://doi.org/10.2337/dc26-S005

Apriani, D., Saputra, B., & Roslita, R. (2024). Pengaruh Edukasi Perawatan Kaki Menggunakan Media Video Terhadap Perilaku Pencegahan Terjadinya Luka Diabetik pada Pasien Diabetes Militus. Jurnal Kesehatan Komunitas (Journal of Community Health), 10(1), 69–76. https://doi.org/10.25311/keskom.vol10.iss1.1337

Dailah, H. G. (2024). The Influence of Nurse-Led Interventions on Diseases Management in Patients with Diabetes Mellitus: A Narrative Review. Healthcare, 12(3), 1–17. https://doi.org/10.3390/healthcare12030352

Davis, J., Fischl, A. H., Beck, J., Browning, L., Carter, A., Condon, J. E., Dennison, M., Francis, T., Hughes, P. J., Jaime, S., Lau, K. H. K., McArthur, T., McAvoy, K., Magee, M., Newby, O., Ponder, S. W., Quraishi, U., Rawlings, K., Socke, J., . . . Villalobos, S. (2022). 2022 national standards for diabetes self-management education and support. Diabetes Care, 45(2), 484–494. https://doi.org/10.2337/dc21-2396

GBD 2021 Diabetes Collaborators. (2023). Global, regional, and national burden of diabetes from 1990 to 2021, with projections of prevalence to 2050: A systematic analysis for the Global Burden of Disease Study 2021. The Lancet, 402(10397), 203–234. https://doi.org/10.1016/S0140-6736(23)01301-6

International Diabetes Federation. (2021). IDF diabetes atlas (10th ed.). https://www.diabetesatlas.org

Kementerian Kesehatan Republik Indonesia. (2023). Survei Kesehatan Indonesia (SKI) 2023 dalam angka. Kemenkes RI.

Megayanti, S. D., & Suantika, I. R. (2023). Improving Diabetes-Mellitus Self-Care Practice Using Educational Video in Preventing COVID-19 (EPIC-19) during the Pandemic. Babali Nursing Research, 4(1), 119–128. https://doi.org/10.37363/bnr.2023.411202

Nurdinilah, N., Safariyah, E., & Hamidah, E. (2024). Hubungan Peran Perawat Sebagai Edukator Dengan Kepatuhan Diet Pasien DM Tipe II di Ruangan Emerald Rumah Sakit Kartika Kasih Kota Sukabumi. Jurnal Ilmu Kedokteran Dan Kesehatan Indonesia, 4(1), 102–110. https://doi.org/10.55606/jikki.v4i1.2950

Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., Shamseer, L., Tetzlaff, J. M., Akl, E. A., Brennan, S. E., Chou, R., Glanville, J., Grimshaw, J. M., Hróbjartsson, A., Lalu, M. M., Li, T., Loder, E. W., Mayo-Wilson, E., McDonald, S., . . . Moher, D. (2021). The PRISMA

2020 statement: An updated guideline for reporting systematic reviews. BMJ, 372, Article n71. https://doi.org/10.1136/bmj.n71

Perkumpulan Endokrinologi Indonesia. (2021). Pedoman pengelolaan dan pencegahan diabetes melitus tipe 2 dewasa di Indonesia 2021. PB PERKENI.

Polsook, R., Aungsuroch, Y., & Thontham, A. (2023). The effect of self-management intervention among type 2 diabetes: A systematic review and meta-analysis. Worldviews on Evidence-Based Nursing. Advance online publication. https://doi.org/10.1111/wvn.12688

Rahman, Z. (2023). Pengaruh edukasi kesehatan terhadap self care pasien diabetes melitus tipe 2. Jurnal Ilmiah Keperawatan (Scientific Journal of Nursing), 9(3), 556–581. https://doi.org/10.33023/jikep.v9i5.1620

Rizki, K., Putra, Y., & Mahira, U. (2024). Effectiveness of Social Media & Animation Video Based Education Increasing Knowledge and Self Care Activity of Type 2 Diabetes Mellitus. Jurnal Keperawatan Florence Nightingale (JKFN), 7(2), 375–381. https://doi.org/10.52774/jkfn.v7i2.299

Sun, H., Saeedi, P., Karuranga, S., Pinkepank, M., Ogurtsova, K., Duncan, B. B., Stein, C., Basit, A., Chan, J. C. N., Mbanya, J. C., Pavkov, M. E., Ramachandaran, A., Wild, S. H., James, S., Herman, W. H., Zhang, P., Bommer, C., Kuo, S., Boyko, E. J., & Magliano, D. J. (2022). IDF Diabetes Atlas: Global, regional and country-level diabetes prevalence estimates for 2021 and projections for 2045. Diabetes Research and Clinical Practice, 183, Article 109119. https://doi.org/10.1016/j.diabres.2021.109119

Sun, J., Fan, Z., Kou, M., Wang, X., Yue, Z., & Zhang, M. (2025). Impact of nurse-led self-management education on type 2 diabetes: a meta-analysis. Frontiers in Public Health, 13, 01–17. https://doi.org/https://doi.org/10.3389/fpubh.2025.1622988

Tamiru, S., Dugassa, M., Amsalu, B., Bidira, K., Bacha, L., & Tsegaye, D. (2023). Effects of Nurse-Led diabetes Self-Management education on Self-Care knowledge and Self-Care behavior among adult patients with type 2 diabetes mellitus attending diabetes follow up clinic: A Quasi-Experimental study design Sanbato. International Journal of Africa Nursing Sciences, 18, 1–7. https://doi.org/10.1016/j.ijans.2023.100548

Yu, X., Chau, J. P. C., Huo, L., Li, X., Wang, D., Wu, H., & Zhang, Y. (2022). The effects of a nurse-led integrative medicine-based structured education program on self-management behaviors among

individuals with newly diagnosed type 2 diabetes: a randomized controlled trial. BMC Nursing, 21, 1–17. https://doi.org/10.1186/s12912-022-00970-7