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Self-Care Management Clinical Protocol for Patients with Type II Diabetes Mellitus: A Delphi Design Study

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ABSTRACT: Background: Type 2 diabetes mellitus (T2DM) is a chronic illness that is characterized by raised levels of blood glucose resulting from insulin resistance and deficiency. It is a complex public health concern that has significant health, social, economic, and familial burdens. Studies suggested that effective self-care management for type 2 diabetic patients has shown the best health outcomes and reduced disease burdens. A significant obstacle for nurses and doctors in health settings is the lack of self-care management clinical guidelines and protocols.

Method: Using a Delphi method, a judgmental panel of experts (N=16) who were academic staff with experience in clinical protocol development and primary healthcare. In addition, primary health care nurses (N=8) and physicians (N=22) who were actively engaged in T2DM management in primary health care (PHC). provided their perspectives regarding the designed clinical protocol. A Delphi checklist on a 5-Likert scale was used to obtain the consensus of participants regarding the module ratings. Directed content analyses were used to analyze qualitative data, and quantitative data were summarized by using the descriptive statistics.

Results: Participants' views on content, required resources, policies, competences, facilities, benefits, type 2 diabetic patients' challenges, and common questions beside their recommendations were noted as key considerations. There was a strong consensus between participants regarding the clinical protocol's content and media, with an excellent agreement exceeding 0.9.

Conclusion and Recommendation: This study underscores the importance of involving experts and primary health care nurses and physicians in the design process of clinical protocol, which provides evidence to support the clinical protocol using it as effective and interactive guidance for clinical protocol users and type 2 diabetic patients toward diabetes self-care management. External validity and applicability testing are recommended to prove its impact on primary health care nurses and physicians ' practice

INTRODUCTION

Diabetes mellitus is a chronic illness that occurs when there isn't enough production of insulin or not effectively using the produced insulin. According to the World Health Organization (WHO), there is a rise in diabetic patients by 630 million from 1990 to 2022. T2DM is the most common type of DM. It represents about 90% percent of worldwide DM diagnoses *(Rodriguez., 2026 ; Davies et al., 2026)*. It is estimated that T2DM has many health, financial, and social burdens *(Alarcón-Yaquetto, et al., 2026;*

Onah., 2026). Accordingly, the 2030 Sustainable Goals Development (SGD) recognizes Non Communicable Diseases (NCDs) as one of its main goals, considering them as a major public health obstacle *(Dassah., 2025)*.

It is recognized that DM has no complete cure yet, but appropriate self-care management contributes to controlling its healing process *(Firooz, et al., 2026)*. Reducing diabetic burdens is closely in the same line with disease self-care management *(Puzhakkal et al., 2025)*. Self-care management is the key factor for T2DM management, which is a high concern for the healthcare system. Additionally, it plays a critical role in promoting health, controlling the disease and its complications, and making diabetic patients more self-managed to deal with the complicated nature of diabetes with or without the help of Primary health care' nurses and physicians *(Karlsson, et al., 2026 ; Puzhakkal, et al., 2025; Owolabi, et al., 2025)*.

The basic components of T2DM self-care management include healthy diet, regular physical activity, self-monitoring of blood glucose, medication compliance, weight control, foot care, and smoking cessation *((Firooz, et al., 2026 ; Osunde, et al., 2025; Zemen, et al., 2025)*. Certainly, a PHC setting is the most appropriate healthcare placement for self-care management strengthening to reduce the secondary healthcare's burden (Kahlon., *2026 ; Bomfim., 2025)*.

The deficit in nursing and medical protocols in PHC can result in minimized health care coordination, standardization of treatment, quality care, patient satisfaction, and the best use of the health resources *(Rafi, et al., 2026; Traylor., 2025)*.

To address this gap in the study setting, the current study employed the Delphi methodology to understand the perspectives of experts, primary health care' nurses and physicians in content, required resources, policies, competences, and facilities, beside their recommendations regarding self-care management clinical protocol for type 2 diabetic patients to be a guidance for primary health care' nurses and physicians with their type 2 diabetic patients. The Delphi method is an effective method of gauging perspectives on a research question from a group of experts to reach a consensus *(Havenga & Ramphal., 2026)*.

METHODOLOGY

Study Design

This study used the Delphi method for (experts and primary health care' nurses and physicians) to provide their perspectives regarding the development of a self-care management clinical protocol for type 2 diabetic patients **which finally used by** primary health care' nurses and physicians. The study allowed the use of qualitative and quantitative strategies for collecting and analysis of data.

Participants & Setting

This study was conducted at primary health care units, Gamasa Health Administration, Dakahlia Directorate of Health Affairs, Ministry of Health, Egypt. Mainly, participants' sample size depended on the principles of establishing the focus group discussion (FGD). Two focus groups were conducted (FGD) for each group. ***(****Rajagopal, et al., 2026)* recommended 10 to 15 to ensure arriving at the best consensus. In this study, each FGD included 8-12 participants.

The Delphi panel was conducted by using the non-probability judgmental sampling technique to recruit experts, primary health care' nurses and physicians. This technique was appropriate to get the best information to meet the study's objectives.

It was **very essential to involve experts** who had experience in clinical protocol development& NCDs management in a Delphi consensus process to ensures that the resulting recommendations, endpoints, and guidelines, are grounded in clinical feasibility and operational realism (Hohmann, et al, 2025).

As result of, **importance of including clinical protocol users (**primary health care' nurses and physicians) in Delphi studies and protocol development ensures safety, practicality of the medical guidelines which used in daily care *(Quek, et al., 2025),*The researcher included primary health care nurses(N=8) and physicians(N= 14) in his study.

Inclusion/Exclusion Eligibility Criteria

To be **eligible as an "expert**" for this study, they had to be listed as the first, second, or last author of at least one peer reviewed, experts in (clinical protocol development, primary healthcare, and community health academic staff, and English language publication in NCDs management). Potential experts were identified by the study team using literature searches and databases (e.g., Google Scholar PubMed), and email addresses were obtained through the publicly-available articles that the experts published.

Regarding HCPs, The researcher included only who actually worked in PHC and actively engaged in Typ2DM management at the PHCs affiliated with Gamasa health administration, beside their high level of education and English language.

Semi-Structured Interview Guide

A semi-structured interview guide was developed after review of the literature that are consistent with the study objectives. Open-ended questions designed to drive their insights and expectations in detail. It was pilot tested with one primary health care nurses, two physicians, and two experts (outside the main panel) to assess the clarity of instructions and wording and the required time for completion. Their feedback helps to make any required modifications before the final form is distributed to the full panel.

Data Collection Process

The researcher sent an email invitation to each participant. This initial email explains the aim of the study and the data collection rounds' timeline (two rounds of online surveys) and data confidentiality information. Electronic informed consent was obtained prior to their participation. Data was collected through semi-structured interviews that occurred through WhatsApp by trained qualitative researchers. Interviews occurred through using audio-recorded voice messages, with each interview lasting approximately 45 minutes. Data collection occurred between January and April 2024. Participants also finished a socio-demographic questionnaire before starting interviews. In the first round, the 16 experts and 8 Primary health care' nurses and 14 physicians received the survey and evaluation form to evaluate and make comments independently. Ratings were calculated, and qualitative comments were categorized thematically to identify the necessary revision, and then modifications were made, and in the second round the modified version, along with the results of the first round, was resubmitted to the expert panel to be re-evaluated. There was a strong consensus between participants regarding the clinical protocol's content and media, with an excellent agreement exceeding 0.90.

Procedures

Two rounds of surveys were conducted in this study.

Round 1

This round was composed of two parts.

Part 1: This part was used to assess socio-demographic and occupational characteristics of participants (such as age, gender, qualification, specialty, education, and other characteristics according to each group.

Part 2: Participants were asked to indicate their level of expertise in conducting self-care management clinical protocol for type 2 diabetic patients through open-ended questions such as the content, the required resources, competencies, policies, and facilities, and their recommendations for the protocol structure. **(A total of participants: experts, nurses, and physicians) responded and completed Round 1.**

Round 2

The opinions and perceptions received in the Round 1 survey were summarized. The researcher sent the prototype protocol along with the electronic Delphi survey checklist (Du, *et al., 2026)* via email to experts and Primary health care' nurses and physicians . **All participants included in Round 1 completed Round 2 without exclusion or attrition**. A structured checklist based on a 5-point Likert scale was used to obtain experts' opinions on the clinical protocol' structure and content.

The tool is organized into eight main domains containing a total of 68 items.

- Topic (2 items)
- Stakeholder Involvement & Target Group (5 items)
- Rigor of Development (3 items)
- Purposes (objectives) and Contents (25 items)
- Literary Presentation (11 items)

- Illustrations (6 items)
- Legibility and printing characteristics (10 items)
- Quality of Media (6 items)

Scoring System. Consensus was defined as achieving a minimum of 75% of participants rating each item as "agree" or "strongly agree." According to one criterion, consensus is reached when at least 75% of the Delphi panel scores four or above on a five-point scale. The agreement about the module was obtained by Intra-Class Correlation Coefficients (ICC) for single and average rates. Cronbach's alpha (α) to assess internal consistency reliability. ICC values for agreement level were calculated as the following:

- Less than 0.5 is indicative of poor agreement/reliability.
- 0.5 and 0.75 are indicative of moderate agreement/reliability.
- 0.75 and 0.9 are indicative of good agreement/reliability.
- A value of more than 0.90 is indicative of excellent agreement/reliability.

By the end of the second round, the researcher formed a consensus among all participants regarding the prototype of the type 2 diabetes self-care management protocol**.** The researcher used the "AGREE II Instrument" to appraise the designed protocol *(Hieltjes, et al., 2010).* This tool included 6 domains with 23 key items rated on a 7-point scale (1-strongly disagree to 7-strongly agree). The domains. The researcher gave participants a three-week deadline to review the protocol and provide an appraisal and recommendation for clinical use of the protocol**.** The high-quality criterion is that when domain scores > 70%.

Validity and Reliability

Content validity was founded through the iterative Delphi process itself; experts evaluated each item and proposed modifications in round one. Accordingly, after revising the domain and confirming acceptance in a second round of the revised content. Content validity indicators were calculated based on item-level and scale-level from the round-two evaluation, and items falling below the acceptable agreement levels were identified for further review.

Reliability of the panel's ratings was assessed through the ICC. This statistic is recommended to quantify agreement between multiple evaluators scoring the same items. Cronbach's alpha was used to assess the internal consistency of the rating instrument.

Statistical Analysis

Experts' and Primary health care' nurses and physicians ' characteristics and item ratings were illustrated in frequency tables. Consensus was calculated using the single-measure and average-measure ICC with 95% confidence intervals and Cronbach's alpha for rating consensus. Qualitative comments were illustrated in themes.

Ethical Considerations

Ethical approval was obtained from the Ethics Committee, Faculty of Nursing, Mansoura University with approval number 420 on 12th December, 2023. Participants were informed of the study's purpose, confidentiality, and voluntary participation. Also, the researcher explained their right to withdraw from the study at any time.

Results

TABLE 1 | Socio demographic characteristics of the experts (N = 16).

	N(%)
Sex	
Male	6(37.5)
Female	10(62.5)
Nationality	16(100)

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Age (years)	
30 - 40 years old	6(37.5)
> 40 years old	10(62.5)
Years of experience in the academic field	
< 10 years old	6(37.5)
≥10 years old	10(62.5)
Faculty of graduation	
Medicine	7(43.8)
Nursing	9(56.2)
Occupation	
Academic staff	16(100)
Specialty	
Community Health Nursing	9(56.2)
Family Medicine	2(12.5)
Surgery	2(12.5)
Endocrinology	3(18.5)
Academic degree	
Lecturer	8(50)
Assistant Professor	5(31.5)
Professor	3(18.8)
Recent publication on chronic diseases	16(100)

Table 1 shows that a total of 16 experts were predominantly identified as (62.5%) female, were aged between 40 and more with a mean of 40.6 (4.5) years, and had 10 years or more in the academic field with a mean of 15.9 (4.8). All of them were also Egyptians and had recent publications on chronic diseases.

TABLE 2 | Socio demographic characteristics of Primary health care' nurses and physicians (N = 22)

	N(%)
Sex	
Male	7(31.8)
Female	15(68.2)
Nationality	22(100)
Age (years)	
20 - 30 years old	9(40.9)
30- 40 years old	11(50)
> 40 years old	2(9.1)
Occupation	
Staff nurse	8(36.4)
General practitioner	8(36.4)
Medicine specialist	4(18.2)
Pediatric specialist	1(4.5)
Gynecology	1(4.5)
Education	
Bachelor of Nursing	3(13.6)
Bachelor of Medicine and Surgery	14(63.3)
Nursing Institute	5(22.7)

Years of Experience in PHC		
< 10 years old		15(68.2)
≥ years or more		7(31.8)
Receiving formal diabetes training programs	4(18.2)	
External Scientific courses in diabetes management	4(18.2)	
Provided with formal printed or soft diabetes self care management	2(9)	
Actively involved as a diabetes caregiver	13(59.1)	

Table 2 shows that a total of 22 health care professionals(HCPs) were female (68.2%). (50%) aged between 30 and 40 years, with a mean of 30.27 (7.05) years, (63.6%) had a bachelor of medicine, and only (9%) were provided with printed or soft materials specifically regarding diabetes self-care management.

TABLE 3 | Main& Sub themes and description summarized from (Round 1)

Main theme	Sub theme	Description
Theme 1: Content of the clinical protocol	- Dietary management - Physical activity - Weight management - Blood glucose monitoring - Regular medical checkup	All participants expressed: *"Based on my experience, the first question of any patient asks what he will eat. Consequently, the protocol must include a comprehensive and sufficient section on the necessary diet to follow, especially diabetes-related food."* ***"Alongside** nutrition, exercise is essential; therefore, establishing a fitness routine is very important, which include practicing daily life activities regularly without fatigue."* *"In my opinion, how to eat a balanced meal, regular physical activities, blood glucose monitoring, medication adherence, and obesity management."*
Theme 2: Required facilities for implementing the clinical protocol	- Strong administrative support - Financial support from higher health authorities - Resources availability	*Most of them expressed:* *"From my experience, presence and commitment from the healthcare team, financial and administrative support, and availability of required tests and equipment for continuous diabetic care, with regular maintenance. Presence of various medical and essential specialties in diabetic care"*
Theme 3: The benefits of the clinical protocol	- Improving patients' quality of life - Strengthening communication between Primary health care' nurses and physicians and patients -Reducing the physical, emotional, and financial burdens	*"All of them believe that implementing it strengthens the partnership between healthcare providers and patients in achieving optimal diabetes control."* *"Protocol helps in early detection and prevention of diabetes-related complications through regular monitoring and patient engagement and adopting healthy lifestyles.*
Theme 4: Common questions	-Medication adherence -Preventing Diabetes complications	*Most common questions:* *"How do I deal with low blood sugar episodes?"* and *"If I feel dizzy, should I take my diabetes medication immediately?"*

asked by diabetic patients	-Managing hypoglycemia	"Can *I prevent diabetes complications*?" *"Can I stop my diabetes medication if my sugar is under control?"* or *"Should I keep taking my pills or insulin even if I feel fine?"*
Theme 5: Challenges that hinder effective self-care management	-Personal - Behavioral - Economic - Cultural & beliefs - Health care related factors	*"Most challenges observed with diabetic patients: "a lack of diabetes knowledge and motivation to follow up, non-adherence to treatment, unhealthy lifestyle, smoking, and obesity. Economic difficulties, such as the high cost of medications and occasional unavailability of treatment, frequent monitoring of blood sugar levels, and limited healthy food options. "We oppose lifestyle modifications or think that diabetes can be controlled with medicine alone; cultural and traditional beliefs make care more complicated." "We saw that disease management is also made more challenging by healthcare-related obstacles, such as restricted access to high-quality services, a lack of medical equipment, and ongoing education, as well as the inability to provide home care for people with financial or physical limitations."*
Theme 6: Recommendations for clinical Protocol designing	-Clear and simple guidelines -Incorporating visual aids	*Most of them mentioned: "The protocol must be simple, concise, and free from complicated medical terms—something that both nurses and patients can easily understand. "Visuals like flowcharts and tables make complex steps easier to follow, especially during clinical work."*
Theme 7: Protocol required resources	-Medical equipments - Capacity building &training - Dedicated spaces and physical facilities	*All of them expressed that: "Availability of medical equipment, materials, machines, meeting rooms, a budget to support its application, blood glucose monitoring devices, laboratory tests for HbA1c, and other necessary medical tools should be available." "Training on the protocol is necessary for capacity building. "There should be a meeting room with data show and computers, brochures, pictures, boards, and writing materials for participants to record information."*

Table 3 Participants' perspectives regarding the clinical protocol designing. The themes identified from the interviews were organized into seven main and sub main themes.

TABLE 4: Internal Reliability and Intra-Class Correlation for the Evaluation Domains of Participants

Domains	Users =22				Experts =16			
	Interclass correlation	95% confidence interval		Cronbach α	Interclass correlation	95% confidence interval		Cronbach α
		Lower bond	Upper bond			Lower bond	Upper bond	

Single measure	.911	0.806	0.978	**0.999**	0.933	0.852	0.983	**0.997**
Average measure	00.994	0.985	0.999		0.997	0.992	0.999	

Table 4 illustrates the reliability of the rating of the expert panel across the clinical protocol's evaluation domains. The result presents that the panel's judgments about the domains were highly consistent. The single-measure ICC for experts was 0.933 (95% CI: 0.852–0.983), and the average-measure ICC reached 0.997 (95% CI: 0.992–0.999). Also, the single-measure ICC for Primary health care' nurses and physicians was 0.911 (95% CI: 0.806–0.978), and the average-measure ICC reached 0.994 (95% CI: 0.985–0.999). The analysis of the reliability of the feedback domain indicated internal consistency (.99) as indicated by Chronbach α.

DISCUSSION

The goal of this Delphi study was to develop participants' consensus regarding the designing of a self-care management clinical protocol for type 2 diabetic patients. Regarding the content of clinical protocol (Theme1), all participants recommended that the protocol should include instructions about dietary management, physical activity, weight management, blood glucose monitoring, medication adherence, and regular medical checkups. This aligned with prior studies demonstrating lifestyle modifications are critical in reducing the risk of diabetes complications and improving the quality of life (*Rakhshani, et al., 2026).*

Concerning the required facilities (Theme 2), most of them expressed that administrative and financial support and resource availability are very essential for the clinical protocol development. This is consistent with (*Joseph., 2026)* who found that availability of resources, HCP engagement, and support help the interprofessional type 2 diabetes program to be implemented successfully. All participants mentioned the benefits from this protocol (Theme 3) as improving patients' quality of life, enhancing communication with Primary health care' nurses and physicians , and reducing the physical, emotional, and financial burdens. This is in the same line with a previous study *(Hassan, et al.,2026)* which mentioned that these results would achieve by disease self-care management.

The most common questions asked by patients (Theme 4) concerned medication adherence, preventing diabetes complications, and managing hypoglycemia. These results aligned with a prior study *(Sasidharan & Vijayan., 2026),* which reflected the need for providing diabetes self-management education to provide the diabetic patients with sufficient information and skills about their condition to enhance T2DM self-care management.

Challenges regarding T2DM self-care management (Theme 5) were personal, behavioral, geographical, healthcare-related, cultural, and economic factors, which aligned with prior study findings *(Karlsson,et al., 2026).* Clear, simple guidelines and the incorporation of visual aids were mostly recommended (Theme 6). This agreed with previous studies (*Chen, et al.,2026)* which mentioned that visual aids help to facilitate learning, retain information, and expand comprehension. Concerning protocol-required resources (Theme 7), all participants mentioned the importance of offering regular and continuous training programs on diabetes management to Primary health care nurses and physicians through workshops and conferences to enhance their role in effective education and disease self-care management. This result agreed with a previous study (*Dos Santos, et al.,2026),* which found a lack of training and skilled personnel and limited staff available to provide diabetes's stress-relief services.

The second round of the Delphi survey results presented a strong consensus among all participants regarding the interface of the protocol content, materials, and multimedia. Regarding the "AGREE II Instrument" results, which obtain participants' final appraisal. The participants gave excellent evaluation scores of more than ninety percent regarding scope and purpose, stakeholder involvement, rigors of development, clarity and presentation, applicability, and editorial independence, which provide evidence supporting the use of this clinical protocol as effective and interactive guidance for health care professionals and type 2 diabetic patients toward diabetes self-care management.

Developing and implementing a tailored T2DM self-care management clinical protocol has a **clinical significance in** the study setting which suffered from deficiency of these protocols. This help to directly address the identified baseline deficiencies by standardizing clinical workflows and integrating structured Diabetes Self-Management Education (DSME). Clinically, this

intervention is pivotal for optimizing glycemic control, minimizing acute/chronic diabetic complications, enhancing patient self-efficacy, and reducing preventable emergency visits within the study setting.

The final form of the clinical protocol included 7 main chapters: Diabetes (introduction & pathophysiology & types), nursing role in diabetic patients' assessment, self-efficacy of type 2 diabetic patients, lifestyle nursing assessment, and diabetic self-management components, including pharmacological and non-pharmacological management in detail with suitable media. The researcher covered all questions, aspects, and preferences of the study participants, drawing upon the latest scientific research.

This study has **notable strengths and limitations**. Strengths include a high number of qualified experts in NCD management and clinical protocol development, and also Primary health care nurses and physicians (protocol users) who actually worked in PHC and actively engaged in Type 2DM management with a high retention rate from Round 1 to Round 2. In addition, the survey's open-ended questions were essential for data richness. One limitation is time constraints because of clinical work overload pressure and nurses and physicians shortage.

The researcher **concluded** from the current study that the importance of providing a study setting with clinical protocols regarding T2DM self-care management to standardize clinical practice of nurses and physicians toward their patients. A significant positive correlation between feedback domains indicated strong alignment in participant responses. Primary health care nurses and doctors found the diabetes self-care management clinical protocol is acceptable, shown welcoming, and their readiness for its implementation. Also, they were satisfied with the protocol content and its illustration methods, further reinforcing its effectiveness and applicability.

Recommendations

Based on the findings and conclusions drawn from the study, the researcher recommended making regular ongoing training for Primary health care nurses and physicians in study settings on NCDs, e.g., diabetes self-care management, and also providing PHC units with guidelines or clinical protocols regarding diabetes self-care management, which are very essential to enhance HCPs' knowledge and practice, promote health care standardization, and ensure patient safety. As well as that, the researcher recommends activating home care visit services, especially for disabled patients, in addition to providing a multidisciplinary medical team who are involved in diabetes management to each PHC unit.

Conflicts of Interest

The authors declare no conflicts of interest.

Use of Artificial Intelligence (AI)

The researcher declare that no generative or large language model as (Chat GPT or similar tools) was used to generate the content of this manuscript. AI tools were only used for minor language checking, under the authors' supervision. All ideas, analyses, and references are entirely the researchers' own work.

Contributions

Nagat Elshahat: Conceptualization, Methodology, Validation, Project Administration, Resources, Formal analysis, Data Curation, Validation, Visualization, Investigation, and Writing – Review & Editing.

Amel Ahmed: Conceptualization, Resources, Supervision, Writing – Review & Editing, Formal analysis, Data Curation, Validation, Visualization, Investigation, and Writing – Review & Editing.

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REFERENCES

[1] Alarcón-Yaquetto, D. E., Stewart, R., Ismail, K., & Shearer, J. (2026). The economic burden of Type 2 Diabetes by social determinants of health: A systematic review. *PLoS One*, *21*(7), e0354198. https://doi.org/10.1371/journal.pone.0354198

[2] Bomfim, A. B., & de Magalhaes, D. D. A. (2025). The Role of Primary Health Care in the Care of Patients with Type 2 Diabetes Mellitus: A Literature Review. Medi Clin Case Rep J, 3(4), 1456-1458. DOI**:** 10.7717/peerj.19529

[3] Brouwers, M. C., Kho, M. E., Browman, G. P., Burgers, J. S., Cluzeau, F., Feder, G., ... & Zitzelsberger, L. (2010). AGREE II: advancing guideline development, reporting, and evaluation in health care. *Cmaj*, *182*(18), E839-E842. https://doi.org/10.1503/cmaj.090449

[4] Chen, R., Nelson, A. J., Zoungas, S., Clark, R. A., Tan, S., Davis, E. F., ... & Nicholls, S. J. (2026). Evaluation of Polygenic Scores and CT Imaging in Risk Factor Modification in Patients With Diabetes: Rationale and Design of the VOLTAIRE Study. *Clinical Cardiology*, *49*(6), e70363. https://doi.org/10.1002/clc.70363

[5] Dassah, C. (2025). Towards global health equity: The contributions of health geography to global health research, policy, and practice. Environment and Planning F, 26349825251350711. https://doi.org/10.1177/26349825251350711

[6] Davies, M. J., Lim, S., Slater, T., Goldney, J., Philis-Tsimikas, A., Franco, D. R., ... & Lingvay, I. (2026). Type 2 diabetes mellitus. *Nature Reviews Disease Primers*, *12*(1), 13. https://doi.org/10.1038/s41572-026-00687-w

[7] Dos Santos, R. R., Costa, S. C. S. R., Galeni, O. D., Regina, H., Vitorino, S., de Medeiros, M. B. M., & de Lima, A. N. Diabetes Mellitus in Primary Healthcare: Strategies for Prevention of Complications and Promotion of Self-Care. DOI: 10.5281/zenodo.21737077

[8] Du, X., Wei, H., He, W., & Song, Y. (2026). A safety risk assessment checklist for personalized exercise as early supportive care in breast cancer patients undergoing chemotherapy: a modified Delphi consensus study. *BMC Palliative Care*. https://doi.org/10.1186/s12904-026-02083-3

[9] Dugbartey, G. J., Alornyo, K. K., Dapaa-Addo, C. O., Kwashie, E. K., Harley, Y., & Asiedu, B. N. (2026). Toxicological profile of anti-diabetic drugs and emerging measures to reduce the toxic burden. *Toxicology Reports*, 10224. https://doi.org/10.1016/j.toxrep.2026.102247

[10] Elsayed, N., Ahmed, A., & Khalil, D. (2024). Digital Education for Clinical Practice Guidelines: Views of Healthcare Professionals. *Mansoura Nursing Journal*, *11*(2), 107-114. https://mnj.journals.ekb.eg/article_379240_ade109b8a8c553083aece7c3ba530e7e.pdf

[11] Firooz, M., Yazdi, K., Mahmoodi-Shan, G. R., & Zahedi, M. (2026). Exploring Barriers to Self-Care in Patients With Uncontrolled Type 2 Diabetes Mellitus: A Qualitative Study. *Sage Open Nursing*, *12*, 23779608261451612. https://doi.org/10.1177/23779608261451612

[12] Hasan, A., Alobaidly, A., Alkouri, O., & Ahmed, F. R. (2026). Lived experiences of type 2 diabetes self-management in Jordan: A qualitative study of sociocultural, religious, and healthcare influences. *Plos one*, *21*(6), e0350641. https://doi.org/10.1371/journal.pone.0350641

[13] Havenga, F. D., & Ramphal, R. R. (2026). Applying the Delphi Method for Consensus in Service Quality User Experience Research: Lessons From a Two-phase Design Study. *International Journal of Qualitative Methods*, *25*, 16094069261473129. https://doi.org/10.1177/16094069261473129

[14] Hieltjes, I. J., Gaasterland, C. M., Bakx, R., van Breukelen, S. C., Ensink, R. J., van Esch, C., & van der Lee, J. H. (2025). An additional Criterion to Appraisal of Guidelines for research and evaluation II might increase the efficiency in Guideline development for rare diseases: results of a national Delphi Study. *Clinical and Public Health Guidelines*, *2*(4), e70040. https://doi.org/10.1002/gin2.70040

[15] Hohmann, E., Beaufils, P., Beiderbeck, D., Chahla, J., Geeslin, A., Hasan, S., ... & Perry, N. P. (2025). Guidelines for designing and conducting Delphi consensus studies: an expert consensus Delphi study. *Arthroscopy*, *41*(10), 4208-4224. https://doi.org/10.1016/j.arthro.2025.03.038

[16] Joseph Mrs, J. (2026). Best Practices for Interprofessional, Community-Based Interventions in Preventing Type 2 Diabetes Among Adults Aged 50 and Older. *Journal of Interprofessional Practice and Collaboration*, *6*(2), 5. https://repository.ulm.edu/ojihp/vol6/iss2/5

[17] Kahlon, B., Gohel, B., Jassemi, S., & Donald, M. (2026). Person-Centered Integrated Kidney Care Narrative Review: A Model for Reduction of Health Care Carbon Emissions. *Canadian Journal of Kidney Health and Disease*, *13*, 20543581251391264. https://doi.org/10.1177/20543581251391264

[18] Karlsson, A. V., Petersson, T., & Wickman, U. L. (2026, April). Factors Influencing Adherence to Self-Care in Patients with Type 2 Diabetes: A Systematic Literature Review. In *Healthcare* (Vol. 14, No. 7, p. 941). MDPI. https://doi.org/10.3390/healthcare14070941

[19] Karlsson, A. V., Petersson, T., & Wickman, U. L. (2026, April). Factors Influencing Adherence to Self-Care in Patients with Type 2 Diabetes: A Systematic Literature Review. In *Healthcare* (Vol. 14, No. 7, p. 941). MDPI. https://doi.org/10.3390/healthcare14070941

[20] Onah, W. C. (2026). Does national health insurance reduce the financial burden of type 2 diabetes care? Evidence from Enugu State, Nigeria. *GAS Journal of Economics and Business Management (GASJEBM)*, *3*(4), 1-8. **DOI:** 10.5281/zenodo.19357607

[21] Oranga, J., & Matere, A. (2023). Qualitative research: Essence, types, and advantages. *Open Access Library Journal*, *10*(12), 1-9. https://doi.org/10.4236/oalib.1111001

[22] Osunde, R. N., Olorunfemi, O., Edwards, O. S., Oduyemi, R. O., & Sodimu, J. O. (2025). Transforming Diabetes Management: Optimizing Blood Glucose Control through Lifestyle Strategies for Better Health Outcomes—Scoping Review. Bangladesh Journal of Endocrinology and Metabolism, 4(1), 18-25. DOI: 10.4103/bjem.bjem_19_24.

[23] Owolabi, E. O., Boakye, M. D., Leshi, O. O., Omololu, S. O., & Smalls, B. L. (2025). Exploring the Role of Time in Diabetes Self-Management: A Scoping Review of Challenges, Intervention Strategies, and Implications for Clinical Care. Diabetes Spectrum, 38(5), 595-610, https://doi.org/10.2337/ds25-0050

[24] Oyewole, O. O., Ale, A. O., Ogunlana, M. O., & Gurayah, T. (2023). Burden of disability in type 2 diabetes mellitus and the moderating effects of physical activity. World Journal of Clinical Cases, 11(14), 3128. https://doi.org/10.12998/wjcc.v11.i14.3128

[25] Puzhakkal, S., Kavanagh, S., Conway, B., Kow, C. S., & Hasan, S. S. (2025). Self-care and self-management in diabetes: concepts, theories, and practices. International Journal of Clinical Pharmacy, 1-7. https://doi.org/10.1007/s11096-025-01941-z

[26] Quek, H. W., Page, A., Lee, K., & Etherton-Beer, C. (2025). Study protocol for developing deprescribing clinical practice guidelines: evidence-based GRADE methodology and a Delphi consensus method. *BMC geriatrics*, *25*(1), 538. https://doi.org/10.1186/s12877-025-06202-2

[27] Rafi, A., Neshati, A., Falahi, B., & Naeimi, S. (2026). "It's more than just physical care": a systematic review and qualitative meta-synthesis of nurses' evolving role in providing mental health care within primary health care systems. *BMC Primary Care*, *27*(1), 91. https://doi.org/10.1186/s12875-026-03210-y

[28] Rajagopal, D., Kulkarni, P., & Mythily, M. R. (2026). Development of a Performance Assessment Tool for the Family Adoption Program in Undergraduate Medical Students Using the Delphi Technique: A Study from Mysuru, Karnataka. *Clinical Epidemiology and Global Health*, 102457. https://doi.org/10.1016/j.cegh.2026.102457

[29] Rakhshani, T., Rastegar, P., Kashfi, S. M., Taravatmanesh, S., Kamyab, A., & Jeihooni, A. K. (2026). The effect of educational intervention on the lifestyle changes of elderly people with diabetes. *BMC Endocrine Disorders*, *26*(1), 31. https://doi.org/10.1186/s12902-025-02155-0

[30] Rodriguez, M. (2026). " I Pass Through Sweet": My Diabetes Diagnosis as Narrative. *WSQ: Women's Studies Quarterly*, *54*(1), 43-53. https://doi.org/10.1353/wsq.2026.a989461

[31] Sasidharan, S., & Vijayan, D. (2026). Effectiveness of nurse-led diabetes self-management education on medication adherence, dietary practices, and glycemic control among patients with type 2 diabetes mellitus: A narrative review. *Scienxt Journal of Nursing Studies*. DOI: 10.5281/zenodo.22198625

[32] Traylor, D. O., Anderson, E. E., Etsey, M., Fenton, B., Cheema, N., McCampbell, D., ... & Clark, B. (2025). Practical Care Coordination for Primary Care Providers: Bridging the Gap between Clinical Practice and Patient Outcomes. DOI: 10.5772/intechopen.1011662

[33] Zemen, E., Yimer, Y. S., Kabeta, N. D., & Abebe, Y. (2025). Self-care practices and associated factors among type 2 diabetes mellitus patients attending public hospitals in the Bale zone, Oromia region, Ethiopia. *PeerJ*, *13*, e19529, https://peerj.com/articles/19529/