©IDOSR PUBLICATIONS International Digital Organization for Scientific Research

IDOSR JOURNAL OF APPLIED SCIENCES 11(1):103-108, 2026 ISSN: 2550-7931

https://doi.org/10.59298/IDOSRJAS/2026/111103108 IDOSRJAS11106

Diabetes Self-Management Education Programs

Katu Amina H.

School of Natural and Applied Sciences Kampala International Uganda

ABSTRACT

Diabetes self-management education (DSME) is a cornerstone of comprehensive diabetes care, equipping individuals with the knowledge, skills, and confidence required to effectively manage their condition and reduce the risk of complications. This narrative review examines the conceptual foundations, delivery models, effectiveness, and implementation challenges of DSME programs, with particular emphasis on clinical, behavioral, psychosocial, and quality-of-life outcomes. Evidence from systematic reviews and longitudinal studies consistently demonstrates that DSME improves glycemic control, self-care behaviors, psychosocial well-being, and patient empowerment. Reductions in glycated hemoglobin (HbA1c), enhanced medication adherence, improved dietary and physical activity practices, and better health-related quality of life are among the most frequently reported outcomes. Program effectiveness is influenced by duration, intensity, delivery format, and degree of personalization, with longer interventions and hybrid face-to-face and digital models showing superior outcomes. Psychosocial components including motivation, self-efficacy, and social support play a central role in sustaining behavior change. Despite strong evidence of benefit, participation and adherence to DSME programs remain suboptimal, particularly among older adults, individuals with low socioeconomic status, rural populations, and ethnically diverse groups. Structural barriers, social determinants of health, and health-system constraints significantly affect access and engagement. Addressing these challenges requires culturally responsive program design, policy support, and integration of DSME within routine clinical care. Strengthening evaluation frameworks and quality improvement strategies will be essential to maximize the reach, equity, and long-term impact of DSME programs.

Keywords: Diabetes self-management education**,** Glycemic control**,** Patient empowerment**,** Health education programs and Self-care behaviors.

INTRODUCTION

Diabetes self-management education (DSME) is a collaboration with the American Association of Diabetes Educators based on the standard of care for diabetes [2]. The American Diabetes Association defines DSME as "the process of facilitating the knowledge, skills and ability necessary for pre-diabetes or diabetes self-care." It is essential for providing individuals with necessary expertise to effectively manage blood glucose levels, resulting in better overall health status. Diabetes self-management education programs (DSME) are designed to improve diet, exercise, monitoring profiles, medication recognition, and body weight; ultimately leading to better glycemic control [1]. Diabetes self-management education allows clinicians to meet the education needs of patients and consequently provide better support in preventing disease progression, reducing complications, and maintaining a higher quality of life [2]. Various educational programs, including those provided online, can reach different age groups and are similarly effective in enhancing self-management capabilities and preventing complications [3].

Conceptual Foundations of Diabetes Self-Management Education

Diabetes self-management education (DSME) is a foundational component of diabetes care, promoting self-management and empowerment in patients through a collaborative and ongoing process [2]. It is targeted towards patients with diabetes, both pre-existing and newly diagnosed and consists of education and training

interventions related to self-monitoring, nutrition, medication, exercise, stress management, and other aspects that support patients' self-management practices [3]. The conceptual foundations of DSME emphasize improving patients' quality of life and treatment satisfaction as the primary goals of education [5]. In addition, DSME aims to ensure that patients acquire knowledge, skills, and capabilities relevant to their diabetes self-management [6]. The two processes of learning and development are characterized by both behavioral and psychosocial dimensions, with the former highlighting a range of more observable self-management skills and routines and the latter targeting more complex topics, such as goal-setting, motivation, coping strategies, and social support[7]. A sophisticated educational model posits that motivation constitutes the initial precondition for effective diabetes self-management, leading to behavioral learning and practice, which subsequently advances the learner toward psychosocial development and empowerment [8]. However, barriers such as socioeconomic status and co-morbidities, psychosocial environment and situations, self-perceived competence, and unsafe experiences stemming from diabetes knowledge and practice are crucial factors that may hinder patients' self-management and, in consequence, need to be addressed via education [3].

Design and Delivery Models for DSME Programs

Since the introduction of diabetes self-management education (DSME) in the early 1970s, numerous models of delivery have been developed to increase access to and the effectiveness of diabetes education (Vallis et al., 2023). Each model is based on a clearly articulated set of objectives, often linked to a particular service delivery or health-system environment [5]. Programs that apply a structured curriculum or educational programme arrive at similar delivery models, regardless of the specific instructional framework (Almeida et al., 2021) [7]. Full-day sessions have been largely replaced by the two- or three-day format (Diabetes Canada Clinical Practice Guidelines Expert Committee, 2018). The extent to which program delivery models can be assessed is influenced by the diversity of both the chronic-disease management interventions offered in conjunction with diabetes education and the integrated approach adopted for delivery of these interventions [4]. Text-book descriptions of the systematic application of a particular framework to drive a structured resource or broad educational programme have tended to highlight only short-term sustainable impact [6]. A model of delivery developed in diabetes education programs in the community and hospital settings above takes account of these different types of program and systemic influence, and three types of model have emerged among the applications across a wide range of educational frameworks: [1] Intensive small group and individual multidisciplinary education, targeting frequent educational needs, as a gateway to those already attending another chronic disease management program. [2]. Medium-sized group education, as a gateway to those with only infrequent educational needs, and to diabetes self-management support [3]. Brief/request education or support only, as a follow-up to any education already delivered. Consideration of feasible and longer-term sustainability informs the approach, and the classification of programs and delivery models takes additional account of the motivation for establishing a new program in these settings and the public-health intervention perspective adopted [5].

Evidence on Effectiveness and Outcomes

Diabetes self-management education (DSME) programs aim to provide individuals with diabetes the knowledge, skills, and attitudes required to manage their disease optimally [5]. Diabetes self-management education is an essential component of effective diabetes care and provides a secure basis for problem-solving in the context of the care that is essential to keeping blood glucose levels under control [3]. Systematic reviews of DSME programs consistently demonstrate efficacy in achieving desired behaviour changes and clinical outcomes 5. Instruction covers the nature of diabetes, its symptoms and complications, dietary management, exercise, blood-glucose monitoring, and the action required when blood-glucose levels fall outside acceptable limits [3]. The teaching process must be continually reviewed and improved; the patient learning outcomes must be better defined; and evaluations should be conducted more rigorously to establish the conditions under which lasting, clinically significant changes may be expected [6].

Glycemic Control and Clinical Outcomes

Diabetes self-management education (DSME) programs have been linked to improved glycemic control and clinical outcomes. Patient education is one of the cornerstones of diabetes management [2]. The UK Prospective Diabetes Study (UKPDS) observed a convincing inverse association between glycosylated hemoglobin (HbA1c) and diabetes-related complications [7]. A reduction of 1% in HbA1c diminishes the risk of diabetes-related deaths by 21%, myocardial infarction by 14%, and microvascular complications by 37%. Moreover, diabetes self-management education programs improve clinical outcomes and patients' quality of life [1]. According to a systematic review, educational interventions significantly improve glycemic control in diabetic patients, reducing HbA1c levels by 1% [6]. Longer interventions, especially those lasting over a year and combining face-to-face with online methods, yield better results. Support from a single healthcare professional is more effective than

team-based education. Personalized education enhances glucose management and clinical outcomes, with both individual and group approaches showing positive effects [3].

Behavioral and Psychosocial Impacts

In diabetes self-management education programs (DSME), psychosocial changes have a fundamental impact on training outcomes, and attention to non-glycemic program objectives can motivate referral to additional services [6]. Social support, confidence, and psychosocial stress each contribute differently to self-care behavior in patients with type 2 diabetes mellitus (T2DM), a pattern that underscores the relevance of targeted population selection and involvement of specialized staff [3]. Increased motivation for self-care remains a key expected outcome of DSME programs worldwide [2]. Studies using behavior change and motivational theories originally developed to underpin smoking cessation campaigns have contributed valuable insights relevant to the transition from diabetes-related knowledge acquisition to motivational change within the population [3]. Such motivation can be technique-specific (for example, the introduction of new meter technology) or address the broader context (for example, a partner's encouragement and praise) [2].

Quality of Life and Patient Empowerment

The improvement of quality of life represents one of the key objectives of diabetes self-management education (DSME) [2]. Quality of life may be defined as a multidimensional concept that reflects an individual's interests, needs, and desires in a variety of life domains, which might include psychological well-being, physical health, social functioning, and feelings of independence, religiousness, and satisfaction [4]. In diabetes care, quality of life is typically measured not only through objective indicators but also through subjective appraisal of physical, psychological, and social distress associated with diabetes [6]. Given the various individual health-related quality-of-life (HRQoL) questionnaires available for patients with diabetes, careful selection for the target population may increase the relevance and impact of DSME programs [1]. Quality of life is closely linked to self-management of chronic conditions, including diabetes. Empowerment theory emphasizes the role of self-efficacy as an important aspect of empowerment that induces and maintains health-promoting behavior's [7]. Studies have found that patients' perception of self-management activities and clinical relationships improves after completing DSME programs. The positive influence of DSME on self-management may also encourage the practice of other diabetes-related behaviours, thereby reinforcing the overall impact of education [8].

Contextual Determinants and Accessibility

Social determinants of health (SDoH) encompass societal conditions affecting health from the widespread access to nutritious food and affordable housing to meeting basic expectations from the environment [8]. Primary SDoH affect health outcomes from birth throughout life [4]. There is extensive recognition of the necessity of providing education with respect to these SDoH to address the global epidemic of diabetes, high blood pressure/hypertension, and heart disease for both prevention and control [9, 1].

Sociodemographic and Cultural Considerations

Diabetes self-management education (DSME) programs are widely recognized as a means to empower patients and enhance their capacity to perform the self-care activities required to manage their condition [3]. Nonetheless, participation rates in these programs are often low and can differ considerably depending on age, sex, ethnicity, financial situation, and geographic location. Access to education is not necessarily guaranteed, even when education programs are available through public healthcare systems. For many patients with specific sociodemographic characteristics, access to other necessities such as food, transportation, or income may take precedence over diabetes education [10]. Effective intervention strategies are critically dependent on the identification and prioritization of the key factors that strongly affect participation in DSME. Location-related factors particularly in rural or remote settings also influence accessibility, along with travel options and distance to education venues [9]. Specific socioeconomic, health, and cultural factors combine to create barriers to participation [4]. Consequently, recruitment strategies must consider how education can fit into individual circumstances and integrated approaches that emphasize the synergies between education and healthy eating, physical activity, and adherence to medication may prove advantageous [4]. Culturally appropriate programs are also helpful in increasing patient engagement and motivation, particularly among diverse populations where traditional education may conflict with cultural norms.

Health Systems and Policy Implications

Faced with growing diabetes prevalence and associated health costs, public policy interventions that support the formation, implementation, and sustainability of effective Diabetes Self-Management Education (DSME) programs become imperative [11]. Supported by a growing body of evidence, DSME has emerged as part of the broad preventive strategy for the control of chronic degenerative diseases and risk factor reduction. The health system plays a key role in disseminating health education and promotion strategies [12]. By shaping the characteristics of health supply, the health system determines the population's exposure to education messages through the health

services network [11]. Policies based on this premise focus on the incentives and capabilities of the educational supply actors in facilitating participation and adhere to the education process. Implementing DSME to undergo supportive policy interventions constitute an avenue and warrant a research agenda of great public health interest [14].

Barriers to Participation and Adherence

Despite the evidence supporting the value of diabetes self-management education (DSME) programs, many studies reveal significant disparities in attendance and participation rates [1]. Only one in five newly diagnosed patients with diabetes actively engaged in DSME programs offered by the Ontario health system [9]. At the other end of the spectrum, 37.9% of participants in a national survey reported having never attended a program, with an additional 20.5% attending only a single session, given that patients generally require 5 to 10 DSME contacts to realize optimal benefits [13]. Attendance is also limited by discipline, with only 1.9% of patients with type 1 diabetes participating compared to 19% of patients with type 2 diabetes. Research conducted in the United States produced similar results, with almost half of the patients reporting never attending a DSME program [12]. Analysis of routine diabetes education in southern Ontario indicates that attendance tends to be lower among groups who might benefit the most, including residents of rural locations, seniors, and individuals facing key barriers such as low socioeconomic status or medical comorbidities [14]. Discounting individuals who never obtained a prescription for blood glucose test strips, only 50% return to share their results with a provider and approximately 30% seek help in interpreting their findings [11]. These figures highlight the difficulty of adhering to fundamental self-monitoring practices [13]. Disparities in diabetes management and self-efficacy are evident in large national studies, where subgroups such as the elderly, those with low educational attainment, non-homeowners, and individuals in low-income neighbourhoods report poorer knowledge of health risks, fewer prescribed medications, limited access to glucose monitoring, worse glycemic control, and lower empowerment scores[12].

Methods of Evaluation and Quality Improvement

Considerable diversity exists in the design and delivery of diabetes self-management education (DSME) programs, reflecting a confluence of different theoretical influences and sociocultural factors [13]. In the United States, most programs focus primarily on personal lifestyle changes, regrettably neglecting the broader socioecological determinants of diabetes [14]. With limited time or resources, educators struggle to address individual needs or reach underserved populations. Furthermore, socioeconomic conditions, psychosocial factors, and the provision of ongoing support remain insufficiently addressed [13]. These contextual factors constitute essential dimensions of quality improvement (QI) and impact program accessibility. Effective approaches to QI necessitate either a focus on formative evaluation of the contextual determinants of DSME delivery or attention to concurrent, integrated adoption of national recognition programs and QI processes targeting those determinants [14].

Recommendations for Practice and Program Development

Diabetes self-management education (DSME) programs use varied content, formats, and delivery methods grounded in diverse theoretical models to help patients achieve optimal diabetes control [13]. The lack of standardization complicates evaluation of program content and design, participant characteristics, and health outcomes [12]. The increasing global burden of diabetes and limitations of conventional management underscore the need for comprehensive DSME and self-management support (SMS) programs [14]. Current evidence supports their critical role in diabetes care by improving clinical, behavioral, psychosocial, and quality-of-life outcomes and reducing short- and long-term diabetes-related complications. The next sections summarize evidence-based recommendations for practice and program development [11].

Future Directions and Research Gaps

Diabetes self-management education (DSME) plays a critical role in improving clinical outcomes, self-care behaviour, and quality of life in people with diabetes [3]. However, many aspects remain under-researched, such as the relative impact of various program characteristics [15-20]. Recommendations for research include enhancing access to remote DSME; integrating DSME more closely with routine clinical care; increasing the focus on psychological, emotional, and social aspects of diabetes management; adjusting material to different education levels; selecting models that fit with training already received; requiring fewer or shorter sessions; providing individualised periodic booster sessions; and exploring incentives to motivate enrolment [21, 22].

CONCLUSION

Diabetes self-management education programs represent a fundamental component of effective diabetes care, offering measurable benefits across clinical, behavioral, psychosocial, and quality-of-life domains. Evidence consistently demonstrates that DSME improves glycemic control, enhances self-care behaviors, increases patient empowerment, and reduces the risk of diabetes-related complications. By fostering knowledge acquisition, motivation, and self-efficacy, DSME enables individuals to actively participate in their care and make informed

decisions that support long-term disease management. However, despite their proven effectiveness, DSME programs face persistent challenges related to accessibility, participation, and sustained engagement. Sociodemographic disparities, social determinants of health, geographic barriers, and health-system limitations continue to restrict uptake, particularly among populations with the greatest need. Variability in program design, delivery models, and evaluation methods further complicates the assessment of effectiveness and scalability. To strengthen the impact of DSME, future efforts should prioritize culturally appropriate and flexible delivery models, integration with routine clinical services, expanded use of digital and remote education platforms, and targeted strategies to address psychosocial and contextual barriers. Policy support and health-system investment are essential to ensure program sustainability and equity. Advancing standardized evaluation frameworks and quality improvement processes will enhance comparability across programs and guide evidence-based refinement. Collectively, these strategies can help position DSME as a universally accessible and impactful intervention in the global effort to improve diabetes outcomes.

REFERENCES

1. Gehlawat M, Lakshminarayanan S, Kar SS. Structured diabetes education program for improving self-care behavior in primary care settings of Puducherry: Evidence from a randomized controlled trial. Indian Journal of Community Medicine. 2019 Apr 1;44(2):107-12.
2. Kerssen A, Goudswaard AN, Quartel M, Zuithoff NP, Rutten GE. The feasibility of a self-management education program for patients with type 2 diabetes mellitus: Do the perceptions of patients and educators match?. primary care diabetes. 2009 May 1;3(2):79-83.
3. Ugwu CN, Ugwu OP, Alum EU, Eze VH, Basajja M, Ugwu JN, Ogenyi FC, Ejemot-Nwadiaro RI, Okon MB, Egba SI, Uti DE. Sustainable development goals (SDGs) and resilient healthcare systems: Addressing medicine and public health challenges in conflict zones. Medicine. 2025 Feb 14;104(7):e41535.
4. Secco Cavicchioli MG, Ferraz de Campos TB, da Silva Rosa A, Lopes De Domenico EB, Andrade Frederico G, de Oliveira Monteiro O, Antar Gamba M. Educational program to promote the self-care of people with diabetes mellitus. Avances en Enfermería. 2019 Aug;37(2):169-79.
5. Ugwu OP, Alum EU, Ugwu JN, Eze VH, Ugwu CN, Ogenyi FC, Okon MB. Harnessing technology for infectious disease response in conflict zones: Challenges, innovations, and policy implications. Medicine. 2024 Jul 12;103(28):e38834.
6. Camargo-Plazas P, Robertson M, Alvarado B, Paré GC, Costa IG, Duhn L. Diabetes self-management education (DSME) for older persons in Western countries: A scoping review. PloS one. 2023 Aug 9;18(8):e0288797.
7. Thongsai S, Youjaiyen M. The long-term impact of education on diabetes for older people: a systematic review. Global journal of health science. 2013 Jul 28;5(6):30.
8. Ongesa TN, Ugwu OP, Ugwu CN, Alum EU, Eze VH, Basajja M, Ugwu JN, Ogenyi FC, Okon MB, Ejemot-Nwadiaro RI. Optimizing emergency response systems in urban health crises: A project management approach to public health preparedness and response. Medicine. 2025 Jan 17;104(3):e41279.
9. Kiçaj E, Saliaj A, Çerçizaj R, Prifti V, Qirko S, Rogozea L. Navigating Diabetes: Enhancing Self-Management through Education among Diabetic People at the Early Stages of the Disease—A Systematic Review. International Journal of Environmental Research and Public Health. 2024 Apr 23;21(5):522.
10. Windrum P, García-Goñi M, Coad H. The impact of patient-centered versus didactic education programs in chronic patients by severity: the case of type 2 diabetes mellitus. Value in health. 2016 Jun 1;19(4):353-62.
11. Paul-Chima UO, Ugwu CN, Alum EU. Integrated approaches in nutraceutical delivery systems: optimizing ADME dynamics for enhanced therapeutic potency and clinical impact. RPS Pharmacy and Pharmacology Reports. 2024 Oct;3(4):rqae024.
12. Hermis AH, Muhaibes FJ. Evaluating the effect of a training program on type 2 diabetic patient's self-care: A quasi-experimental study. Journal of Education and Health Promotion. 2024 Jan 1;13(1):38.
13. Cauch-Dudek K, Victor JC, Sigmond M, Shah BR. Disparities in attendance at diabetes self-management education programs after diagnosis in Ontario, Canada: a cohort study. BMC public health. 2013 Jan 30;13(1):85.
14. Viswanathan V, Krishnan D, Kalra S, Chawla R, Tiwaskar M, Saboo B, Baruah M, Chowdhury S, Makkar BM, Jaggi S. Insights on medical nutrition therapy for type 2 diabetes mellitus: an Indian perspective. Advances in therapy. 2019 Mar 1;36(3):520-47.
15. Lee YH. Sociodemographic factors associated with participation in diabetes education among community-dwelling adults with diabetes. Yonsei Medical Journal. 2020 Feb 1;61(2):169-78.

16. Dube L, Van den Broucke S, Dhoore W, Kalweit K, Housiaux M. An audit of diabetes self-management education programs in South Africa. Journal of public health research. 2015 Nov 17;4(3):jphr-2015.
17. Ugwu OP, Ogenyi FC, Ugwu CN, Ugwu MN. Gut microbiota-derived metabolites as early biomarkers for childhood obesity: A policy commentary from urban African populations. Obesity Medicine. 2025 Sep 1;57:100641.
18. Srulovici E, Feldman B, Reges O, Hoshen M, Balicer RD, Rotem M, Shadmi E, Key C, Curtis B, He X, Rubin G. Which patients with Type 2 diabetes will have greater compliance to participation in the Diabetes Conversation Map™ program? A retrospective cohort study. Diabetes Research and Clinical Practice. 2018 Sep 1;143:337-47.
19. Paul-Chima UO, Nneoma UC, Bulhan S. Metabolic immunobridge: Could adipose-derived extracellular vesicles be the missing link between obesity, autoimmunity, and drug-induced hepatotoxicity?. Medical Hypotheses. 2025 Sep 28:111776.
20. Heter A. Encouraging participation in diabetes self-management education (DSME) programs for the patient with type 2 diabetes mellitus. The Midwest Quarterly. 2019 Mar 22;60(3):319-29.
21. Ugwu OP, Ogenyi FC, Ugwu CN, Basajja M, Okon MB. Mitochondrial stress bridge: Could muscle-derived extracellular vesicles be the missing link between sarcopenia, insulin resistance, and chemotherapy-induced cardiotoxicity?. Biomedicine & Pharmacotherapy. 2025 Dec 1;193:118814.
22. Balamurugan A, Rivera M, Jack Jr L, Morris S, Allen K. Barriers to diabetes self-management education programs in underserved rural Arkansas: implications for program evaluation. Preventing chronic disease. 2005 Dec 15;3(1):A15.

CITE AS: Katu Amina H. (2026). Diabetes Self-Management Education Programs. IDOSR JOURNAL OF APPLIED SCIENCES 11(1):103-108. https://doi.org/10.59298/IDOSRJAS/2026/111103108