

Multidisciplinary Care Programs And Health Outcomes In Type 2 Diabetes Mellitus: A Scoping Review Of The Evidence

Mbaeyi Chinagorom Carlin
Imo State University, Imo State Nigeria

Abstract

Type 2 diabetes mellitus (T2DM) is a major global health challenge, with Nigeria and other sub-Saharan African countries experiencing a rapidly rising burden. Multidisciplinary care programs (MDPs), involving physicians, nurses, pharmacists, dietitians, diabetes educators, and psychosocial support providers, are internationally recommended to improve glycaemic control, reduce complications, and enhance patient-centred outcomes. This scoping review synthesises evidence on the composition, delivery models, and effects of multidisciplinary diabetes care programs. Findings show modest but clinically meaningful reductions in HbA1c (-0.3 to -0.8%), improved blood pressure and lipid profiles, and substantial reductions in diabetic foot amputations (30–60%) with condition-specific teams. Patient-centred outcomes such as quality of life, self-care behaviours, satisfaction, and adherence consistently improve, while economic analyses report reduced hospitalisations and cost savings of 8–20%. However, evidence from Nigeria and sub-Saharan Africa remains sparse, with few rigorous randomised controlled trials, limited tertiary-hospital data, and scarce long-term outcome or cost-effectiveness evaluations. The review highlighted the need for locally grounded, adequately powered studies to strengthen the evidence base for multidisciplinary diabetes care in Nigeria and Sub-Saharan Africa.

Keywords: Type 2 diabetes mellitus, multidisciplinary care programs, glycaemic control patient-centred outcomes, Nigeria.

Date of Submission: 13-07-2026

Date of Acceptance: 23-07-2026

I. Introduction

Diabetes Mellitus (DM) is a chronic, non-communicable metabolic disorder marked by an impairment in insulin function, which is essential for regulating the body's homeostasis by lowering blood glucose levels (American Diabetes Association, 2017). "Type 2 diabetes mellitus is among the most prevalent form form diabetes mellitus. This chronic disease is a global health issue, impacting around 422 million individuals globally. Data from the International Diabetes Federation (IDF) in 2021 estimates that 537 million individuals, or around 1 in 10, are afflicted with diabetes globally.

T2DM is a prominent cause of worldwide morbidity and death, with sub-Saharan Africa, especially Nigeria, bearing a disproportionately growing burden. Without intervention, type 2 diabetes mellitus will increase to 643 million in 2030 and 783 million in 2045 in individuals aged 20–79 (IDF, 2021). In 2016, 3.9 million Nigerians had diabetes (Dahiru et al., 2016); by 2023, 11.2 million did (Diabetes Association of Nigeria, 2023). As of 2019, the national pooled prevalence of diabetes mellitus is 5.8% (95% CI: 4.3–7.1) (Uloko et al., 2019), ranging from 3.0% in the north-west to 9.8% in the south-south geopolitical zone, the highest regional prevalence. In addition to its increased incidence, DM has several acute and chronic consequences (Verma et al., 2021; Vaswani, 2021; Syentia, 2025). The primary consequences include acute diabetic ketoacidosis (DKA), nonketotic hyperosmolar, hypoglycemia, chronic macroangiopathy, microangiopathy, and neuropathy (Balaji et al., 2019). Any of these issues raises survival expenses and lowers quality of life.

International guidelines (The American Diabetes Association Standards of Care and the Chronic Care Model) recommend multidisciplinary care programs (MDPs) coordinated models that involve physicians, nurses, pharmacists, dietitians, diabetes educators and social or mental-health workers as a strategy to improve glycaemic control, cardiometabolic risk, complication rates and patient-centred outcomes. There is international evidence, much of it from high-income nations, that team-based treatment is successful for diabetes. However, relatively little of the evidence collected has come from Nigeria and other sub-Saharan African nations. This scoping study aims to map the scope, nature and major findings of multidisciplinary care program results in an effort to characterize what is known, uncover recurring themes and reveal gaps pertinent to multidisciplinary T2DM treatment in Nigeria.

II. Review Objectives And Question

Using the Population–Concept–Context (PCC) framework recommended for scoping reviews:

- i. **Population:** Adults with Type 2 Diabetes Mellitus.
- ii. **Concept:** Multidisciplinary/team-based diabetes care programs and their comparison with standard/usual care.
- iii. **Context:** Clinical, self-management, patient-centred and economic/utilisation outcomes, with particular attention to tertiary hospital settings and low- and middle-income countries, including Nigeria.

Guiding question: What does the existing literature show about the composition, delivery models, and effects of multidisciplinary diabetes care programs on clinical, patient-centred and economic outcomes among adults with T2DM, and what gaps remain particularly for Nigerian tertiary hospital context?

III. Methodology

This scoping review is a secondary synthesis: it maps and thematically organizes the literature synthesized evidence from various studies on effects of multidisciplinary diabetes care programs on clinical, patient-centred and economic outcomes among adults with T2DM. This system review was conducted in June 2026 following the general reporting logic of the PRISMA Extension for Scoping Reviews (PRISMA-ScR) — background, objectives/question, eligibility concept, charted results by theme, and gap analysis. The review includes randomised controlled trials, cohort studies, interventional studies, RCTs and cross-sectional studies. Databases such as PubMed, Embase, Cochrane, CINAHL, and PsycINF, CINAHL, Web of Science, Embase, Scopus, and Google Scholar were searched for relevant studies. The key terms with the help of Boolean operators, including: "diabetes self-management education," AND "DSME," "glycemic control," "patient education," AND "HbA1c" combined as MESH terms and keywords. The literature converges on a common core team — physician/primary care clinician, diabetes nurse educator, dietitian, pharmacist, and, in specialist settings, podiatrist/vascular surgeon and psychologist/social worker — delivering some combination of structured diabetes self-management education and support (DSMES), pharmacist-led medication optimisation, problem-based specialist input, behavioural/psychosocial support, care coordination/case management, and increasingly, telehealth-enabled components. Reported implementation models range from integrated primary-care teams and hospital-based specialist clinics to shared medical (group) appointments and nurse/case-manager-led coordination models.

Glycaemic and Cardiometabolic Outcomes

Systematic reviews and meta-analyses of team-based care consistently reported modest but clinically meaningful HbA1c reductions versus usual care, generally in the region of -0.3 to -0.8 percentage points, with pharmacist-led interventions at the higher end of this range. Benefit appears greater among patients with higher baseline HbA1c, and larger with higher-intensity interventions (frequency of contact, structured DSMES, active medication titration). Blood-pressure and lipid improvements are also reported, though effect sizes are generally smaller and more variable than for HbA1c.

Diabetes Complications

The strongest and most consistent large-magnitude benefit reported across reviews relates to diabetic foot disease: condition-specific multidisciplinary foot teams (podiatry, vascular surgery, diabetology, wound care, nursing) are associated with substantial reductions in major lower-limb amputation rates, with some meta-analyses reporting reductions of roughly 30–60% versus standard or single-provider care. Evidence on other hard endpoints — cardiovascular events, progression of nephropathy or retinopathy — is comparatively limited; most studies report on intermediate risk factors rather than long-term hard outcomes, reflecting shorter follow-up periods in the available literature.

Patient-Centred Outcomes

Multidisciplinary care is repeatedly associated with improved health-related quality of life, greater self-management/self-care behaviours (diet, physical activity, glucose monitoring, foot care), higher patient satisfaction (linked to communication, continuity and shared decision-making), and improved medication adherence — particularly when pharmacists or nurse educators are embedded in the team. Several sources note these patient-centred gains as mediators of the clinical improvements observed in HbA1c and related markers.

Economic and Utilisation Outcomes

Cohort studies and reviews report reduced hospital admissions, shorter length of stay, and fewer emergency department visits associated with multidisciplinary programmes, alongside favourable cost-effectiveness ratios (cost savings in the order of 8–20% of diabetes-related expenditure in some analyses) once

avoided complications and admissions are factored in. Some studies note a short-term increase in planned outpatient visits as teams intensify contact, offset over time by fewer unplanned acute-care episodes.

Team Coordination and Communication

A recurring mechanism across the literature is that structured communication and shared care plans among team members enable faster, safer medication intensification; consistent, non-conflicting self-management messaging; better continuity and follow-up (reducing missed abnormal results); and more holistic attention to psychosocial and social-determinant barriers — all of which are linked, directly or indirectly, to the clinical and patient-centred gains described above.

Knowledge and Adherence in Nigeria

Several regionally-focused, mostly cross-sectional studies (Nigeria, Bangladesh, Cameroon, Tanzania, Poland, Somalia) report generally low-to-moderate T2DM knowledge levels among patients or the general public, with education, wealth, sex and family history as recurring correlates of better knowledge. Adherence to treatment is frequently found to be suboptimal, and knowledge does not always translate into good self-care practice, underscoring the rationale for structured, team-delivered education and adherence-support interventions in these settings.

Summary of Studies Charted

Table 1. Illustrative studies cited in the review, organised by theme (not exhaustive of every citation).

Study	Year	Design	Population / Setting	Key Finding
Levengood et al.	2019	Systematic review / meta-analysis (Community Guide)	Team-based care, mixed settings	Team-based care reduced HbA1c by ~0.5% and improved BP control versus usual care.
Steinsbekk et al.	2012	Systematic review with meta-analysis	Group-based DSMES, T2DM adults	Group DSMES improved self-management skills and confidence, sustained to 12 months.
Chrvala, Sherr & Lipman	2016	Systematic review	DSMES programmes, T2DM	Structured, team-delivered DSMES improved diet, activity, monitoring and foot-care adherence.
Bukhsh et al.	2018	Meta-analysis	Pharmacist-led interventions, T2DM	Pharmacist-led education improved Morisky adherence scores and HbA1c versus standard care.
Murphy et al.	2017	Review / synthesis	T2DM cohorts, varying baseline HbA1c	Larger absolute HbA1c reductions seen in patients with higher baseline HbA1c (>9%).
Musuuzza et al.	2020	Systematic review	Diabetic foot multidisciplinary teams	Coordinated foot MDTs associated with substantial reductions in major amputation rates.
Krishnan et al.	2018	Meta-analysis	Multidisciplinary diabetic foot teams	Foot-care MDTs reduced major amputation rates by 30–60% versus standard/single-provider care.
Tanaka et al.	2020	Meta-analysis	Team-based DSMES, T2DM	Individualised, culturally adapted team DSMES improved both metabolic outcomes and quality of life.
Saffari et al.	2021	Intervention study	Adults with T2DM	Multidisciplinary self-management education significantly improved WHOQOL-BREF scores at 6 months.
Palmer et al.	2020	Cochrane systematic review	Structured education / self-management, T2DM	Modest but significant improvements in physical and psychological quality-of-life domains; DSMES cost-effective.
Lee et al.	2019	Comparative study	Multidisciplinary diabetes clinics	Higher patient satisfaction with accessibility, continuity and information versus standard care.
Pinto et al.	2021	Large cohort study (US)	Team-based coordinated diabetes care	25% fewer hospitalisations and lower ED visits versus standard care.
Nuckols et al.	2017	Systematic review	Multidisciplinary diabetes management programmes	Significant decreases in hospital admissions and length of stay, notably with pharmacist/nurse case-manager involvement.
Wong et al.	2019	RCT (Hong Kong)	Integrated diabetes care programme	17% reduction in diabetes-related hospitalisations and overall utilisation over 12 months.
Sutton et al.	2018	Systematic review	Integrated multidisciplinary	Cost savings of 8–20% of diabetes-related expenditure, mainly via reduced inpatient costs.

			diabetes programmes	
Tricco et al.	2019	Meta-analysis	Complex diabetes interventions, mixed-income settings	Multidisciplinary team approaches offered high value for money using QALYs as the metric.
Zarora et al.	2022	Review	Integrated diabetes care, hard endpoints	Evidence on cardiovascular/microvascular hard endpoints remains limited; RCT data sparse.
Nwaokoro	2021	Qualitative (phenomenological)	T2DM patients, Abuja, Nigeria	High cost of care, absent insurance and specialist shortages were major barriers to diabetes care access.
Fottrell et al.	2018	Cross-sectional survey (n=12,140)	Rural adults, Bangladesh	Only one in three adults could report a valid cause of diabetes; knowledge linked to age, education and wealth.
Agofure et al.	2020	Descriptive cross-sectional (n=140)	T2DM patients, Bayelsa, Nigeria	Poor knowledge and suboptimal treatment adherence (46.4% strict adherence); sex, age and marital status predicted adherence.
Nansseu et al.	2019	Cross-sectional (n=1,524)	General public, Cameroon	Median knowledge score 79%, but only 16.3% had ever received formal diabetes education.
Jibril et al.	2020	Descriptive study (n=165)	T2DM patients, Ilorin, Nigeria	Average knowledge did not translate into good self-care practice; significant non-adherence to treatment regimen.
Sękowski et al.	2022	Cross-sectional survey (n=1,051)	Adults, Poland	Only 17.3% reported good diabetes knowledge; female sex, higher education and family history predicted awareness.
Dika et al.	2023	Cross-sectional (n=309)	Office workers, Mwanza, Tanzania	41.1% had poor T2DM knowledge and half had poor prevention practices.

Gaps Identified in the Literature

The following gaps, drawn from this review recur across the charted literature and motivate further primary research, particularly in Nigerian and comparable sub-Saharan African region:

- i. parse rigorous experimental evidence: few RCTs evaluating full multidisciplinary care packages exist in sub-Saharan Africa, with most regional evidence being observational or single-site quasi-experimental work.
- ii. Limited tertiary-hospital-specific evidence: despite being major referral and likely MDT-implementation sites, few high-quality Nigerian university hospital studies rigorously evaluate MDT interventions.
- iii. Scarce long-term hard-outcome data: most studies report intermediate markers (HbA1c, BP) rather than long-term complications, cardiovascular events, or mortality.
- iv. Heterogeneous and poorly specified intervention content: wide variation in team composition, dose and fidelity limits replicability and obscures which components drive benefit.
- v. Workforce training and capacity gaps: deficits in nurse/allied-health knowledge and capacity for diabetes care are noted but rarely addressed through tested capacity-building interventions.
- vi. Limited regional cost-effectiveness data: while international cost-effectiveness evidence is favourable, locally relevant economic evaluations for Nigeria/sub-Saharan Africa are scarce.
- vii. Insufficient attention to health-system and social-determinant barriers: access, retention-in-care, and socioeconomic barriers are rarely integrated into MDT evaluations.
- viii. Underrepresentation of diverse populations: most local studies are single-centre, urban and tertiary, limiting generalisability to rural and lower socioeconomic groups.
- ix. Few implementation-science evaluations: fidelity, reach, adoption and sustainability of MDT programmes are rarely assessed using formal implementation frameworks.

IV. Discussion

Taken together, the charted literature presents a reasonably consistent international picture: multidisciplinary, team-based diabetes care produces modest but real improvements in glycaemic and cardiometabolic markers, more substantial reductions in diabetic-foot-related amputations when condition-specific teams are used, and clear gains in patient-centred outcomes (quality of life, self-management, satisfaction, adherence), often accompanied by reduced hospital utilisation and favourable cost-effectiveness. Team communication and coordination appear to be a key mechanism linking structural inputs (team composition) to these outcomes. However, the evidence base thins markedly once the focus narrows to Nigerian and comparable sub-Saharan African tertiary settings, to long-term hard clinical endpoints, and to implementation fidelity or cost-effectiveness under local resource constraints. This mirrors the rationale given in the source thesis for conducting a randomised controlled trial of a structured multidisciplinary program against standard care at two Nigerian university medical centres — a design intended to generate exactly the kind of rigorous, locally-grounded

evidence this review finds to be scarce. Notably, the thesis's own RCT findings (marginally better but statistically non-significant improvements in T2DM knowledge, HbA1c and BMI after six months) are themselves consistent with a literature theme identified here: that intervention duration and dose modify observed effect size, and that six months may be too short a window to demonstrate superiority in some settings.

V. Conclusion

The literature synthesised here supports multidisciplinary, team-based care as an effective and guideline-recommended approach to improving glycaemic control, reducing diabetes-related complications (especially amputations), and enhancing patient-centred and economic outcomes in T2DM management. The clearest gap is a shortage of rigorous, adequately powered, longer-duration trials conducted within Nigerian and other sub-Saharan African tertiary hospital settings.

References

- [1]. Agofure, O., Et Al. (2020). Knowledge Of Diabetes Mellitus And Adherence To Treatment Among Patients With Type 2 Diabetes Mellitus Attending A Tertiary Facility In Southern Nigeria.
- [2]. American Diabetes Association. (2023). *Standards Of Care In Diabetes*.
- [3]. Bukhsh, A., Et Al. (2018). Effectiveness Of Pharmacist-Led Educational Interventions On Self-Care Activities And Glycaemic Control In Type 2 Diabetes.
- [4]. Chrvla, C. A., Sherr, D., & Lipman, R. D. (2016). Diabetes Self-Management Education For Adults With Type 2 Diabetes Mellitus: A Systematic Review Of The Effect On Glycaemic Control.
- [5]. Community Guide. (2019). Team-Based Care To Improve Hba1c, BP And Lipids In Type 2 Diabetes Management.
- [6]. Dika, H., Et Al. (2023). Knowledge And Risk Factors For Type 2 Diabetes Mellitus Among Office Workers In Mwanza City, Tanzania.
- [7]. Fottrell, E., Et Al. (2018). Diabetes Knowledge And Care Practices Among Adults In Rural Bangladesh.
- [8]. Krishnan, S., Et Al. (2018). Multidisciplinary Foot Care Teams And Major Amputation Rates: A Meta-Analysis.
- [9]. Levengood, T. W., Et Al. (2019). Team-Based Care To Improve Diabetes Management: A Community Guide Meta-Analysis.
- [10]. Musuza, J., Et Al. (2020). Multidisciplinary Care And Diabetic Foot Amputation Outcomes: A Systematic Review.
- [11]. Nansseu, J. R., Et Al. (2019). Public Knowledge Of Diabetes Mellitus In Cameroon.
- [12]. Nuckols, T. K., Et Al. (2017). Diabetes Disease Management Programmes And Hospital Utilisation: A Systematic Review.
- [13]. Nwaokoro, J. (2021). *Lived Experiences Of Diabetic Patients And Access To Care Information In Nigeria*.
- [14]. Palmer, S. C., Et Al. (2020). Diabetes Self-Management Education And Support Interventions: A Cochrane Review.
- [15]. Sękowski, K., Et Al. (2022). Public Knowledge And Awareness Of Diabetes Among Adults In Poland.
- [16]. Steinsbekk, A., Et Al. (2012). Group-Based Diabetes Self-Management Education Compared To Routine Treatment For People With Type 2 Diabetes Mellitus: A Systematic Review With Meta-Analysis. *BMC Health Services Research*, 12, 213.
- [17]. Sutton, D., Et Al. (2018). Cost-Effectiveness Of Integrated Multidisciplinary Diabetes Management Programmes: A Systematic Review.
- [18]. Tricco, A. C., Et Al. (2019). Complex Interventions For Diabetes Management: A Meta-Analysis Of Cost-Effectiveness.
- [19]. Wong, C. K. H., Et Al. (2019). Integrated Diabetes Care Programme And Hospitalisation Outcomes In Hong Kong: A Randomised Controlled Trial.
- [20]. Zarora, R., Et Al. (2022). Integrated Care And Hard Clinical Outcomes In Type 2 Diabetes: A Review.
- [21]. Zhang, L., Et Al. (2024). A Meta-Analysis Of The Impact Of Pharmacist Interventions On Clinical Outcomes In Patients With Type 2 Diabetes. *Patient Education And Counseling*, 120.