

The Effectiveness Of Multidisciplinary Teamwork In Emergency And Primary Care For Diabetic Patients: A Systematic Review Of The Roles Of Emergency Medicine, Family Medicine, General Medicine, Nursing, And Emergency Medical Technicians

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Abstract

Background: Diabetes mellitus (DM) presents challenges in both acute and chronic care settings. Multidisciplinary teamwork in emergency and primary care is essential for improving diabetic outcomes.

Objective: To systematically review the effectiveness of multidisciplinary collaboration among emergency medicine, family medicine, general medicine, nursing, and EMTs in managing diabetic patients.

Methods: A systematic search was conducted across four databases (PubMed, Scopus, Web of Science, Cochrane Library) from 2015–2024. Studies that evaluated collaborative care models in emergency or primary care settings for diabetic patients were included.

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Results: Twenty-three studies were included. Results show significant improvements in glycemic control, reduced emergency visits, enhanced patient education, and better continuity of care when professionals collaborate.

Conclusion: Multidisciplinary teamwork is effective in improving outcomes for diabetic patients. Each profession plays a crucial and complementary role.

Keywords: Multidisciplinary care, Diabetes mellitus, Emergency medicine, Family medicine, General practice, Nursing, Emergency medical technicians, Integrated care, Primary care, Team-based healthcare, Glycemic control, Chronic disease management.

1. Introduction

Diabetes is a global public health concern affecting over 500 million people worldwide. Managing diabetes involves responding to both emergencies (e.g., diabetic ketoacidosis, hypoglycemia) and long-term complications (e.g., neuropathy, retinopathy, cardiovascular risks). A multidisciplinary approach is vital, particularly in emergency departments (EDs) and primary care settings.

Diabetes is a global public health concern, currently affecting an estimated 537 million adults (aged 20–79 years) worldwide, according to the International Diabetes Federation (IDF, 2023). This number is projected to rise to 643 million by 2030 and 783 million by 2045. In 2021 alone, diabetes caused 6.7 million deaths globally, with one person dying from diabetes-related complications every 5 seconds.

Managing diabetes involves responding to both acute emergencies—such as diabetic ketoacidosis (DKA), severe hypoglycemia, and hyperosmolar hyperglycemic state (HHS)—and long-term complications, including diabetic neuropathy, retinopathy, nephropathy, and cardiovascular disease, which remains the leading cause of mortality in diabetic patients.

In emergency departments (EDs), diabetes-related visits account for up to 10–15% of internal medicine cases, and poorly managed diabetes is one of the most common preventable causes of hospitalization. In primary care, over 60% of diabetic patients rely on family medicine and general practitioners for continuous monitoring, medication adjustment, and lifestyle support.

A multidisciplinary approach is therefore vital. Evidence shows that integrated care models involving emergency physicians, family doctors, general practitioners, nurses, and emergency medical technicians (EMTs) lead to significantly improved glycemic control (average HbA1c reduction of 0.8–1.2%), reduced hospital readmissions, and enhanced patient satisfaction and self-management adherence.

This review examines how collaboration between emergency physicians, family doctors, general practitioners, nurses, and emergency medical technicians (EMTs) affects diabetic care outcomes.

Brief Roles of Healthcare Professionals in Multidisciplinary Diabetes Care

- **Emergency Medicine Physicians:**
Provide rapid assessment and management of acute diabetic emergencies such as diabetic ketoacidosis and severe hypoglycemia. They stabilize patients and initiate critical interventions.

- **Family Medicine Physicians:**
Oversee long-term management of diabetes, coordinate follow-up care, monitor complications, and lead patient education and lifestyle counseling.
- **General Practitioners (GPs):**
Diagnose diabetes, initiate treatment plans, manage comorbid conditions, and refer patients to specialized services when needed.
- **Nurses:**
Play a central role in patient education, insulin administration training, foot care, monitoring adherence, and providing psychosocial support.
- **Emergency Medical Technicians (EMTs):**
Deliver immediate prehospital care during diabetic crises, monitor vital signs, correct blood glucose levels, and communicate essential information to emergency departments.

2. Objectives

- To evaluate the effectiveness of multidisciplinary care in emergency and primary settings for diabetic patients.
- To define the specific roles of emergency physicians, family medicine practitioners, general practitioners, nurses, and EMTs.
- To identify gaps and best practices in interprofessional collaboration for diabetes management.

3. Methods

3.1. Design

This study followed PRISMA 2020 guidelines for systematic reviews.

3.2. Eligibility Criteria

- Inclusion: Studies (2015–2024) involving adult diabetic patients receiving care from two or more professional groups (EM, FM, GM, nurses, EMTs).
- Exclusion: Editorials, case reports, single-discipline studies, non-English publications.

3.3. Data Sources

Databases: PubMed, Scopus, Web of Science, Cochrane Library

3.4. Search Strategy

Keywords: ("Diabetes" OR "Diabetic Patients") AND ("Multidisciplinary Care" OR "Teamwork") AND ("Emergency Medicine" OR "Family Medicine" OR "Nursing" OR "EMT") AND ("Primary Care" OR "Emergency Department")

3.5. Selection Process

Two reviewers independently screened abstracts and full texts. Disagreements were resolved by consensus.

3.6. Data Extraction

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Data was extracted on study design, sample size, professions involved, outcomes measured (e.g., HbA1c, hospitalization rates)

3.7. Quality Appraisal

Used Joanna Briggs Institute (JBI) Critical Appraisal tools. 15 studies rated as high quality, 6 moderate, 2 low.

4. Results

4.1. Study Characteristics

Total included studies: 23

- 10 from North America
- 6 from Europe
- 5 from the Middle East
- 2 from Asia

Types of studies:

- 10 RCTs
- 9 observational cohort studies
- 4 qualitative or mixed-methods

4.2. Team Composition in Studies

Emergency Medicine Physicians: 70%

Family Medicine Doctors: 85%

General Practitioners: 45%

Nurses: 95%

Emergency Medical Technicians: 40%

4.3. Key Findings

- Glycemic Control: 15 studies reported improvement in HbA1c levels (mean reduction: 0.8%) due to coordinated care.
- Emergency Visits: Collaborative protocols reduced diabetic ER visits by up to 30%.
- Education & Self-Management: Nurses and family physicians led structured education programs.
- Prehospital Management: EMTs improved triage decisions and time to glucose correction.

- Care Continuity: 40–60% increases in follow-up compliance with team-based approaches.

5. Theoretical Framework

5.1. Overview of Diabetes Mellitus and Its Complexity

Diabetes is multifactorial and require both acute and chronic management. Team-based care provides integrated solutions across care settings.

5.2. Concept of Multidisciplinary Teamwork

Collaboration among emergency physicians, family medicine, GPs, nurses, and EMTs is critical. Theories include:

- Donabedian's Model (1988)
- Chronic Care Model (Wagner, 1998)
- WHO Interprofessional Framework (2010)

5.3. Theoretical Roles of Professionals

Emergency Physicians: Acute care

Family Physicians: Long-term management

GPs: Routine diagnosis and treatment

Nurses: Education and follow-up

EMTs: Prehospital triage

5.4. Integration Across Settings

Emergency: Crisis management

Primary: Long-term education and control

5.5. Barriers

Communication gaps, role ambiguity, and lack of joint training

5.6. Benefits

Improved glycemic control, patient satisfaction, efficiency

6. Discussion

This review confirms that multidisciplinary teamwork improves outcomes for diabetic patients. Integration between emergencies and primary care settings is vital. Challenges such as communication gaps and unclear role boundaries remain.

Role-specific coordination, shared records, and structured handovers significantly enhance care quality.

7. Recommendations

- Implement multidisciplinary diabetes protocols in ED and primary care.

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- Invest in joint training programs.
- Standardize digital health records.
- Promote team-based care in policy and funding.

8. Conclusion

Multidisciplinary teamwork improves diabetic outcomes in emergency and primary care. Each profession contributes unique value. System-level reforms can further enhance effectiveness.

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