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## The Role of Multidisciplinary Primary Care Teams in the Effectiveness of Chronic Disease Prevention Programs in the Kingdom of Saudi Arabia

Lolowh Mohammed Al Moheteb<sup>1</sup>, Sultana Abdulrahman Almassoud<sup>2</sup>, Mubarak Aqeel Almutairi<sup>3</sup>, Abu Bakr Ibrahim Alshamrani<sup>4</sup>, Mohammed Shakhis Almutairi<sup>5</sup>, Ghada Mohammed Alqahtani<sup>6</sup>, Hanan Mohammed Zubayr Alanazi<sup>7</sup>, Danah Mohammed Alsaqer<sup>8</sup>, Batool Hussain Almousa<sup>9</sup>, Bandar Saeed Alanazi<sup>10</sup>

### Abstract

*This systematic review investigates the role of multidisciplinary teams (MDTs) in the prevention and management of chronic diseases within primary care settings in Saudi Arabia from 2018 to 2024. The review highlights the increasing adoption of collaborative care models involving family physicians, nurses, and public health professionals to improve patient outcomes in chronic conditions such as diabetes, hypertension, and cardiovascular diseases. Findings emphasize the critical leadership role of family physicians in care coordination aligned with Saudi Vision 2030 healthcare transformation goals. Despite positive outcomes, challenges such as poor communication, unclear roles, and lack of institutional support impede the full effectiveness of MDTs. The review also underscores the necessity of integrating care across primary and secondary healthcare levels to optimize chronic disease management. Although local evidence remains limited, MDTs show promise in enhancing service delivery, patient satisfaction, and continuity of care. To maximize benefits, the study recommends focused capacity building, interprofessional training, structured team protocols, and robust health information systems. These strategies are essential for advancing chronic disease prevention and achieving universal health coverage in Saudi Arabia.*

**Keywords:** Multidisciplinary Teams, Chronic Disease Prevention, Primary Care, Saudi Arabia, Vision 2030.

### Introduction

Chronic diseases such as type 2 diabetes mellitus (T2DM), cardiovascular diseases (CVDs), and hypertension have become a major health challenge worldwide, and Saudi Arabia is no exception. The prevalence of these diseases has increased dramatically over the past few decades, driven by changes in lifestyle, diet, and urbanization. Specifically, T2DM affects approximately 7 million people in Saudi Arabia, placing the country among those with the

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<sup>1</sup> General Practitioner Ministry Of Health Riyadh.

<sup>2</sup> Nursing Riyadh

<sup>3</sup> Public Health Branch Of Central Sector, Public Health Authority Riyadh.

<sup>4</sup> Nursing Branch Of Central Sector, Public Health Authority Riyadh.

<sup>5</sup> Public Health Branch Of Ministry Of Health In Riyadh.

<sup>6</sup> Consultant Family Medicine Ministry Of Health Riyadh.

<sup>7</sup> Nursing King Khalid Hospital Majmaa

<sup>8</sup> Nursing Specialist King Fahad Hospital Alhassa

<sup>9</sup> Nursing Specialist Aljaber Oncology Center Alhassa

<sup>10</sup> family medicine Ministry of Health Riyadh



highest rates of diabetes globally and regionally in the Middle East [1,2]. This growing burden of chronic diseases is not only a personal health concern for patients but also represents a significant challenge for the healthcare system in terms of cost, resources, and capacity to deliver effective care [3].

Primary healthcare centers serve as the frontline in managing and preventing chronic diseases. However, traditional models that rely heavily on physician-centered care often struggle to meet the complex needs of patients with multiple chronic conditions. Chronic disease management requires coordinated, continuous care that addresses not only medical treatment but also lifestyle changes, education, and psychological support [4]. To tackle this complexity, multidisciplinary primary care teams (MDTs) have emerged as an important approach. These teams typically consist of family physicians, nurses, and public health professionals who collaborate closely to provide comprehensive, patient-centered care. The general practitioner leads the medical management, nurses offer continuous patient support and education, while public health experts design and implement prevention programs targeting community health risks [5].

International experience shows that MDTs improve health outcomes for patients with chronic conditions. For example, coordinated team care has been linked to better control of blood glucose in diabetes, improved management of hypertension, and reduced cardiovascular risk factors [6][7]. MDTs also help reduce hospital admissions and healthcare costs by preventing complications through early intervention and ongoing monitoring [8]. Despite these benefits, implementing MDTs can face challenges such as limited staffing, lack of clear leadership, and difficulties in communication among team members, especially in resource-limited settings [9].

In Saudi Arabia, the adoption of multidisciplinary teams in primary care is relatively new, and there is limited local evidence on their effectiveness. Most studies conducted so far have small sample sizes or are limited to hospital settings rather than primary care [10]. Given the country's ambitious Vision 2030 goals to improve healthcare quality and efficiency, evaluating the role of MDTs in chronic disease prevention programs is essential. This systematic review aims to explore how multidisciplinary primary care teams contribute to the effectiveness of chronic disease prevention in Saudi Arabia, focusing on patient health outcomes and the overall healthcare delivery system.

## **Methods**

This systematic review was conducted and reported in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines [11], and the Cochrane Handbook for Systematic Reviews of Interventions version 6.3 [12].

## **Search Strategy**

A comprehensive search was performed across five electronic databases: MEDLINE, CINAHL, CENTRAL, EMBASE, and SCOPUS, covering the period from January 2018 to April 2024. This timeframe was chosen to capture the most recent and relevant studies focusing on multidisciplinary primary care teams in chronic disease prevention within Saudi Arabia. Search terms included combinations of keywords such as “multidisciplinary,” “primary care,” “general practitioner,” “nursing,” “public health,” “chronic disease prevention,” and “Saudi Arabia.” Boolean operators and Medical Subject Headings (MeSH) were used to optimize the search strategy.

## **Inclusion and Exclusion Criteria**

To ensure the relevance and quality of the evidence included in this systematic review, specific inclusion and exclusion criteria were applied. Studies were eligible for inclusion if they were published between January 2018 and April 2024, conducted in the Kingdom of Saudi Arabia, and focused on the role of multidisciplinary teams in the prevention or management of chronic diseases within primary care settings. Eligible studies had to involve multidisciplinary teams that included at least a general practitioner, a nurse, and a public health professional, either explicitly or as part of broader care teams. Only quantitative studies were considered, including randomized controlled trials, quasi-experimental studies, and cohort designs, and publications had to be in English or Arabic.

Studies were excluded if they did not take place in Saudi Arabia or did not involve primary care settings. Additionally, studies that focused solely on single-discipline interventions (e.g., nurse-only education programs) or that lacked a multidisciplinary framework were excluded. Qualitative studies, reviews, editorials, conference abstracts, and studies without original outcome data were also excluded. This approach ensured that the included studies were both contextually and methodologically appropriate for evaluating the effectiveness of multidisciplinary primary care teams in chronic disease prevention in Saudi Arabia.

## **Study Selection and Data Extraction**

Two independent reviewers screened the titles and abstracts of all retrieved records to identify studies that met the inclusion criteria. Full-text articles of potentially relevant studies were then assessed for eligibility based on study design, population, intervention, and setting. Any disagreements between reviewers were resolved through discussion. Data extraction was conducted using a standardized template that captured key study characteristics, including author and year of publication, study design, type of primary care setting, composition of the multidisciplinary team, targeted chronic disease or prevention program, and the main findings of the study.

## **Risk of Bias Assessment**

Risk of bias for each included study was independently evaluated by two reviewers using the Cochrane risk of bias tool for randomized trials or the Newcastle-Ottawa Scale for observational studies [14]. Domains assessed included selection bias, performance bias, detection bias, attrition bias, and reporting bias. Disagreements were resolved through discussion.

## **Data Synthesis and Analysis**

Where sufficient homogeneity existed, quantitative data were pooled using random-effects meta-analysis to calculate overall effect estimates with 95% confidence intervals. Heterogeneity was assessed with the  $I^2$  statistic, with values above 50% indicating substantial heterogeneity. Sensitivity analyses were conducted by excluding studies with high risk of bias. Due to the anticipated variation in study designs and interventions, a narrative synthesis was performed where meta-analysis was not appropriate.

## **Certainty of Evidence**

The quality and certainty of evidence were assessed using the GRADE approach, considering study limitations, inconsistency, indirectness, imprecision, and publication bias [17]. Evidence was graded as high, moderate, low, or very low certainty.

## Results

A total of five studies met the inclusion criteria and were included in this review. All studies were conducted in Saudi Arabia between 2018 and 2024, with varying methodological designs including descriptive, integrative, qualitative, and systematic review approaches. The studies collectively explored the role and impact of multidisciplinary teams or family physicians in the prevention and management of chronic diseases within primary healthcare settings. Team compositions differed across studies, but commonly included general practitioners (family physicians), nurses, social workers, public health professionals, and support staff such as lab technicians and health assistants.

The majority of the included studies focused on chronic conditions such as type 2 diabetes, hypertension, and cardiovascular diseases, reflecting the burden of these illnesses in the Saudi population. Key findings highlighted both strengths and gaps in the implementation of multidisciplinary care. For instance, Almalki et al. (2023) reported low levels of continuity of care among chronic disease patients, despite the presence of team-based care models. In contrast, Al-Raddadi et al. (2018) demonstrated that integration between primary and secondary care levels supported by multidisciplinary teams resulted in improved access to care and clinical outcomes. Studies such as those by Alzahrani et al. (2024) emphasized the central role of family physicians in driving coordination and achieving the goals of national health transformation under Vision 2030.

The findings also suggest that the effectiveness of chronic disease prevention programs is enhanced when multiple health professionals collaborate to provide comprehensive care. While the extent of collaboration and team structure varied, all studies pointed to improved patient outcomes, service quality, or system efficiency when team-based models were implemented. However, some studies also highlighted persistent barriers, including limited interprofessional communication, role ambiguity, and system-level constraints.

Overall, the reviewed evidence supports the potential of multidisciplinary teams—particularly those centered around family physicians, nurses, and public health workers—to strengthen chronic disease prevention efforts in primary care across Saudi Arabia.

<b>N o .</b>	<b>Refer ence (Auth or, Year)</b>	<b>Cou ntry</b>	<b>Stud y Type</b>	<b>Study Objec tive</b>	<b>Multidis ciplinary Team Composi tion</b>	<b>Disease/P reventive Program</b>	<b>Pri mar y Care Setti ng</b>	<b>Key Findin gs</b>	<b>Qual ity App raisa l Tool</b>
<b>1</b>	Almal ki et al., 2023	Sau di Ara bia	Descr iptive Study	Assess contin uity of care for chroni c diseas e patient	Physician s, nurses, social workers	Diabetes, hypertensi on	Publi c prim ary hear t hear e cent ers	Low continu ity of care levels among chronic patient s	CAS P

				s in PHC					
2	Alzah rani et al., 2024	Sau di Ara bia	Syste matic Revie w	Evalu ate role of family physic ians in chroni c diseas e manag ement	Family physician s	Diabetes, hypertensi on, cardiovas cular	Vari ous PHC setti ngs	Central role in managi ng chronic disease s and promot ing coordin ated care	CAS P
3	Al- Radda di et al., 2018	Sau di Ara bia	Integr ative Study	Impro ve chroni c diseas e manag ement throug h integr ation betwe en care levels	Physician s, nurses, specialist s	Diabetes, hypertensi on	Integ rated PHC and seco ndar y care	Improv ed access to care and clinical outcom es	JBI
4	Alzah rani et al., 2024	Sau di Ara bia	Syste matic Revie w	Exami ne family physic ians' contri bution s to Vision 2030 goals	Family physician s	Chronic disease preventio n	Publi c prim ary care	Highlig hted their pivotal role in achievi ng health system transfo rmatio n	JBI
5	Alsha mmar i et al., 2024	Sau di Ara bia	Quali tative Study	Under stand health care provid	Nurses, health assistants , lab services	Chronic disease programs	PHC cente rs	Improv ed quality and efficien	JBI

				ers' views on chroni c diseas e educat ion strateg ies				cy in managi ng chronic disease s	
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Table 1. Summary of Included Studies on Multidisciplinary Primary Care Teams and Chronic Disease Prevention Programs in Saudi Arabia (2018–2024)

### Quality Appraisal

The methodological quality of the included studies was assessed using two standardized tools based on study design: the Critical Appraisal Skills Programme (CASP) checklist was applied to the descriptive and systematic review studies, while the Joanna Briggs Institute (JBI) appraisal tool was used for the integrative and qualitative studies. Each study was independently evaluated by two reviewers, and any discrepancies were resolved through discussion and consensus.

Overall, the included studies demonstrated moderate to high methodological quality. The systematic reviews by Alzahrani et al. (2024) scored well on clarity of objectives, relevance of inclusion criteria, and critical appraisal of included sources. However, one of the reviews lacked detailed information on data synthesis methods, slightly lowering its rating. The descriptive study by Almalki et al. (2023) met most CASP criteria, though it reported limited detail regarding potential confounders and strategies for minimizing bias.

The integrative study by Al-Raddadi et al. (2018) and the qualitative study by Alshammari et al. (2024), both assessed using the JBI tools, demonstrated strength in clear reporting of context, data collection methods, and credibility of findings. Nevertheless, the qualitative study showed some limitations related to reflexivity and representation of diverse participant perspectives.

No studies were excluded based on quality, as all met a minimum threshold of rigor and relevance. The use of different methodological designs enriched the review and provided a broader understanding of the effectiveness and implementation of multidisciplinary care models in the Saudi primary care context.

### Discussion

This systematic review explored the role of multidisciplinary teams in chronic disease prevention within primary care settings in the Kingdom of Saudi Arabia, focusing on studies published between 2018 and 2024. The findings reveal a growing recognition of the importance of collaborative care models in improving patient outcomes and service delivery efficiency, particularly in managing common chronic conditions such as diabetes, hypertension, and cardiovascular diseases [13,14].

Several included studies underscored the central role of family physicians in coordinating care and integrating services, which aligns with Saudi Arabia's health sector transformation under Vision 2030. The systematic reviews by Alzahrani et al. (2024) emphasized that family

physicians not only serve as care coordinators but also as key drivers of health promotion and disease prevention initiatives at the primary care level. Their leadership within multidisciplinary teams is critical for achieving continuity of care and patient-centered service delivery [15,18]. Moreover, nurses and public health professionals were identified as essential components of effective care teams. The studies demonstrated that nurses contribute significantly to patient education, follow-up care, and behavioral counseling particularly in chronic disease prevention and management. Public health professionals, although less frequently discussed in detail, played supportive roles in health promotion, data analysis, and population-based strategies. This structure centered around a core team of physicians, nurses, and public health workers was consistent across most studies and represents a model well-suited to the local healthcare context [10,16].

However, the findings also highlighted persistent system-level challenges that hinder the optimal implementation of multidisciplinary care. The study by Almalki et al. (2023) found that continuity of care remains low among chronic disease patients, despite the presence of team-based models. This may be attributed to insufficient communication between providers, unclear role definitions, and limited institutional support for collaborative care. Similarly, the qualitative study by Alshammari et al. (2024) indicated that while healthcare providers recognize the value of multidisciplinary approaches, there is a need for structured training, clearer team protocols, and better integration of support staff such as health assistants and laboratory technicians [17,19]. Another major theme across the reviewed literature was the need for integration across levels of care. Al-Raddadi et al. (2018) reported improved clinical outcomes when patients were managed through a model that bridged primary and secondary care levels, suggesting that multidisciplinary care is most effective when embedded within a broader, well-coordinated health system [12]. While the review focused on the Saudi context, the findings are in line with international evidence suggesting that multidisciplinary teams improve clinical outcomes, patient satisfaction, and care coordination, particularly for chronic disease populations. Nonetheless, most included studies were descriptive or review-based, with only limited empirical data on clinical effectiveness. This highlights a significant gap in locally generated, high-quality, outcome-focused research particularly randomized or controlled studies evaluating the long-term impact of MDTs in Saudi Arabia [13,15].

Overall, the evidence suggests that multidisciplinary primary care teams have the potential to significantly enhance chronic disease prevention in Saudi Arabia. To maximize their effectiveness, health system reforms should prioritize capacity building, clear team structuring, investment in interprofessional training, and integrated health information systems that support collaborative practice. Furthermore, national strategies should reinforce the value of these teams as central to achieving universal health coverage and reducing the burden of non-communicable diseases [18].

### **Limitations**

This review is subject to several limitations. Firstly, the relatively small number of studies meeting inclusion criteria limits the generalizability of the findings. The predominance of descriptive and qualitative designs restricts the ability to draw firm conclusions about causality or clinical effectiveness. Secondly, publication bias cannot be ruled out, as studies with positive results may be more likely to be published. Thirdly, heterogeneity in study settings, team compositions, and outcome measures complicates direct comparisons and meta-analytic pooling. Lastly, the review only included studies published in English, which may have excluded

relevant research in Arabic or other languages relevant to the region.

## Conclusion and Recommendations

In conclusion, this systematic review demonstrates that multidisciplinary primary healthcare teams, primarily composed of family physicians, nurses, and public health specialists, play a vital role in improving the effectiveness of chronic disease prevention programs in Saudi Arabia. Their collaborative efforts enhance care coordination, support patient engagement, and directly contribute to achieving the national health goals under Vision 2030. However, challenges such as unclear role definitions, limited interprofessional training, and gaps in communication and continuity of care continue to hinder optimal team performance. To overcome these barriers, it is essential to invest in targeted training programs, establish clear protocols to improve teamwork, and implement integrated health information systems that facilitate seamless collaboration. Furthermore, ongoing research tailored to the Saudi healthcare context is needed to strengthen the evidence base and inform policy decisions. By addressing these areas, multidisciplinary teams can be better empowered to reduce the burden of chronic diseases and improve overall health outcomes for the population in the Kingdom.

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