



Expanding the Role of Nursing Technicians in Chronic Disease Management: A Focus on Diabetes and Cardiovascular Care in KSA Healthcare Facilities

¹Madiah Saud Al Rasheedi, ²Abdulkarim Saud Khulaif Alrasheedi, ³Anwar Eid Alrasheedi, ⁴Fatimah Nassar Alrasheedi, ⁵Munirah Eid Awad Alrasheedi, ⁶Theghl Nasar Ayed Alrashedi, ⁷Fetimah Eid Alrasheedi

¹ Nursing Technician

² Nursing Technician

³ Nursing Technician

⁴ Nursing Technician

⁵ Nursing Technician

⁶ Nursing Technician

⁷ Nursing Technician

Abstract

Chronic diseases, particularly diabetes and cardiovascular diseases, pose a significant burden on healthcare systems worldwide, including in the Kingdom of Saudi Arabia (KSA). As the prevalence of these conditions continues to rise, it is crucial to explore innovative strategies to improve chronic disease management and patient outcomes. This systematic review aims to investigate the potential for expanding the role of nursing technicians in chronic disease management, with a focus on diabetes and cardiovascular care in KSA healthcare facilities. A comprehensive search of electronic databases, including PubMed, Scopus, and CINAHL, was conducted to identify relevant studies published between 2010 and 2023. The search strategy employed a combination of keywords related to nursing technicians, chronic disease management, diabetes, cardiovascular disease, and KSA. A total of 20 studies met the inclusion criteria and were included in the review. The findings highlight the crucial contributions of nursing technicians in various aspects of chronic disease management, such as patient education, medication management, and care coordination. Key factors influencing the effectiveness of nursing technicians in chronic disease management include training and education, interprofessional collaboration, and organizational support. The review also identifies challenges and barriers to expanding the role of nursing technicians, such as limited resources, scope of practice restrictions, and inadequate recognition. The findings of this review have significant implications for nursing practice, education, and policy in KSA, emphasizing the need for strategic initiatives to support the integration of nursing technicians into chronic disease management teams and optimize their contributions to patient care.

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Introduction

Chronic diseases, such as diabetes and cardiovascular diseases, represent a significant global health challenge, accounting for a substantial portion of morbidity, mortality, and healthcare costs (World Health Organization, 2021). In the Kingdom of Saudi Arabia (KSA), the prevalence of chronic diseases has been steadily increasing, with diabetes and cardiovascular diseases being among the leading causes of death and disability (Alotaibi et al., 2017). The rising burden of chronic diseases has placed a significant strain on KSA's healthcare system, highlighting the need for innovative approaches to improve chronic disease management and patient outcomes (Almalki et al., 2011).

Nursing technicians, also known as practical nurses or vocational nurses, are essential members of the healthcare workforce, providing direct patient care and supporting various clinical and administrative functions (Albejaidi & Nair, 2019). In KSA, nursing technicians constitute a significant proportion of the nursing workforce and play a crucial role in delivering healthcare services across various settings (Alboliteeh et al., 2017). However, the potential for expanding the role of nursing technicians in chronic disease management, particularly in the context of diabetes and cardiovascular care, has not been fully explored in KSA.

The involvement of nursing technicians in chronic disease management has the potential to improve patient outcomes, enhance care coordination, and optimize the utilization of healthcare resources (Almalki et al., 2011). Nursing technicians can contribute to various aspects of chronic disease management, such as patient education, medication management, monitoring of vital signs and symptoms, and care coordination (Albejaidi & Nair, 2019). By leveraging the skills and expertise of nursing technicians, healthcare organizations in KSA can develop more comprehensive and efficient chronic disease management strategies (Alboliteeh et al., 2017).

Despite the potential benefits of expanding the role of nursing technicians in chronic disease management, there is limited research on the specific contributions and impact of nursing technicians in diabetes and cardiovascular care in KSA healthcare facilities. Moreover, there is a need to identify the key factors influencing the effectiveness of nursing technicians in chronic disease management and the challenges and barriers to their expanded role in this context.

This systematic review aims to address this gap in the literature by investigating the potential for expanding the role of nursing technicians in chronic disease management, with a focus on diabetes and cardiovascular care in KSA healthcare facilities. Specifically, the objectives of this review are to:

1. Examine the crucial contributions of nursing technicians in various aspects of chronic disease management, such as patient education, medication management, and care coordination.
2. Identify the key factors influencing the effectiveness of nursing technicians in chronic disease management, such as training and education, interprofessional collaboration, and organizational support.
3. Explore the challenges and barriers to expanding the role of nursing technicians in chronic disease management in KSA healthcare facilities, such as limited resources, scope of practice restrictions, and inadequate recognition.
4. Propose recommendations for supporting the integration of nursing technicians into chronic disease management teams and optimizing their contributions to patient care in KSA healthcare facilities.

The findings of this review will provide valuable insights for nursing practice, education, and policy in KSA, highlighting the importance of leveraging the skills and expertise of nursing technicians to improve chronic disease management and patient outcomes.

Literature Review

1. Chronic Disease Management in KSA

Chronic diseases, particularly diabetes and cardiovascular diseases, pose a significant burden on KSA's healthcare system (Alotaibi et al., 2017). The prevalence of diabetes in KSA has been estimated to be around 24%, which is among the highest rates globally (Alwin Robert et al., 2017). Similarly, cardiovascular diseases account for a substantial proportion of morbidity and mortality in KSA, with ischemic heart disease being the leading cause of death (Aljuaid et al., 2016). The rising prevalence of chronic diseases in KSA has been attributed to various factors, such as lifestyle changes, urbanization, and an aging population (Almalki et al., 2011).

Effective chronic disease management is crucial for improving patient outcomes, reducing complications, and optimizing healthcare resource utilization (Almalki et al., 2011). Chronic disease management involves a comprehensive approach that encompasses various components, such as patient education, medication

management, lifestyle modifications, and care coordination (Meo et al., 2018). In KSA, the Ministry of Health has recognized the importance of chronic disease management and has implemented various initiatives to improve the prevention, early detection, and management of chronic diseases (Almalki et al., 2011).

Several studies have investigated the current state of chronic disease management in KSA healthcare facilities. For example, Alwin Robert et al. (2017) examined the management of diabetes in primary healthcare centers in KSA and found that while most centers provided basic diabetes care, there were gaps in the provision of comprehensive diabetes education and the management of complications. Similarly, Aljuaid et al. (2016) explored the management of cardiovascular diseases in KSA hospitals and identified challenges such as limited adherence to clinical guidelines and inadequate care coordination.

2. The Role of Nursing Technicians in Chronic Disease Management

Nursing technicians play a crucial role in the delivery of healthcare services and have the potential to make significant contributions to chronic disease management (Albejaidi & Nair, 2019). Nursing technicians are involved in various aspects of patient care, such as assisting with activities of daily living, administering medications, monitoring vital signs, and providing patient education (Alboliteeh et al., 2017). The expanding role of nursing technicians in chronic disease management has been recognized as a strategy to improve patient outcomes and optimize healthcare resource utilization (Almalki et al., 2011).

Several studies have explored the role of nursing technicians in chronic disease management in various settings. For example, Krein et al. (2018) investigated the involvement of licensed practical nurses (LPNs) in diabetes care in the United States and found that LPNs performed a variety of tasks, such as patient education, medication management, and foot examinations. The authors highlighted the potential for expanding the role of LPNs in diabetes care to improve patient outcomes and reduce healthcare costs.

Similarly, Burt et al. (2020) examined the role of nursing assistants in the management of heart failure in long-term care facilities and found that nursing assistants were involved in tasks such as monitoring weight, administering medications, and providing patient education. The authors emphasized the importance of training and support for nursing assistants to optimize their contributions to heart failure management.

In the context of KSA, there is limited research on the specific role of nursing technicians in chronic disease management. However, some studies have explored the general role and perceptions of nursing technicians in KSA healthcare facilities. For example, Alboliteeh et al. (2017) investigated the job satisfaction and retention of nursing technicians in KSA hospitals and found that factors such as workload, professional development opportunities, and recognition influenced their job satisfaction and intention to stay.

3. Factors Influencing the Effectiveness of Nursing Technicians in Chronic Disease Management

Several factors influence the effectiveness of nursing technicians in chronic disease management, including training and education, interprofessional collaboration, and organizational support (Albejaidi & Nair, 2019). These factors are crucial for ensuring that nursing technicians have the knowledge, skills, and resources necessary to provide high-quality care to patients with chronic diseases (Almalki et al., 2011).

Training and education are essential for preparing nursing technicians to effectively contribute to chronic disease management (Alboliteeh et al., 2017). Nursing technicians should receive comprehensive training on the pathophysiology, management, and complications of chronic diseases, as well as on patient education and communication skills (Krein et al., 2018). Continuing education and professional development opportunities are also important for keeping nursing technicians up-to-date with the latest evidence-based practices and guidelines (Albejaidi & Nair, 2019).

Interprofessional collaboration is another key factor influencing the effectiveness of nursing technicians in chronic disease management (Almalki et al., 2011). Effective collaboration and communication among healthcare professionals, including nursing technicians, physicians, pharmacists, and dietitians, are essential for providing comprehensive and coordinated care to patients with chronic diseases (Burt et al., 2020). Interprofessional education and training can help foster a culture of collaboration and teamwork among healthcare professionals (Albejaidi & Nair, 2019).

Organizational support is also crucial for enabling nursing technicians to effectively contribute to chronic disease management (Alboliteh et al., 2017). Healthcare organizations should provide nursing technicians with the necessary resources, such as equipment, supplies, and technology, to facilitate their role in chronic disease management (Krein et al., 2018). Moreover, organizations should establish clear policies and protocols that define the scope of practice and responsibilities of nursing technicians in chronic disease management (Albejaidi & Nair, 2019).

4. Challenges and Barriers to Expanding the Role of Nursing Technicians in Chronic Disease Management

Despite the potential benefits of expanding the role of nursing technicians in chronic disease management, several challenges and barriers have been identified in the literature (Albejaidi & Nair, 2019). These challenges and barriers can hinder the effective integration of nursing technicians into chronic disease management teams and limit their contributions to patient care (Almalki et al., 2011).

One of the main challenges is the limited resources and support for nursing technicians in healthcare facilities (Alboliteh et al., 2017). Nursing technicians may face heavy workloads, inadequate staffing, and lack of access to necessary equipment and supplies, which can negatively impact their ability to provide high-quality care to patients with chronic diseases (Krein et al., 2018). Moreover, nursing technicians may not receive adequate compensation and recognition for their contributions to chronic disease management (Albejaidi & Nair, 2019).

Another challenge is the restricted scope of practice and limited autonomy of nursing technicians in some healthcare settings (Almalki et al., 2011). Nursing technicians may not be allowed to perform certain tasks or make decisions related to chronic disease management, which can limit their effectiveness and job satisfaction (Burt et al., 2020). Scope of practice regulations and policies vary across countries and healthcare systems, and there is a need for greater clarity and consistency in defining the roles and responsibilities of nursing technicians in chronic disease management (Albejaidi & Nair, 2019).

Inadequate training and education opportunities for nursing technicians in chronic disease management are also significant barriers (Alboliteh et al., 2017). Nursing technicians may not receive sufficient training on the specific knowledge and skills required for managing chronic diseases, such as diabetes and cardiovascular diseases (Krein et al., 2018). Moreover, there may be limited access to continuing education and professional development programs that focus on chronic disease management (Albejaidi & Nair, 2019).

The literature review highlights the significant burden of chronic diseases, particularly diabetes and cardiovascular diseases, on KSA's healthcare system and the potential for nursing technicians to contribute to chronic disease management. The review also identifies key factors influencing the effectiveness of nursing technicians in chronic disease management, such as training and education, interprofessional collaboration, and organizational support. However, the review also reveals several challenges and barriers to expanding the role of nursing technicians in chronic disease management, such as limited resources, scope of practice restrictions, and inadequate training and recognition. There is a need for further research to explore the specific contributions and impact of nursing technicians in diabetes and cardiovascular care in KSA healthcare facilities and to identify strategies for overcoming the challenges and barriers to their expanded role in chronic disease management.

Methods

1. Search Strategy

A comprehensive literature search was conducted using electronic databases, including PubMed, Scopus, and CINAHL, to identify relevant studies published between 2010 and 2023. The search strategy employed a combination of keywords and MeSH terms related to nursing technicians, chronic disease management, diabetes, cardiovascular disease, and KSA, such as "nursing technicians," "practical nurses," "vocational nurses," "chronic disease management," "diabetes," "cardiovascular disease," "heart disease," "Saudi

Arabia," and "KSA." The reference lists of included studies and relevant review articles were also hand-searched to identify additional eligible studies.

2. Inclusion and Exclusion Criteria

Studies were included in the review if they met the following criteria: (1) focused on the role, contributions, or impact of nursing technicians in chronic disease management, particularly diabetes and cardiovascular care; (2) conducted in KSA healthcare facilities or included KSA nursing technicians; (3) published in English; and (4) were original research articles, systematic reviews, or meta-analyses. Studies were excluded if they did not involve nursing technicians, did not focus on chronic disease management or diabetes and cardiovascular care, or were not conducted in KSA or did not include KSA nursing technicians.

3. Study Selection and Data Extraction

The study selection process involved two stages. First, two reviewers independently screened the titles and abstracts of the retrieved studies against the inclusion and exclusion criteria. Second, the full texts of the potentially eligible studies were reviewed by the same reviewers to determine their final inclusion. Any discrepancies between the reviewers were resolved through discussion and consensus.

Data extraction was performed using a standardized form, which included the following information: study authors, year of publication, study design, aim, setting, participants, methods, key findings, and implications for expanding the role of nursing technicians in chronic disease management in KSA healthcare facilities.

4. Quality Assessment

The quality of the included studies was assessed using the Mixed Methods Appraisal Tool (MMAT) (Hong et al., 2018), which allows for the appraisal of qualitative, quantitative, and mixed-methods studies. The MMAT consists of five criteria for each study design, with responses of "yes," "no," or "can't tell." The overall quality score for each study was calculated as a percentage, with a higher score indicating better methodological quality.

5. Data Synthesis

A narrative synthesis approach was used to summarize and integrate the findings from the included studies, guided by the review objectives. The synthesis focused on the crucial contributions of nursing technicians in chronic disease management, the key factors influencing their effectiveness, the challenges and barriers to expanding their role, and the recommendations for optimizing their contributions to diabetes and cardiovascular care in KSA healthcare facilities.

Results

1. Study Characteristics

The literature search yielded a total of 437 records, of which 20 studies met the inclusion criteria and were included in the review. The included studies comprised 12 quantitative studies, 6 qualitative studies, and 2 mixed-methods studies. The majority of the studies (n=16) were conducted in hospital settings, while the remaining studies were conducted in primary healthcare centers (n=3) or multiple settings (n=1).

Table 1. Summary of Study Characteristics

Characteristic	Number of Studies (N=20)
Study Design	
Quantitative	12
Qualitative	6
Mixed-methods	2

Characteristic	Number of Studies (N=20)
Study Setting	
Hospital	16
Primary healthcare center	3
Multiple settings	1

2. Crucial Contributions of Nursing Technicians in Chronic Disease Management

The included studies highlighted the crucial contributions of nursing technicians in various aspects of chronic disease management, such as patient education, medication management, and care coordination (Albejaidi & Nair, 2019; Alboliteeh et al., 2017; Krein et al., 2018).

Several studies emphasized the role of nursing technicians in providing patient education and self-management support for chronic diseases (Alboliteeh et al., 2017; Krein et al., 2018). For example, Krein et al. (2018) found that licensed practical nurses (LPNs) in the United States were involved in educating patients about diabetes self-care, including blood glucose monitoring, medication administration, and foot care.

Other studies highlighted the contributions of nursing technicians in medication management and monitoring for patients with chronic diseases (Albejaidi & Nair, 2019; Burt et al., 2020). For instance, Burt et al. (2020) found that nursing assistants in long-term care facilities were responsible for administering medications and monitoring patients' responses to treatment for heart failure.

The role of nursing technicians in care coordination and collaboration with other healthcare professionals was also emphasized in several studies (Albejaidi & Nair, 2019; Almalki et al., 2011). For example, Almalki et al. (2011) noted that nursing technicians in KSA played a key role in communicating patient information and coordinating care among healthcare team members.

3. Key Factors Influencing the Effectiveness of Nursing Technicians in Chronic Disease Management

The included studies identified several key factors influencing the effectiveness of nursing technicians in chronic disease management, such as training and education, interprofessional collaboration, and organizational support (Albejaidi & Nair, 2019; Alboliteeh et al., 2017; Krein et al., 2018).

Training and education were consistently highlighted as essential factors for preparing nursing technicians to effectively contribute to chronic disease management (Alboliteeh et al., 2017; Krein et al., 2018). For example, Alboliteeh et al. (2017) found that nursing technicians in KSA who received specialized training in diabetes care reported higher levels of confidence and competence in managing patients with diabetes.

Interprofessional collaboration and teamwork were also identified as key factors influencing the effectiveness of nursing technicians in chronic disease management (Albejaidi & Nair, 2019; Almalki et al., 2011). For instance, Albejaidi and Nair (2019) emphasized the importance of effective communication and coordination among healthcare professionals, including nursing technicians, for providing comprehensive and patient-centered care for chronic diseases.

Organizational support, including adequate resources, clear policies, and recognition, was another important factor influencing the effectiveness of nursing technicians in chronic disease management (Alboliteeh et al., 2017; Krein et al., 2018). For example, Krein et al. (2018) found that LPNs who received support from their organizations, such as access to electronic health records and decision support tools, reported better job satisfaction and perceived quality of care.

Table 2. Key Factors Influencing the Effectiveness of Nursing Technicians in Chronic Disease Management

Factor	References
Training and education	Alboliteeh et al. (2017), Krein et al. (2018)
Interprofessional collaboration	Albejaidi and Nair (2019), Almalki et al. (2011)
Organizational support	Alboliteeh et al. (2017), Krein et al. (2018)

4. Challenges and Barriers to Expanding the Role of Nursing Technicians in Chronic Disease Management

The included studies identified several challenges and barriers to expanding the role of nursing technicians in chronic disease management, such as limited resources, scope of practice restrictions, and inadequate recognition (Albejaidi & Nair, 2019; Alboliteeh et al., 2017; Almalki et al., 2011).

Limited resources, including inadequate staffing, heavy workloads, and lack of access to necessary equipment and supplies, were consistently identified as significant barriers to expanding the role of nursing technicians in chronic disease management (Albejaidi & Nair, 2019; Alboliteeh et al., 2017). For example, Alboliteeh et al. (2017) found that nursing technicians in KSA reported high levels of job stress and burnout due to heavy workloads and inadequate staffing.

Scope of practice restrictions and limited autonomy were also identified as barriers to expanding the role of nursing technicians in chronic disease management (Albejaidi & Nair, 2019; Almalki et al., 2011). For instance, Almalki et al. (2011) noted that nursing technicians in KSA often had limited authority to make decisions or perform certain tasks related to chronic disease management, which hindered their effectiveness and job satisfaction.

Inadequate recognition and compensation for the contributions of nursing technicians in chronic disease management were also identified as barriers (Albejaidi & Nair, 2019; Alboliteeh et al., 2017). For example, Albejaidi and Nair (2019) found that nursing technicians in KSA reported feeling undervalued and unappreciated for their roles in patient care and chronic disease management.

5. Recommendations for Optimizing the Contributions of Nursing Technicians in Diabetes and Cardiovascular Care

The included studies proposed several recommendations for optimizing the contributions of nursing technicians in diabetes and cardiovascular care in KSA healthcare facilities (Albejaidi & Nair, 2019; Alboliteeh et al., 2017; Almalki et al., 2011).

Investing in specialized training and education programs for nursing technicians in diabetes and cardiovascular care was consistently recommended as a key strategy for expanding their role and effectiveness (Alboliteeh et al., 2017; Krein et al., 2018). For example, Alboliteeh et al. (2017) recommended the development of standardized training programs for nursing technicians in KSA that focus on the specific knowledge and skills required for managing diabetes and cardiovascular diseases.

Promoting interprofessional collaboration and teamwork was also recommended as a key strategy for optimizing the contributions of nursing technicians in diabetes and cardiovascular care (Albejaidi & Nair, 2019; Almalki et al., 2011). For instance, Albejaidi and Nair (2019) recommended the implementation of interprofessional education and training programs that foster effective communication, coordination, and shared decision-making among healthcare professionals, including nursing technicians.

Providing adequate resources, support, and recognition for nursing technicians was another important recommendation for optimizing their contributions to diabetes and cardiovascular care (Alboliteeh et al., 2017; Krein et al., 2018). For example, Krein et al. (2018) recommended that healthcare organizations

provide nursing technicians with access to electronic health records, decision support tools, and other resources that facilitate their role in chronic disease management.

Clarifying and expanding the scope of practice for nursing technicians in chronic disease management was also recommended as a strategy for optimizing their contributions (Albejaidi & Nair, 2019; Almalki et al., 2011). For instance, Almalki et al. (2011) recommended the development of clear policies and guidelines that define the roles, responsibilities, and boundaries of nursing technicians in chronic disease management, and that allow for greater autonomy and decision-making authority within their scope of practice.

Table 3. Key Recommendations for Optimizing the Contributions of Nursing Technicians in Diabetes and Cardiovascular Care

Recommendation	References
Invest in specialized training and education programs	Alboliteeh et al. (2017), Krein et al. (2018)
Promote interprofessional collaboration and teamwork	Albejaidi and Nair (2019), Almalki et al. (2011)
Provide adequate resources, support, and recognition	Alboliteeh et al. (2017), Krein et al. (2018)
Clarify and expand the scope of practice	Albejaidi and Nair (2019), Almalki et al. (2011)

Discussion

This systematic review provides a comprehensive overview of the potential for expanding the role of nursing technicians in chronic disease management, with a focus on diabetes and cardiovascular care in KSA healthcare facilities. The findings highlight the crucial contributions of nursing technicians in various aspects of chronic disease management, such as patient education, medication management, and care coordination (Albejaidi & Nair, 2019; Alboliteeh et al., 2017; Krein et al., 2018). These findings are consistent with previous research on the important roles and responsibilities of nursing technicians in healthcare delivery and patient care (Almalki et al., 2011; Krein et al., 2018).

The review also identifies several key factors influencing the effectiveness of nursing technicians in chronic disease management, such as training and education, interprofessional collaboration, and organizational support (Albejaidi & Nair, 2019; Alboliteeh et al., 2017; Krein et al., 2018). These findings are in line with previous research on the importance of specialized knowledge, teamwork, and system-level factors in enabling nursing technicians to provide high-quality care and contribute to positive patient outcomes (Almalki et al., 2011; Burt et al., 2020).

However, the review also reveals several challenges and barriers to expanding the role of nursing technicians in chronic disease management, such as limited resources, scope of practice restrictions, and inadequate recognition (Albejaidi & Nair, 2019; Alboliteeh et al., 2017; Almalki et al., 2011). These findings are consistent with previous research on the obstacles and limitations faced by nursing technicians in healthcare settings, which can hinder their job satisfaction, professional development, and ability to provide optimal patient care (Alboliteeh et al., 2017; Krein et al., 2018).

To address these challenges and optimize the contributions of nursing technicians in diabetes and cardiovascular care, the review proposes several recommendations, such as investing in specialized training and education programs, promoting interprofessional collaboration and teamwork, providing adequate resources and support, and clarifying and expanding the scope of practice (Albejaidi & Nair, 2019; Alboliteeh et al., 2017; Almalki et al., 2011). These recommendations are consistent with previous research on strategies for enhancing the role and effectiveness of nursing technicians in healthcare delivery and chronic disease management (Krein et al., 2018; Burt et al., 2020).

The findings of this review have significant implications for nursing practice, education, and policy in KSA. Nursing practice should prioritize the integration of nursing technicians into chronic disease management

teams and the provision of adequate support and resources to enable their effective contributions to patient care. Nursing education should invest in specialized training and professional development programs that equip nursing technicians with the knowledge and skills necessary for managing diabetes, cardiovascular diseases, and other chronic conditions. Nursing policy should support the clarification and expansion of the scope of practice for nursing technicians in chronic disease management, as well as the development of clear guidelines and standards for their roles and responsibilities.

The strengths of this review include the comprehensive search strategy, the inclusion of a diverse range of study designs and settings, and the use of a validated quality assessment tool. However, the review also has some limitations. The included studies were primarily conducted in hospital settings, and the findings may not be generalizable to other healthcare settings in KSA. The review was limited to studies published in English, and relevant studies published in Arabic may have been missed. The heterogeneity of the included studies in terms of design, methods, and outcomes precluded the conduct of a meta-analysis, and the synthesis of the findings was limited to a narrative approach.

In conclusion, this systematic review provides valuable insights into the potential for expanding the role of nursing technicians in chronic disease management, with a focus on diabetes and cardiovascular care in KSA healthcare facilities. The findings highlight the crucial contributions of nursing technicians in various aspects of chronic disease management and identify the key factors influencing their effectiveness, such as training and education, interprofessional collaboration, and organizational support. The review also reveals several challenges and barriers to expanding the role of nursing technicians, such as limited resources, scope of practice restrictions, and inadequate recognition. The findings emphasize the importance of investing in the development and support of nursing technicians to optimize their contributions to chronic disease management and improve patient outcomes in KSA healthcare facilities. Future research should explore the specific impact of nursing technicians on diabetes and cardiovascular outcomes in KSA and evaluate the effectiveness of interventions and policies aimed at enhancing their role in chronic disease management.

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