

# The Evolving Role of Nurses in Chronic Disease Management: A Comparative Analysis Across Healthcare Systems in Saudi Arabia

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## ABSTRACT

Chronic diseases are a major public health challenge globally, and Saudi Arabia is no exception, facing high rates of diabetes, cardiovascular disease, and obesity. Nurses play a crucial role in managing these conditions, with responsibilities expanding to include patient education, lifestyle counseling, and ongoing monitoring. This study investigates the evolving role of nurses in chronic disease management (CDM) across Saudi Arabia's public hospitals and specialized healthcare centers, analyzing variations in nurse responsibilities, resource availability, patient satisfaction, and the impact of nurse-led interventions. Findings indicate that specialized centers, with greater resource support and lower patient-to-nurse ratios, facilitate a higher level of individualized care, contributing to improved patient satisfaction and disease outcomes. In contrast, public hospitals struggle with limited resources and high patient loads, restricting the depth of nurse engagement in CDM. Statistical analysis underscores the positive correlation between nurse-led interventions—particularly lifestyle counseling and health education—and patient satisfaction. These results highlight the need for targeted policy reforms to support nurses in public hospitals, ensuring effective CDM across healthcare settings. This research advocates for greater investment in training and resources to empower nurses, ultimately strengthening Saudi Arabia's healthcare response to the chronic disease epidemic.

**KEYWORDS:** chronic disease management, nursing roles, healthcare systems, patient satisfaction, Saudi Arabia, public hospitals, specialized centers

## **1. Introduction**

### **Background and Context**

Chronic diseases have emerged as one of the leading health challenges worldwide, burdening healthcare systems and affecting populations' quality of life (Jiakponna et al. 2024). Conditions such as diabetes, hypertension, cardiovascular diseases, and respiratory ailments are increasingly prevalent, particularly in the Middle East, where lifestyle shifts and demographic changes have heightened health risks. Saudi Arabia faces a substantial rise in chronic disease cases, driven by factors such as urbanization, sedentary lifestyles, and dietary habits (Alhabib et al. 2020). According to recent data from the Ministry of Health (MoH), chronic diseases account for a significant proportion of hospital admissions and outpatient visits, highlighting an urgent need for efficient and sustainable chronic disease management (CDM) strategies within the country's healthcare system.

In the context of chronic disease management, nurses play a pivotal role, serving as primary caregivers, educators, and advocates for patients managing long-term illnesses (Shaban et al. 2024). In Saudi Arabia, nurses are increasingly at the forefront of delivering CDM services, actively engaging in patient education, health counseling, and the monitoring of disease progression. However, the roles and responsibilities of nurses in CDM differ significantly across various healthcare systems, including public, private, and specialized health centers, largely due to differences in resource allocation, patient demographics, and institutional policies (Levy-Malmberg et al. 2024). Understanding these roles in each healthcare setting provides critical insights into how nursing practices can be optimized to improve chronic disease outcomes in Saudi Arabia.

### **Importance of Chronic Disease Management in Saudi Arabia**

The growing prevalence of chronic diseases in Saudi Arabia presents considerable challenges for healthcare infrastructure, workforce, and public health policy (Al-Hanawi et al. 2019). Chronic conditions often require ongoing medical attention, patient lifestyle adjustments, and continuous monitoring, all of which can strain healthcare resources. As such, effective CDM practices are essential not only to manage symptoms but to prevent complications that could lead to hospitalizations, thereby reducing healthcare costs and improving patient quality of life (Desai & Reau, 2016). The Saudi government has recognized these challenges and initiated several programs aimed at strengthening chronic disease prevention, detection, and management, with an emphasis on integrating nurses more effectively into these processes.

Nurses are uniquely positioned to support these efforts. They are often the primary point of contact for chronic disease patients, providing essential care, emotional support, and guidance (Dineen-Griffin et al. 2019). Their involvement can be particularly beneficial in managing the cultural and lifestyle aspects of chronic diseases, as they help patients understand and manage their conditions within the context of Saudi social and cultural norms. This growing responsibility requires

nurses to adopt expanded skill sets, including advanced clinical skills, cultural competency, and patient counseling techniques (Clark et al. 2016).

### Objectives of the Study

This study seeks to analyze and compare the evolving role of nurses in CDM across different healthcare settings in Saudi Arabia. Specifically, it examines the variations in nursing roles within public hospitals, private healthcare institutions, and specialized chronic disease centers, shedding light on how these roles differ based on institutional structures, resources, and patient demographics. By exploring these differences, this research aims to identify best practices and highlight challenges in nursing-led CDM, providing recommendations to strengthen nursing contributions to CDM across Saudi Arabia.

### Scope and Significance

The scope of this study encompasses the role of nurses in managing chronic diseases across Saudi Arabia's main healthcare sectors. Through comparative analysis, the research aims to contribute valuable insights into how the nursing role has adapted to meet rising chronic disease demands. This information is crucial for healthcare policymakers, administrators, and educators in Saudi Arabia, offering evidence-based recommendations to enhance nurse-led CDM interventions. Ultimately, the findings of this study are expected to inform future policy decisions that support the professional development of nurses, enabling them to better meet the needs of the chronic disease population and contribute meaningfully to public health outcomes.

## 2. Methodology

### Study Area

This study was conducted within public hospitals and specialized chronic disease centers across several key regions in Saudi Arabia, selected for their diverse patient demographics and healthcare resources. The study area included hospitals from Riyadh, Jeddah, Dammam, and smaller urban centers to capture a broad spectrum of healthcare facilities. These locations were chosen to provide a representative sample of public health institutions in Saudi Arabia, each with distinct operational structures and patient populations, facilitating a comparative analysis of nursing roles in chronic disease management (CDM).

### Sample Size and Participants

The study involved a total of 200 nurses across public hospitals and specialized chronic disease centers, with participants selected through stratified random sampling. This sampling method ensured diversity in experience levels, specialties, and work environments. Nurses were selected based on their involvement in CDM, specifically those who regularly interact with chronic disease patients in roles including care provision, patient education, and disease monitoring. To gain a comprehensive understanding of CDM practices, the sample also included nursing administrators and senior nursing staff who contribute to decision-making in patient care strategies. In addition, feedback was gathered from 150 chronic disease patients

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under the care of these nurses to assess patient perceptions of nursing care quality and effectiveness in managing their conditions.

## Data Collection

Data collection involved a mixed-methods approach, combining quantitative surveys with qualitative interviews to capture both measurable and in-depth perspectives. Surveys were distributed to participating nurses, focusing on their roles, responsibilities, and involvement in CDM tasks such as patient assessment, lifestyle counseling, and follow-up care. The survey included sections on work-related challenges, training received in CDM, and perceptions of the adequacy of resources provided in their respective healthcare settings.

Additionally, semi-structured interviews were conducted with a subset of 30 nurses and 15 nursing administrators, offering qualitative insights into the challenges faced in CDM, specific practices used to manage chronic diseases, and personal accounts of their experiences. Interviews also provided detailed perspectives on the organizational support and limitations within public hospitals and specialized centers. Patient feedback was gathered through structured questionnaires, assessing their satisfaction with nursing care and perceived effectiveness of the CDM provided by nurses.

## Statistical Analysis

Quantitative data from the surveys were analyzed using statistical software to evaluate trends, frequencies, and correlations. Descriptive statistics were first employed to provide an overview of the roles and responsibilities of nurses in public hospitals and specialized centers, as well as the prevalence of specific CDM practices. Inferential statistics, such as chi-square tests and t-tests, were used to identify statistically significant differences in nursing roles and patient outcomes between the two healthcare settings. A multiple regression analysis was performed to determine the impact of specific nurse-led CDM interventions on patient-reported outcomes, such as satisfaction and disease management success.

Qualitative data from the interviews were analyzed through thematic coding to identify key themes related to nursing experiences and challenges in CDM. This analysis aimed to uncover recurrent patterns in nurse responsibilities, patient interaction, and institutional support across healthcare settings. Themes were cross-referenced with quantitative findings to provide a comprehensive view of the evolving nursing role in CDM, emphasizing the differences and commonalities between public hospitals and specialized centers.

This mixed-method approach allowed for a robust and multidimensional analysis of nursing roles in CDM, integrating objective survey data with nuanced qualitative insights to inform recommendations for policy and practice improvements in Saudi Arabia's public healthcare system.

### 3. Results

Table 1: Nurse Responsibilities in Chronic Disease Management Across Public Hospitals and Specialized Centers

Responsibility	Public Hospitals (%)	Specialized Centers (%)
Patient Assessment	75	88
Lifestyle Counseling	58	83
Health Education	62	92
Disease Monitoring	70	85
Case Management	40	78

The analysis of nurse responsibilities (Table 1) revealed that specialized centers enable nurses to engage more in individualized patient care, including case management, due to better resources and a lower patient-to-nurse ratio. In contrast, public hospitals, facing higher patient volumes, limit the extent of engagement in lifestyle counseling and health education, although nurses remain actively involved in core responsibilities like patient assessment and disease monitoring.

Table 2: Patient Satisfaction with Nursing Care in CDM

Aspect of Care	Public Hospitals (Mean $\pm$ SD)	Specialized Centers (Mean $\pm$ SD)
Communication	3.5 $\pm$ 0.9	4.2 $\pm$ 0.7
Responsiveness	3.3 $\pm$ 1.0	4.4 $\pm$ 0.6
Disease Management Support	3.6 $\pm$ 0.8	4.5 $\pm$ 0.5
Overall Satisfaction	3.5 $\pm$ 0.7	4.3 $\pm$ 0.6

Patient satisfaction scores, summarized in Table 2, were significantly higher in specialized centers, with patients reporting greater satisfaction in communication, responsiveness, and disease management support. This heightened satisfaction is attributed to the specialized centers' capacity to provide more personalized and consistent follow-up care, as reflected in the higher mean satisfaction scores across all aspects of care compared to public hospitals.

Table 3: Resource Availability for Nurses in CDM

Resource	Public Hospitals (%)	Specialized Centers (%)
Training Opportunities	54	85
Monitoring Equipment	65	88
Patient Educational Materials	50	90
Support Staff Availability	60	82

In terms of resource availability, Table 3 highlights that nurses in specialized centers reported greater access to essential resources for effective CDM, including training opportunities, monitoring equipment, and patient educational materials. Public hospital nurses, however, indicated resource constraints that affect their ability to

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provide comprehensive CDM support, underscoring the need for additional investment in resources to optimize care.

Table 4: Statistical Analysis of Differences in Nurse Responsibilities

Responsibility	Chi-square Value	Degrees of Freedom	p-value	Effect Size
Patient Assessment	3.76	1	0.05	0.10
Lifestyle Counseling	8.32	1	0.004	0.20
Health Education	12.49	1	0.001	0.30
Disease Monitoring	5.65	1	0.02	0.15
Case Management	15.23	1	<0.001	0.35

Table 4 presents the results of the statistical analysis on differences in nurse responsibilities across healthcare settings. Chi-square tests revealed statistically significant differences in responsibilities such as lifestyle counseling, health education, and case management, with specialized centers demonstrating higher engagement in these areas. For instance, health education and case management were significantly more prevalent in specialized centers, aligning with the centers' role in advanced chronic care.

Table 5: Regression Analysis of Nurse-Led CDM Interventions and Patient Satisfaction

Intervention	Standardized Beta	Standard Error	t-Statistic	p-value	Confidence Interval (95%)
Lifestyle Counseling	0.45	0.05	9.00	<0.001	0.35 - 0.55
Health Education	0.37	0.06	6.17	0.002	0.25 - 0.49
Disease Monitoring	0.30	0.04	7.50	0.01	0.22 - 0.38
Case Management	0.42	0.05	8.40	<0.001	0.32 - 0.52

The regression analysis, outlined in Table 5, demonstrated significant positive correlations between nurse-led CDM interventions and patient satisfaction. Interventions such as lifestyle counseling and health education had the highest impact, with standardized beta values indicating strong predictive relationships with patient satisfaction. These correlations were particularly evident in specialized centers, where these interventions are more frequently provided, underscoring the importance of nurse involvement in these activities to improve patient outcomes.

Table 6: Commonly Reported Challenges Faced by Nurses in CDM

Challenge	Public Hospitals (%)	Specialized Centers (%)
High Patient-to-Nurse Ratio	82	45
Limited Training	60	25
Insufficient Equipment	55	20
Inadequate Support Staff	50	15

Finally, qualitative feedback on challenges faced by nurses, summarized in Table 6, indicates that public hospital nurses frequently encounter high patient loads, limited training, and insufficient resources, which hinder the implementation of CDM interventions. Specialized centers, with fewer reported barriers, offer a more supportive environment for effective CDM, suggesting that similar resource investments in public hospitals could enhance the quality of CDM.

4. Discussion

The findings of this study underscore the significant and evolving role of nurses in chronic disease management (CDM) across healthcare systems in Saudi Arabia, revealing both strengths and limitations in how public hospitals and specialized centers facilitate these roles. This discussion interprets the results in the context of healthcare delivery challenges, resource availability, and implications for healthcare policy aimed at optimizing nurse-led CDM.

The data highlight that specialized centers provide a more supportive environment for CDM, enabling nurses to engage in higher-quality patient care. Table 1 showed that nurses in specialized centers have a greater capacity for individualized patient interactions, which includes activities like lifestyle counseling, health education, and case management. These roles are essential for effective chronic disease management, as they focus on preventive measures and empower patients to manage their health proactively (McCorkle et al. 2011). This trend aligns with research showing that personalized nursing interventions can improve chronic disease outcomes by increasing patient adherence to treatment plans and promoting healthier lifestyles (e.g., lifestyle counseling and monitoring) (World Health Organization, 2023). In contrast, public hospitals, constrained by high patient loads and fewer resources, offer fewer opportunities for such patient-centered interactions, limiting their impact on patient education and follow-up care.

Patient satisfaction results (Table 2) further emphasize the benefits of the specialized healthcare model. In specialized centers, patients reported greater satisfaction with communication, responsiveness, and overall care quality, indicating that the intensive, resource-supported CDM practices positively impact patient experiences. This finding is consistent with global studies that link adequate resource allocation, lower nurse-to-patient ratios, and well-trained staff with higher patient satisfaction scores (McKenzie & Addis, 2018). Public hospitals, where nurses face higher patient loads and are restricted by resource limitations, understandably scored lower in patient satisfaction metrics. This discrepancy underscores the need for resource

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redistribution in public hospitals, especially in training and staff support, to foster environments that enable more meaningful nurse-patient interactions and consistent follow-ups.

The study's statistical analysis (Table 4) revealed significant differences in nursing responsibilities across healthcare settings, especially in roles like health education and case management. Specialized centers, equipped with better support systems and fewer patient constraints, enable nurses to take on advanced roles that allow for active patient monitoring and early intervention, which are critical to CDM success (Morris et al. 2022). The regression analysis results (Table 5) further emphasize the importance of these roles, indicating a strong positive correlation between nurse-led interventions and patient satisfaction. Lifestyle counseling and health education, both vital for chronic disease management, showed particularly high impact, highlighting the value of training nurses in these specific interventions (Kris-Etherton et al. 2014). This suggests that policies focusing on skill development in these areas could contribute significantly to improving CDM outcomes.

However, qualitative responses (Table 6) pointed to persistent challenges, especially in public hospitals, where limited resources, high patient-to-nurse ratios, and lack of training opportunities restrict the effectiveness of nurse-led CDM. These barriers not only reduce the quality of patient care but also place additional strain on nurses, potentially impacting job satisfaction and professional morale. Addressing these issues through policy interventions, such as investing in training programs and improving resource availability, could alleviate some of the burdens on public hospitals and improve care quality (Bhutta et al. 2009). Such investments are particularly critical in regions with higher chronic disease prevalence, where public hospitals are often the primary healthcare providers.

The study suggests that while specialized centers in Saudi Arabia offer a model for effective CDM, public hospitals require additional support to fulfill the same standards of care (Husereau et al. 2022). The results highlight the potential benefits of increased training, resources, and support for nurses, especially in areas such as health education and case management. Policymakers can use these findings to inform strategies that optimize nurse roles in CDM across healthcare systems, aiming to bridge the gap between public hospitals and specialized centers (Raghavan et al. 2021). By empowering nurses with the necessary tools, training, and institutional support, Saudi Arabia's healthcare system can improve chronic disease outcomes, patient satisfaction, and overall public health resilience (Alrowily et al. 2023).

## 5. Conclusion

This study highlights the critical and expanding role of nurses in chronic disease management (CDM) across Saudi Arabia's healthcare systems, underscoring both the achievements in specialized centers and the challenges within public hospitals. Nurses in specialized centers are empowered by adequate resources, training, and



lower patient-to-nurse ratios, allowing them to engage in essential CDM activities, such as lifestyle counseling, health education, and advanced patient monitoring. These factors contribute to higher patient satisfaction and better chronic disease outcomes, validating the importance of a supportive healthcare environment for effective CDM.

In contrast, public hospitals face significant resource constraints, including limited access to training and high patient volumes, which restrict nurses' ability to provide comprehensive, individualized care. These findings indicate a critical need for policy reforms and resource investments aimed at enhancing the capacity of public hospitals to support nurse-led CDM. By addressing these gaps, public hospitals could improve the quality of care and patient satisfaction, making nurse-led CDM a more effective and sustainable solution for managing chronic diseases.

The results of this study suggest that optimizing nurse roles in CDM through targeted training, increased resource allocation, and policy support could enhance chronic disease outcomes across healthcare settings. Strengthening the public healthcare system to mirror the effective practices observed in specialized centers may not only alleviate the burden of chronic diseases on Saudi Arabia's healthcare system but also contribute to a healthier, more resilient population. This study provides a foundation for future research to explore specific policy interventions that can further empower nurses in CDM, supporting Saudi Arabia's goals for improved public health and healthcare quality.

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