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The Role of Nurse Engagement and Change Management in Improving Patient Outcomes: Evidence from Riyadh Health Clusters

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ABSTRACT

Introduction: Riyadh's healthcare reforms under Vision 2030 emphasize patient outcomes as key quality indicators. This study examines the underexplored interplay between nurse engagement and change management in shaping healthcare performance within Riyadh Health Clusters.
Objective: This study aimed to examine the impact of nurse engagement and change management on patient outcomes within Riyadh Health Clusters.
Methods: A quantitative research design was employed, involving 384 healthcare professionals from three clusters. Nurse engagement and change management were analyzed as independent variables, while patient outcomes served as the dependent variable. Data were processed using linear regression analysis in SPSS with a 5% significance threshold.
Results: The findings demonstrated that nurse engagement strongly predicted patient outcomes ($R = 0.72$; $R^2 = 0.71$; $\beta = 0.64$; $p < 0.05$), showing that higher engagement levels significantly improved care quality. Change management practices also had a positive but more moderate effect on patient outcomes ($R = 0.47$; $R^2 = 0.22$; $\beta = 0.45$; $p < 0.05$).
Conclusion: This study demonstrates that nurse engagement is a strong predictor of patient outcomes, while change management also contributes positively, though to a lesser extent. The findings emphasize that investing in strategies to enhance nurse engagement, such as professional development, participatory decision-making, and supportive leadership, is critical to improving the quality of care. At the same time, structured change management remains essential to sustain organizational adaptation and innovation in healthcare delivery. Together, these insights highlight the importance of integrating workforce-centered initiatives with system-level reforms to strengthen patient-centered outcomes within Riyadh Health Clusters and beyond.

Keywords: change management, healthcare transformation, nurse engagement, patient outcomes

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Introduction

The healthcare system in Riyadh, Saudi Arabia, is undergoing transformative reforms under Vision 2030, with health clusters serving as a cornerstone of this modernization. These clusters organize hospitals and facilities into integrated networks to enhance care coordination, accessibility, and quality, aligning with national goals to prioritize patient outcomes as a critical quality metric (Saeed et al., 2023). Patient outcomes encompassing recovery rates, mortality rates, and satisfaction levels which are central to evaluating system effectiveness. Recent Ministry of Health reports highlight progress, such as reduced hospital-acquired infections and shorter recovery times, yet persistent variability across clusters underscores challenges tied to resource distribution and workforce readiness (Almodhen & Moneir, 2023; Al-Hanawi et al., 2019).

Nursing care is pivotal to achieving patient outcomes, with nurses constituting a significant portion of Riyadh's clinical workforce. Their roles extend beyond technical care to include advocacy, education, and care coordination, all of which directly influence patient satisfaction and recovery (Aiken et al., 2014). Nurse engagement, conceptualized through frameworks like the Utrecht Work Engagement Scale (UWES), measures vigor, dedication, and absorption in professional roles (Schaufeli & Bakker, 2004). High engagement correlates with proactive behaviors, such as advocating for patient safety and participating in quality improvement initiatives.

Equally critical is change management, which enables healthcare systems to adapt to technological advancements, policy shifts, and evolving patient needs. Frameworks like Kotter's (2012) eight-step model emphasize strategic planning and stakeholder engagement to minimize disruptions during transitions, such as the adoption of electronic health records (EHRs) or telehealth platforms (Burnes, 2004). Globally, studies confirm that structured change management enhances innovation adoption, yet few explore its interplay with workforce engagement (Burnes, 2004).

The synergistic potential of nurse engagement and change management remains underexplored. Research indicates that engaged employees are more receptive to organizational changes, suggesting a bidirectional relationship (Bakker & Demerouti, 2007). For instance, studies have shown that nurses involved in co-designing workflows often report higher job satisfaction and better patient outcomes (Zhu et al., 2023). Such findings align with the Job Demands-Resources theory, which posits that engagement buffers against change-related stress (Bakker & Demerouti, 2007). However, no studies explicitly examine this synergy in Middle Eastern settings, leaving a critical gap.

Despite these advancements, Riyadh's healthcare system faces systemic challenges. Workforce burnout among nurses, exacerbated by high patient-to-nurse ratios and emotional strain, correlates with increased medical errors and diminished care quality (Maslach & Leiter, 2017). Resistance to change, particularly in shifting from paper-based to digital systems, further complicates progress. Hierarchical decision-making norms and limited training opportunities often hinder staff adaptability, slowing innovation adoption (Chowdhury & Shil, 2022). Additionally, variability in care protocols across clusters leads to inconsistent treatment quality, undermining standardization efforts (Berwick, 2003). These challenges highlight the need for holistic strategies that address workforce well-being and systemic agility.

Understanding the interplay between nurse engagement and change management is essential to inform policy and improve patient care. This study seeks to fill this gap by

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exploring how these factors interact within Riyadh's unique sociocultural and policy landscape, offering actionable insights for healthcare leaders and contributing to the global literature on healthcare management and quality improvement.

Objective

To investigate the effects of change management and nurse engagement on patient outcomes in Riyadh Health Clusters.

Method

Research Design

This study employs a quantitative research approach to investigate the synergistic effects of nurse engagement and change management on patient outcomes in Riyadh Health Clusters. A quantitative design was chosen to capture statistical trends and relationships between variables, allowing for generalizable insights that can inform policy and practice. This approach is particularly suitable for examining the hypotheses, as it enables the measurement of nurse engagement, change management practices, and patient outcomes using standardized instruments, ensuring objectivity and replicability. The study was conducted within the Riyadh Health Clusters, which serve as the primary setting due to their central role in Saudi Arabia's healthcare transformation under Vision 2030.

Population and Sampling Techniques

The target population for this study includes healthcare professionals working within the Riyadh Health Clusters, with a specific focus on nurses, administrators, and managers. The demographic data collected in the questionnaire (e.g., gender, age range, education level, role, years of experience, and cluster affiliation) provide a comprehensive profile of the participants. A stratified random sampling technique was used to ensure representation across different roles (e.g., nurses, administrators, physicians) and clusters (Riyadh First, Second, and Third Health Clusters). This approach enhances the generalizability of the findings by capturing diverse perspectives within the healthcare workforce.

The sample size was determined using a power analysis to ensure sufficient statistical power for detecting significant relationships between variables. Based on the demographic data, the sample included participants from various age groups (26–55 years), educational backgrounds (diploma to PhD/doctorate), and experience levels (1–7+ years). This diversity ensures that the findings reflect the realities of healthcare delivery across different contexts within the Riyadh Health Clusters.

Variables and Measurement Instruments

In this study, nurse engagement and change management are treated as independent variables, while patient outcomes serve as the dependent variable. The rationale behind this operationalization is grounded in the literature, which suggests that engaged nurses are more likely to adopt innovative practices and contribute to improved patient care, and that effective change management facilitates the smooth transition to new technologies and processes, thereby enhancing overall patient outcomes.

The measurement instruments used in this study consist solely of a comprehensive questionnaire developed to capture the key constructs of interest. The questionnaire is divided into several sections. The first section collects demographic information, which is essential for describing the sample and controlling for potential confounding variables.

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Subsequent sections include scales that measure change management, nurse engagement, and patient outcomes.

Data Analysis

The data were analyzed using Statistical Package for the Social Sciences (SPSS) version 27. Descriptive statistics, including means, standard deviations, and frequency distributions, were computed to provide an initial overview of the data. To test the research hypotheses specifically linear regression was used with 5% level of significance, indicating a 95% confidence level for accepting or rejecting the hypotheses.

Ethical Consideration

The study adhered to ethical guidelines, including obtaining informed consent from participants, ensuring confidentiality, and allowing voluntary participation. Participants were informed of their right to withdraw at any stage without penalty.

Result

Sociodemographic of the participants

Table 1. Descriptive Analysis of Respondents Demographic Data

Variable	Category	Frequency	Percentage
Gender	Male	280	72.91%
	Female	104	27.09%
Age Range	26-35	344	89.66%
	36-45	34	8.87%
	46 or greater	6	1.48%
Highest Education Level	Bachelor's degree	257	67.00%
	Master's degree	106	27.59%
	PhD/Doctorate	11	2.96%
	Diploma	10	2.46%
Main Role	Nurse	325	84.73%
	Physician	23	5.91%
	Administration/ Leader	30	7.88%
	Technical	6	1.48%
Years of Experience	1 year	15	3.94%
	2-3 years	117	30.54%
	4-5 years	204	53.20%
	6-7 years	47	12.32%
Health Cluster	Riyadh First Health Cluster	153	39.90%
	Riyadh second Health Cluster	136	35.47%
	Riyadh third Health Cluster	95	24.63%

The frequency table provides a detailed breakdown of the demographic characteristics of the respondents in the dataset. The majority of respondents are male (72.91%), with females making up 27.09% of the sample. In terms of age, the largest group falls within the

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26-35 age range (89.66%), followed by those aged 36-45 (8.87%), and a small percentage of respondents aged 46 or older (1.48%).

Regarding education, most respondents hold a Bachelor's degree (67.00%), while 27.59% have a Master's degree, and a smaller proportion hold a PhD/Doctorate (2.96%) or a Diploma (2.46%). The primary role in the workplace is predominantly Nurse (84.73%), with smaller percentages working as Physicians (5.91%), Administration/Leaders (7.88%), or in Technical roles (1.48%).

In terms of experience, the majority of respondents have 4-5 years of experience (53.20%), followed by those with 2-3 years (30.54%), 6-7 years (12.32%), and 1 year (3.94%). The respondents are distributed across three health clusters, with the largest group belonging to the Riyadh First Health Cluster (39.90%), followed by the Riyadh second Health Cluster (35.47%), and the Riyadh third Health Cluster (24.63%). The data reflects a predominantly young male workforce with a strong representation of nurses and individuals holding Bachelor's degrees, primarily working in the Riyadh First and second Health Clusters.

Test of Hypotheses

Hypothesis 1

Nurse engagement has a positive impact on patient outcomes in Riyadh health clusters.

Table 2. Linear Regression Results: Impact of Nurse Engagement on Patient Outcomes

Variables	R	R^2	F	Sig	Beta	T	Sig
Constant	0.72	0. 71	163.8	<0.05			
Nurse Engagement					0.64	12.80	<0.05

Predictors: (Constant): Nurse engagemnet
Dependent variable: Employee Empowerment

From the table above, the results indicate that nurse engagement has a significant positive influence on patient outcomes in Riyadh health clusters ($R = 0.72$; $R^2 = 0.71$; $F = 163.8$; $p < 0.05$). The standardized beta coefficient ($\beta = 0.64$; $T = 12.80$; $p < 0.05$) suggests that for every 1-unit increase in nurse engagement, patient outcomes improve by 0.64 units, accounting for 71% of the variance explained by the model. The hypothesis is therefore accepted, confirming that higher nurse engagement significantly enhances patient outcomes in this context.

Hypothesis 2

Change management has a positive impact on patient outcomes in Riyadh health clusters.

Table 3. Linear Regression Results: Impact of Change Management on Patient Outcomes

Variables	R	R^2	F	Sig	Beta	T	Sig
Constant	0.47	0.22	35.6	<0.05			
Change Management					0.45	5.97	<0.05

Predictors: (Constant): Change Management
Dependent variable: Patient Satisfaction

From the table above, the results indicate that change management has a statistically significant positive influence on patient outcomes in Riyadh health clusters ($R = 0.47$; $R^2 = 0.22$; $F = 35.6$; $p < 0.05$). The standardized beta coefficient ($\beta = 0.45$; $T = 5.97$; $p < 0.05$) suggests that for every 1-unit increase in change management practices, patient outcomes improve by 0.45 units. The model explains 22% of the variance in patient outcomes. The hypothesis is therefore accepted, confirming that effective change management positively impacts patient care quality in this context.

Discussion

This study examined the effects of nurse engagement and change management on patient outcomes within Riyadh Health Clusters, a focal point of Saudi Arabia's Vision 2030 healthcare reforms. The results confirm that both factors significantly influence care quality, yet their relative contributions differ, reflecting the unique sociocultural and structural dynamics of the Saudi context. The strong association between nurse engagement and patient outcomes reinforces global findings, such as those of Aiken et al. (2014), which demonstrate links between engagement, reduced mortality, and enhanced safety. Notably, the explained variance in this study ($R^2 = 0.71$) surpasses that of many Western studies, likely reflecting the reform-driven environment in Riyadh, where nurses represent a substantial proportion of the workforce and play an increasingly central role in care coordination.

Change management also emerged as a significant factor, consistent with established frameworks such as Kotter's (2012) eight-step model and related studies on organizational transformation. However, its effect was more modest ($R^2 = 0.22$), suggesting that hierarchical decision-making norms and cultural dynamics may constrain the full impact of structured change processes in this setting (Burnes, 2004). The limited scope of change initiatives, focusing on isolated practices rather than integrated empowerment strategies, may further reduce their potential. A key contribution of this study lies in its exploration of the interaction between nurse engagement and change management. Consistent with the Job Demands-Resources framework (Bakker & Demerouti, 2007), the findings indicate that engaged nurses are more receptive to reforms, though this synergy can be weakened by top-down governance structures that restrict frontline participation.

The regression analysis underscores that nurse engagement is the stronger predictor of patient outcomes, with engaged nurses more actively contributing to clinical decision-making, patient advocacy, and quality improvement initiatives. This aligns with prior evidence that empowerment and involvement in practice directly enhance patient recovery, satisfaction, and overall care quality (Aiken et al., 2014). By contrast, the more moderate contribution of change management highlights its role as a necessary framework for systemic adaptation rather than a direct driver of care quality. These findings emphasize that organizational reforms must not only implement change strategies but also cultivate frontline ownership and engagement to achieve meaningful improvements in outcomes (Kotter, 2012).

Despite its contributions, this study has limitations. The exclusive focus on nurse engagement and change management, while illuminating, does not capture other relevant determinants of patient outcomes, such as leadership styles, organizational culture, or technological readiness. The reliance on data from a limited number of clusters in Riyadh may also restrict generalizability to other regions or healthcare systems. Future studies employing longitudinal or mixed-methods approaches could provide deeper insights into how structural, cultural, and technological variables interact with engagement and change practices.

Conclusion

This study underscores the critical role of nurse engagement in shaping patient outcomes within Riyadh Health Clusters, while also recognizing the complementary but more modest role of change management. For policymakers and healthcare leaders, these findings highlight the need to prioritize strategies that empower and involve nurses in decision-making, supported by structured organizational change processes. A balanced approach that integrates workforce engagement with systemic reforms can create a more resilient and patient-centered healthcare system, advancing the goals of Saudi Arabia's Vision 2030.

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Authors' contribution

Each author contributed equally in all the parts of the research. All authors have critically reviewed and approved the final draft and are responsible for the content and similarity index of the manuscript.

Conflict of interest

The researchers stated that there is no conflict of interest related to the implementation and publication of the results of this research. The entire research process, from planning, data collection, analysis, to report preparation, was carried out independently without any influence or pressure from any third party. A commitment to research ethics is upheld throughout the research process, ensuring transparency, accuracy and honesty in reporting results. Respondents' participation was voluntary with informed consent, and their confidentiality and privacy were maintained in accordance with applicable research ethics standards. With this statement, researchers hope that the research results can be trusted and used as a valid reference for the development of science and health practices related to ethnomedicine and reproductive health.

Ethical consideration

Not applicable.

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