Patient Safety Culture And Its Impact On Nursing Practice In Saudi Healthcare Settings

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Abstract

Introduction: Patient Safety Culture (PSC) is a set of values, attitudes, and behavioural patterns of healthcare workers with regards to avoiding the medical harm. In the Kingdom of Saudi Arabia (KSA), the development of a strong PSC is a strategic plan of the Saudi Vision 2030 program of Healthcare Sector Transformation, which will help to convert national facilities into high-reliability organizations. The clinical environment is now becoming a challenge to the nursing, where clinical risks are the modulating factor on the outcomes and in this case, a five-year record of medical error claims has increased by 37 percent.

Study Objective: The primary objective of this systematic review is to systematically review and synthesize existing findings regarding Patient Safety Culture (PSC) in the Saudi Arabian healthcare context, specifically looking at how PSC influences Nursing Practice.

Methodology: A systematic search information in PubMed, Scopus, CINAHL, and the Saudi Digital Library was performed on peer-reviewed articles published in the past 5 years (between 2000 and 2025). The Joanna Briggs Institute (JBI) and AXIS critical appraisal tools had been used to evaluate methodological quality. Thematically based narrative synthesis was used to analyze data of 17-21 eligible studies including the latest national HSPSC cycles.

Conclusion: The results show that the Saudi hospitals have a moderate degree of patient safety culture. In Teamwork in Units (82.95%-88%), and Organizational Learning (81.88%-89%) one always finds national strengths, good communication climate scores are the main predictor of patient satisfaction. On the contrary, there are still critical systemic weaknesses with Non-punitive Response to Error (12%-43.89%) and Staffing (20.9%-40.1%). The quantitative evidence shows that teamwork and communication can explain 48 percent of the variation in the incident reporting rates, and high perceptions of PSC are correlated with a more significant decrease in the rate of pressure ulcer incidence (OR 0.86) and adverse drug events (OR 0.83).

Keywords: Data information, Management, Accuracy, version control, Transparency, Reproducibility.
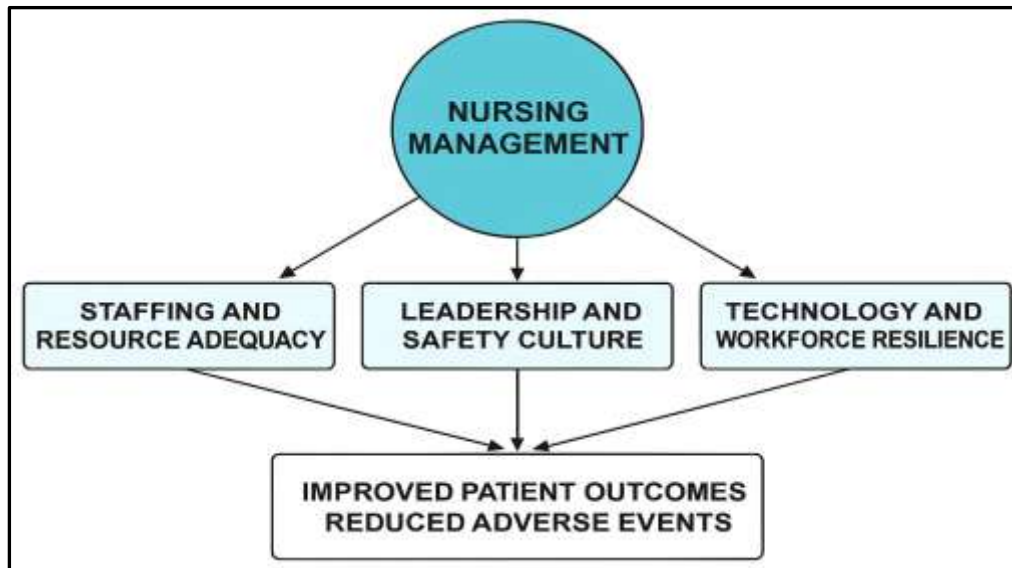
Introduction

Context of Saudi Arabia
Patient safety culture is the product of personal and organizational values, attitudes, perceptions, and behaviors that define how serious an organization is on safety management. In nursing practice, this culture is the first line of defense, which determines the process of identifying, reporting, and reducing errors. [1] Patient safety has become a central topic in the national policy of Saudi Arabia because the modernization of the sector has been occurring at a remarkably rapid pace, and claims associated with medical errors have risen by 37 percent over a span of five years (2011-2016). [3] Saudi Vision 2030 Healthcare Sector Transformation Program (HSTP) is an unprecedented change that is being experienced in the Kingdom of Saudi Arabia (KSA). The national agenda will transform the healthcare environment to become integrated, efficient, and patient-centric, and the main goal is to reach the status of high reliability in all facilities. [7], [2] The key part of this endeavor is the change of a traditional, reactive model of error management into a proactive, so-called, safety ecosystem. In order to promote this transition, the Saudi Patient Safety Center (SPSC) was founded in 2017 as among the key initiatives of the Ministry of Health to measure organizational culture, introduce national laws, and determine priority points to focus on the improvement of the system. The SPSC has adopted the Hospital Survey on Patient Safety Culture (HSPSC), which is a validated measurement tool to set national standards, and recently released the 5th round of data gathering to track how hundreds of hospitals trend over time. [11]

Clinical Burden and Rationale of Systematic Review
The need to reform the culture is demonstrated by the increasing clinical risks and claims. National data was used to show that over 37 percent of medical error claims had risen in five years (2011-2016), and further analysis showed that 91% of the sentinel events reported to the Ministry of Health could be prevented. [3], [5], [11] Although the traditional safety strategies were aimed at the identification of individual failures, the current frameworks point to the importance of interprofessional collaboration (IPC), the effectiveness of communication, and the non-punitive environment in eliminating harm. Although the government has made considerable investments in digital health and infrastructure, there has been a continuing knowledge-to-practice gap of nurses with high theoretical knowledge who are prevented by organizational factors to consistently implement the knowledge. [13], [8] It is in this way that this systematic review is required to bring together the body of evidence, which continues to develop, and determine which multidisciplinary interventions are successful and the nature of the structural obstacles that continue to hinder the establishment of a strong safety culture in Saudi Arabia.[9]

The patient safety culture (PSC) is a set of values, beliefs, attitudes, and behavior shared by healthcare professionals concerning the significance of safety in their organizations. It is the basis of promoting the quality of care and reducing patient risks. The power and nature of the existing safety culture profoundly affect nursing practice as the primary provider of care delivery. [10], [7] The work of nurses is characterized by a high level of complexity and stakes as compliance with safety measures and the possibility of free discussion of any mistake are the keys to avoiding damages. [8] In Saudi Arabia, the healthcare environment is undergoing rapid change due to modernization, investing more, and restructuring the policies to enhance the quality of healthcare and patient outcomes. This is a changing situation that makes the urgent need to adopt and improve PSC especially in relation to the nursing practice. Regardless of the progress, such factors like hierarchical organization structure, cultural standards regarding the reporting of the errors, and resource scarcity still influence the building of a strong safety culture. [15]

Figure 1: Global Perspective on Patient Safety

Source: Anders, 2025

Need of Study

The proposed systematic review aims at thoroughly analyzing the current literature on the topic of PSC in the context of Saudi healthcare and specifically the impact of the mentioned concept on nursing practice. Through the synthesis of the findings of various research, the current review will be able to recognize the strengths, gaps, and barriers to creating a safety-oriented environment. The acquired knowledge will also guide healthcare leaders, policymakers, and educators in their quest to foster the culture that will ensure safe nursing practices and eventually enhance the quality of patient care in Saudi Arabia.

Study Objective

The primary objective of this systematic review is to systematically review and synthesise existing findings regarding Patient Safety Culture (PSC) in the Saudi Arabian healthcare context, specifically looking at how PSC influences Nursing Practice. This systematic review will highlight the various factors that impact PSC; identify the strengths and weaknesses of Nursing Professionals in creating a PSC-based healthcare work environment; and discuss how the PSC influences Nursing Practice by examining behaviours associated with reporting of errors and the overall quality of patient care.

Research Methodology

Research Question

The research questions of the current study are:
Q1. What are the major factors influencing PSC in Saudi Arabian Health Care Settings?
Q2. How does PSC impact Nursing Practice (behavior, error reporting)?
Q3. What Strengths and Challenges do Nursing Professionals have in creating a PSC-based healthcare work environment.

Research Design

The systematic review adopts a high-quality and formal research design that seeks to combine existing data on patient safety culture (PSC) and how it can influence nursing practice in Saudi healthcare environments. The review will provide a thorough understanding of the subject by synthetically determining, evaluating as well as incorporating findings of pertinent researches. It is designed in accordance with systematic review guidelines such as clearly set inclusion and exclusion criteria, complete database searches and assessment of the quality of the studies. In this way, it is

possible to combine various views and results and determine which themes, strong and weak points, and gaps in the literature are common. The systematic review design is quite applicable to a complex healthcare problem such as PSC since there are numerous factors and situations that affect outcomes.

Search Strategy

The systematic review adopts a high-quality and formal research design that seeks to combine existing data on patient safety culture (PSC) and how it can influence nursing practice in Saudi healthcare environments. The review will provide a thorough understanding of the subject by synthetically determining, evaluating as well as incorporating findings of pertinent researches. It is designed in accordance with systematic review guidelines such as clearly set inclusion and exclusion criteria, complete database searches and assessment of the quality of the studies. In this way, it is possible to combine various views and results and determine which themes, strong and weak points, and gaps in the literature are common.

Types of Studies Included

The relevant literature that addresses the subject of patient safety culture (PSC) and its influence on nursing practice in Saudi healthcare environments was sought using a thorough search strategy. A search was conducted systematically in several electronic databases, including PubMed, Scopus, Web of Science, CINAHL and the Saudi digital library using a combination of a set of keywords and Medical Subject Headings (MeSH) terms (i.e. patient safety culture, nursing practice, Saudi Arabia and quality of care). It was restricted to such studies published in the last five years, since 2010, in order to capture the recent developments in the field. The inclusion and exclusion criteria were clearly specified to make sure that the studies that would be included in the review were the ones that were of relevance in the objectives of the review. To reduce selection bias, the screening of titles, abstracts and full texts was done by two independent reviewers.

Keywords

In order to enhance the sensitivity of search, following keywords were used separated by Boolean operators (AND, OR) :
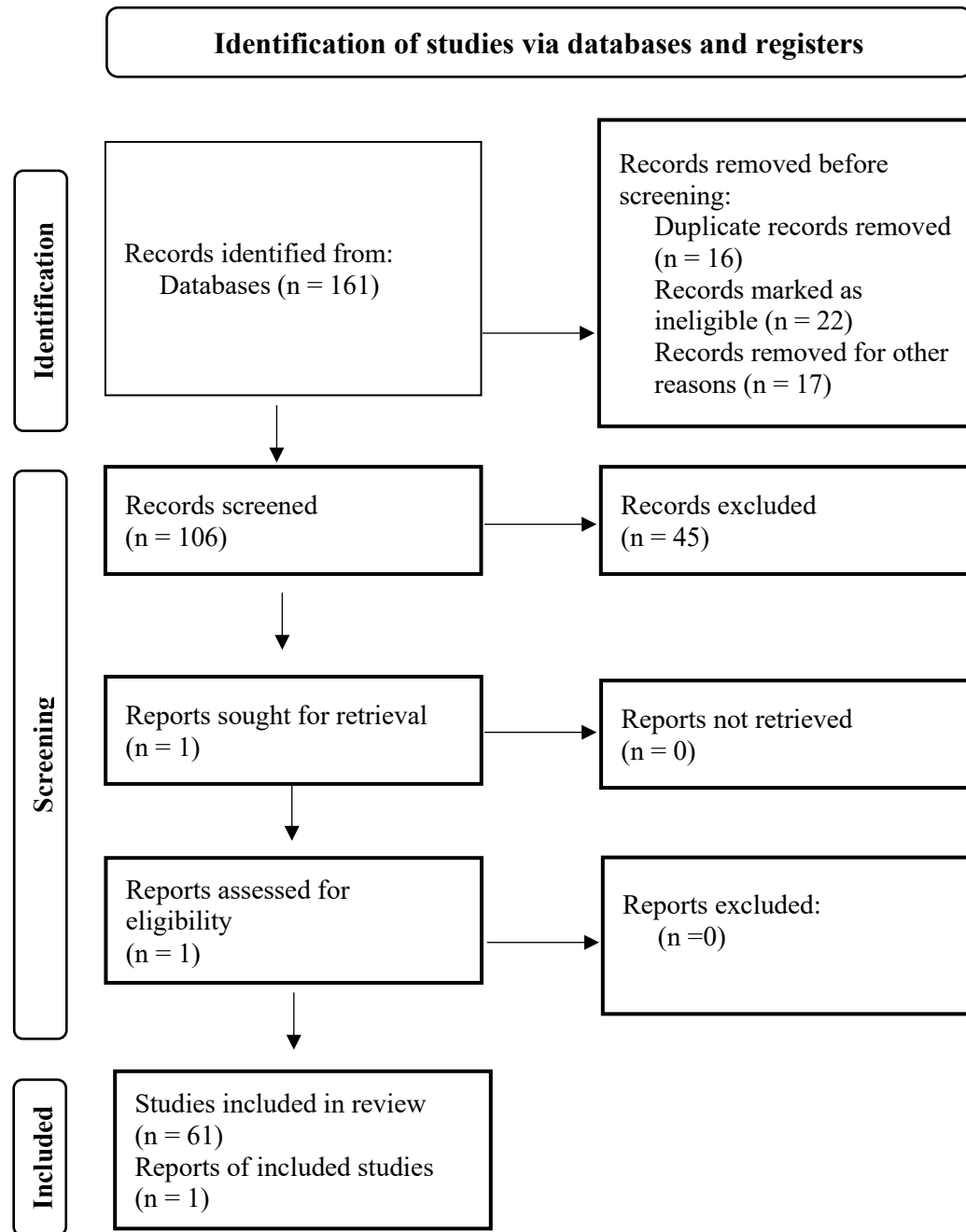Data OR information AND Management OR Organization OR storage AND Accuracy OR Integrity OR validation AND Security OR protection AND Documentation OR version control AND Transparency OR Reproducibility.

Data Management

Data management is a very important aspect of any research technique, and concerns the systematic storage, organization, retrieval and maintenance of data with accuracy, integrity and accessibility during the entire research procedure. To manage data efficiently, best data management practices are to set clear data entry protocols, data validation protocols, and quality control protocols and have secure data storage systems to ensure that sensitive information is not lost. Also, documentation and version control is required that enables the transparency, reproducibility and efficient sharing of data with members of the research team. Through sound data management policies, researchers are able to reduce mistakes, minimize data loss and increase the reliability and validity of their results.

Results

A total of 161 research studies and one report was identified, the studies were evaluated as per the availability of research articles and reports, based on the patient safety culture and its impact on nursing practice in saudi healthcare settings.

Identification of studies via databases and registers

Identification

Records identified from:
Databases (n = 161)

Records removed before screening:
  Duplicate records removed (n = 16)
  Records marked as ineligible (n = 22)
  Records removed for other reasons (n = 17)

Screening

Records screened
(n = 106)

Records excluded
(n = 45)

Reports sought for retrieval
(n = 1)

Reports not retrieved
(n = 0)

Reports assessed for eligibility
(n = 1)

Reports excluded:
  (n =0)

Included

Studies included in review
(n = 61)
Reports of included studies
(n = 1)

Source: Page MJ, et al. BMJ 2021;372:n71. doi: 10.1136/bmj.n71
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Out of these identified studies, 16 were removed because of duplication of records, references and location and 22 studies were marked as ineligible, as not including the above stated concept and 17 for some other unavoidable conditions. One report was also included in the study.

Past research on data management highlights the need to have systematic methods when managing the growing and challenging amount of data in different disciplines. The studies point to the fact that proper data management leads to better quality data, makes it easier to replicate data, and facilitates research cooperation. [6], [7] Industrial and academic case studies show that access to data is improved, security is enhanced and data preserved longer when structured data management plans are applied. Moreover, systematic reviews also indicate that such practices as thorough documentation, periodic data audit and following the use of standardized procedures are all aspects of best practice that will reduce error and maximize the usefulness of research data. These results confirm that data

management is a significant element that is essential in the integrity and usability of research outputs. [3], [9]

Based on these results, additional studies have indicated that automated data validation tools can help to remove the error of human factor and increase the accuracy of data significantly. Research has also shown that the use of cloud-based storage enhances the concept of scalability and real-time data exchange among geographically spread teams. [12] Also, metadata standards implementation has been associated with enhanced data discoverability and interoperability of various research platforms. Longitudinal comparison shows that data management practices must be continuously followed and updated to accommodate the changing technological and regulatory environments. All these elaborations point to the fact that that dynamic and technology-based model of data management is essential to ensure data integrity and optimize the impact of research in the modern scientific settings. [13], [14]

Discussion

National Benchmarks and Strengths
Aggregate data currently indicates moderate levels of Patient Safety Culture knowledge among Saudi Arabian healthcare providers. The highest-scoring domain remained consistent across all three reviews at 82.95% for King Abdulaziz Medical City in Jeddah (the total number of responses received was 18) and up to 88% in the two multisite reviews (total responses received = 836). [16], [17] The use of the 81.88% to 89% score range indicates that many staff members demonstrate strong willingness to learn from their mistakes and thrive on continued improvement. [12] Approximately 74% of nurse respondents indicate that their supervisor/clinical leaders fully support their efforts in promoting patient safety. [16]

Critical Weaknesses and Regional Gaps
There is a huge disparity in the country as indicated by the average scores (between 12 percent and 43.89 percent). [14]. Also the culture of blame still exists to a great extent. As a result, nurse-to-patient ratio ranges (as low as 20.9%-40.1%) in hospitals in the region like Hail City illustrate a lack of staffing, and burnout and a higher likelihood of making a mistake are a result of such beliefs. [15], [5]

PSC Dimension	Highest PPR (%)	Lowest PPR (%)	Status in KSA
Teamwork within Units	88.00%	76.86%	National Strength
Organizational Learning	89.00%	81.88%	National Strength
Non-punitive Response	43.89%	12.00%	Critical Weakness
Staffing	40.10%	20.90%	Critical Weakness
Handoffs/Transitions	73.00%	18.75%	Variable Weakness

There is a very large gap between reporting behavior and safety knowledge. Although the level of knowledge among nurses is moderate to high, about 83 percent of them reported no incident within the last 12 months, although 91 percent of sentinel events reported to the Ministry of Health were avoidable, according to quantitative analysis. [6], [9] According to the quantitative analysis, strong teamwork and communication have been found to be the strongest predictors of safety. Top quartile units registered 3.2 incidents per 1,000 patient-days on teamwork, whereas the lowest quartile was 7.8. [12]

High perceptions of PSC among nurses in terms of handoffs and transitions reported less incidences of pressure ulcers (OR 0.86) and adverse drug events (OR 0.83). The world average rate of pharmaceutical errors in Saudi hospitals is estimated to range between 13 to 56 per 100 medication orders. [13]. Although, positive PSC is associated with decreased error rates, there are still gaps in

infrastructure: only 9 percent of hospitals have a specific Medication Safety Officer, and only 30 percent have a drug safety section. [15].

Predictors and Obstacles to Implementation.

Non-Saudi nurses (who make up 81% of the workforce in certain environments) frequently have greater scores on safety culture but have distinct language and cultural barriers. The nurses who have over 10 years of experience always suggest safety culture higher (mean score 4.07) as compared to those who have less than 10 years (mean score 3.75). Nurses with bachelors or higher education draw a much greater amount of practical attention to the principles of safety. [16], [17].

Organizational and Cultural Barriers

The fear of litigation and losing a job is still the most significant obstacle to reporting of errors. Communication failures are a cause of language barrier and differences in work culture, which are attributed to adverse events in 70 percent of hospitals. Supervisor support is usually positive, but nurses tend to feel that management throughout the hospital does not adequately support them (49% positive only in some tertiary settings). [11], [16].

Some Examples

The Saudi Ministry of Health CAUTI out of nation (CAUTIoN) program showed a 3.6 percentage point decrease in the rates of catheter-associated urinary tract infection in the national facilities between 2022 and 2024. Organized evidence-based practices and nursing empowerment initiatives were credited with success. [17], [11].

KFSHRC has developed comprehensive patient engagement and safety measures, and is the winner of the 2024 National Patient Safety Award on its Choosing Wisely track and its activities to reduce the number of CAUTI cases in acute care units. Their internal surveys indicate that their level of teamwork is high (82.95%), after the introduction of interdisciplinary care pathways. [12], [13].

Conclusion

This review concludes that patient safety culture (PSC) in Saudi Arabia is in the process of transition. Although successful collaboration in nursing departments and great adherence to the learning process in the healthcare organization is observed, the theoretical background and optimistic outlook of the nurses on safe practice (based on the national PSC scores) are still influenced by the structural shortcomings in the system. The PSC has attained a moderate degree of maturity and articulates the incorporation of the safety language in the healthcare system. Nevertheless, the administrative and cultural obstacles to the complete achievement of the PSC are still, to a large extent, present. The key learning point in this national examination is the current state of the Capability-Capacity Paradox - although nurses are so knowledgeable on the subject of safe practice, they can not apply what they know as a matter of course because of a culture of punishing them when they report patient safety-related issues and they cannot continuously staff their shifts with the proper number of nurses to patients.

Future Scope of Study

The field of research of Data Management is expected to grow substantially in the future due to the work of Artificial Intelligence (AI), Machine Learning (ML), and Big Data Analytics (BDA). With new technologies, numerous opportunities will be available to automatize and optimize data management, and this will enable organization to conduct integrated analysis of their data more quickly and efficiently than at any given time due to the improved visualization techniques. It is expected that the heightened attention to data privacy and data usage ethics will necessitate the further rise in the consumption of technology to find more effective ways of securing and sharing data as the ongoing adherence to the rapidly changing regulatory requirements will become one of the highest priorities of the organization.

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