

## Assessing Safety Protocols and Practices in Healthcare Workplaces in Saudi Arabia: A Systematic Review of Current Evidence and Recommendations

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### Abstract

The healthcare sector in Saudi Arabia is undergoing significant transformations to meet ambitious health standards set forth by Saudi Vision 2030. This systematic review assesses current evidence on safety protocols and practices within healthcare workplaces, highlighting the critical need for an enhanced safety culture. A systematic literature search was conducted across multiple academic databases, yielding five relevant studies published between 2021 and 2024 that aligned with defined inclusion criteria. Key findings reveal strengths in organizational learning and communication while exposing challenges such as staffing issues, insufficient collaboration, and the need for non-punitive error management strategies. The review indicates that fostering a robust patient safety culture requires coordinated efforts at various organizational levels, focusing on continuous training, clear communication, and leadership commitment. Recommendations emphasize increasing staffing levels, implementing comprehensive training programs, promoting interprofessional collaboration, and tailoring safety initiatives to specific contexts. By addressing these areas, healthcare organizations can improve safety protocols, enhance staff well-being, and ultimately achieve better patient outcomes in Saudi Arabia's evolving health landscape.

### Introduction

Efforts to protect and promote workers' safety, health, and well-being have shifted toward integrating the complex and dynamic systems of the workplace and work environment (Sorensen et al., 2018). Working in health care has considerable health and safety risks (Bronkhorst, 2018). The establishment of an occupational safety culture remains a critical concern in many businesses, previous research, primarily done in the industrial sector, found various variables and predictors that promote an occupational safety culture (Wagner et al., 2020). Creating a good and productive workplace culture is crucial for achieving high-quality clinical and organizational outcomes (Braithwaite et al., 2017).

The basic model integrates management and worker behavior by emphasizing worker empowerment, adopting progressive labor practices, promoting health and safety as a personal and

organizational value, developing positive worker attitudes through behavior modification, and utilizing ergonomic and human factor analyses (Asumeng et al., 2015). Safety protocols influence how individuals operate in a variety of ways (Militello et al., 2023). They specify which personal protective equipment is required in specific scenarios, the order in which tasks must be completed, and which rooms are appropriate for particular operations (Militello et al., 2023).

Researchers have investigated how workplace safety, health, and well-being influence employee involvement, inspiration, and performance (Juba, 2024). Previous research has focused on the success of workplace safety, health, and wellness initiatives, however, it has not been investigated how such programs affect employee engagement and productivity (Juba, 2024).

Work is a key factor in determining health. It provides income and benefits, shapes life opportunities and resources for individual workers, families, and communities, and has the ability to boost well-being, resilience, and life satisfaction (Sorensen et al., 2021). Alternatively, working environments such as physical exposures, job expectations, and psychosocial experiences can cause or contribute to work-related injury and illness, as well as increase the risk of chronic disease and mental stress (Hudson et al., 2019).

Study by Waheeb et al. (2024) concluded that security and safety recommendations should be posted in visible areas for all employees. Workers should be told about all of the hazards associated with the profession in which they will work, and such issues should not be left unresolved. Some businesses are offering public safety training classes as a first step toward educating employees about various safety procedures, continuously supervise personnel to ensure compliance with public safety standards and to avoid leaving things uncontrolled. Paying attention to supplying the facility with all forms of security and safety, such as alarms, public safety measures, firefighting systems, and others (Waheeb et al., 2024).

It should involve participation from all levels of the business, from management to employees, to ensure that everyone understands their roles and responsibilities in keeping the workplace safe (Alqahtani et al., 2024). Such a program will allow the company to develop a safe and healthy workplace while adhering to all legal obligations, thereby protecting the well-being of its employees (Alqahtani et al., 2024). Meanwhile, good leadership, clear communication, and teamwork among nurses helped overcome many of the impediments to a healthy safety culture (Al Muharraq et al., 2024). This study aimed to comprehensive assessing Safety Protocols and Practices in Healthcare Workplaces in Saudi Arabia. This is particularly pertinent in Saudi Arabia, where the healthcare sector is undergoing significant transformations to meet the ambitious health standards set forth by Saudi Vision 2030 (Al Muharraq et al., 2024).

## **Methods**

### **Introduction**

This systematic review sought to assess and synthesize the existing evidence on the association between nurse administrators' leadership styles and nurses' well-being. The review took a rigorous methodological approach, according to recognized systematic review principles to ensure that the findings were comprehensive, credible, and applicable to nurse leadership practices. The

procedure included a precise search strategy, a set of defined inclusion and exclusion criteria, and a systematic data extraction method for relevant research published between 2020 and 2024.

### **Search Strategy**

This systematic review used a structured and methodical methodology to locate and filter relevant studies. Initially, a comprehensive search was undertaken across numerous academic databases, including PubMed, Scopus, Web of Science, and Google Scholar, using predetermined keywords relating to healthcare safety measures in Saudi Arabia. The search generated a significant number of articles, which were subsequently integrated into reference management software for easier organizing and deduplication. Following that, the titles and abstracts of the retrieved studies were screened using the defined inclusion and exclusion criteria. Full-text reviews were conducted on both studies that clearly met the inclusion criteria and those that did not match the exclusion criteria. During this stage, the entire texts of the selected articles were rigorously reviewed to ensure their eligibility under the criteria. Each item was evaluated for its relation to the review's aims, with an emphasis on articles that discussed the implementation, effectiveness, and outcomes of safety protocols in Saudi healthcare environments. Throughout the selection process, two independent reviewers conducted the screening and assessment to ensure objectivity and consistency. Discrepancies between reviewers were handled by debate and compromise, resulting in a thorough selection process. Finally, this detailed and iterative approach resulted in the discovery of a specific corpus of literature devoted to understanding safety measures in Saudi healthcare organizations.

### **Inclusion Criteria**

To ensure relevance and quality, studies in this systematic review were selected using certain criteria. To be included, papers must be peer-reviewed empirical research, systematic reviews, or clinical guidelines published between 2021 and 2024. They needed to focus on healthcare workplaces in Saudi Arabia, including hospitals, clinics, and long-term care institutions. Healthcare workers, including physicians, nurses, and allied health professionals, administrative personnel, and support staff, were among those of interest. Furthermore, the articles' content must address safety protocols, practices, interventions, or outcomes related to occupational health and safety in healthcare settings, providing insights into their implementation, effectiveness, or challenges, as well as their impact on worker health and safety. The eligible studies had to be written in English.

### **Exclusion Criteria**

The review rejected research that did not match specified criteria. Non-peer-reviewed papers, including opinion pieces, editorials, commentaries, and conference abstracts with insufficient data, were eliminated. Research on non-healthcare businesses or general workplace safety that is not relevant to healthcare settings was also excluded. Furthermore, research conducted outside of Saudi Arabia or that did not directly address safety practices in Saudi healthcare settings were eliminated. Articles that did not give relevant information on healthcare worker safety protocols, practices, or occupational health, as well as those that lacked methodological rigor and clear findings, were excluded. Finally, publications published in

languages other than English were removed to ensure that the research team could properly comprehend and analyze the findings. These criteria were designed to facilitate a focused and relevant selection of studies, ultimately aiming to create a comprehensive understanding of safety protocols and practices in healthcare workplaces in Saudi Arabia.

### **Selection process**

In 2024, the review search returned 110 results. After deleting duplicates, 60 studies remained. After evaluating the titles and abstracts, 50 studies were removed for not meeting the inclusion criteria. Thus, ten studies were thoroughly examined to assess eligibility; five studies were excluded since they did not describe the original investigations. As a result, our systematic review comprised five papers (see Table 1 and Figure 1).

### **Data Extraction**

A review search was conducted, with all titles and abstracts provided, inclusion and exclusion criteria applied, reasons for inclusion and removal indicated, and duplicates eliminated. A PRISMA flowchart was developed to show the four stages of the systematic review method. Figure 1 displays the steps of a systematic review. Table 1 summarizes the characteristics of the five included studies. The summarized data was then evaluated. The author(s), study design, findings, and conclusions were all collected and analyzed.

### **Results**

Recent studies, such as those conducted by Aljaffary et al. (2021), emphasize the relevance of staff perspectives on patient safety culture (PSC), exposing strengths in communication and organizational learning while also identifying crucial areas for improvement in staffing and error management. Similarly, Alshehri et al. (2023) focused on nuclear safety culture, emphasizing the importance of a complete framework to improve personal safety commitment and reduce safety-compromising behaviors. Their findings are consistent with a greater need for strategic interventions in high-stakes settings like healthcare.

Al-Arnous et al. (2022) conduct additional research on the relationship between safety measures and accountability among frontline workers, providing actionable insights for industry leaders and regulators. In addition to these findings, Abdurabuh et al. (2024) investigated how hospital accreditation affects organizational safety culture, emphasizing the need of strong leadership in creating a safe environment.

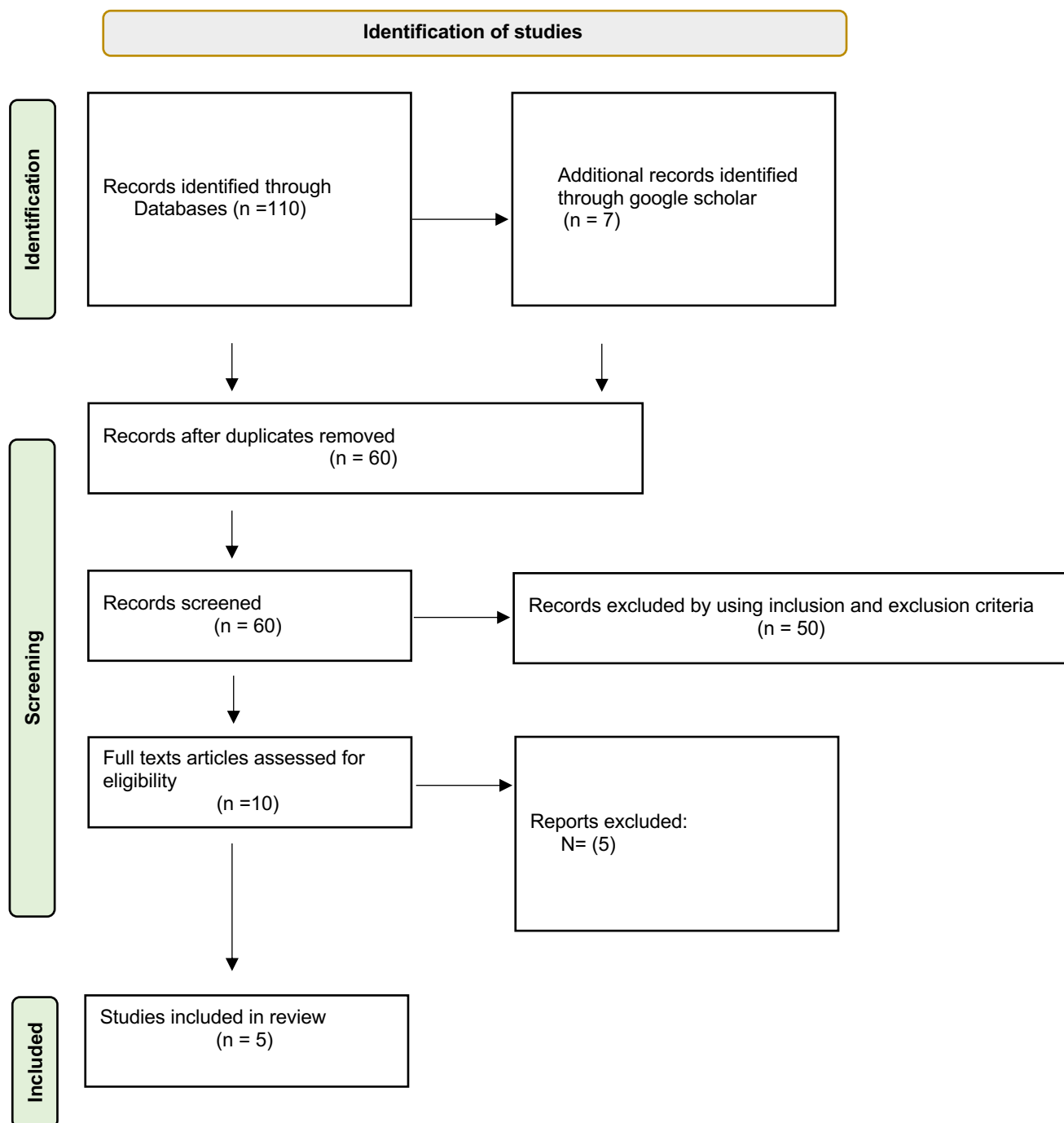
Furthermore, the study by Alghadir et al. (2021) sheds light on the workplace safety and health recommendations that affect rehabilitation nurses, revealing a significant improvement in their knowledge and a decrease in the prevalence of occupational back pain following training interventions. This highlights the crucial necessity for ongoing education and ergonomics training in the healthcare industry.

<b>Table (1):</b> Summary of the related studies			
<b>Author</b>	<b>Aim</b>	<b>Study Design</b>	<b>Results</b>

<p>(Aljaffary et al., 2021).</p>	<p>The purpose of this study was to investigate staff opinions of patient safety culture (PSC) at King Fahd University Hospital (KFUH) and make recommendations for improving PSC integration.</p>	<p>In 2018, KFUH conducted a cross-sectional survey with 900 healthcare professionals using the Hospital Survey on Patient Safety Culture instrument.</p>	<p>Response rate was 67%. KFUH excelled in three PSC composites: continuous organizational learning, mistake feedback and communication, and event frequency reporting. Low-scoring areas included staffing, unit collaboration, and a non-punitive response to errors.</p>
<p>(Alshehri et al., 2023).</p>	<p>To create a framework for identifying the elements impacting nuclear safety culture in Saudi Arabia and investigating their impact on personal safety commitment, error behaviors, and violation behaviors.</p>	<p>The study used structural equation modeling based on a survey of 240 Saudi individuals from diverse sectors that operate with radioactive materials. Prior to analysis, the data was confirmed, and the five hypotheses were evaluated using a high-order construct.</p>	<p>The results showed that nuclear safety culture has a considerable impact on personal safety commitment, error behaviors, and violation behaviors. Furthermore, three dimensions—individual variables, managerial methods, and environmental conditions—were discovered to have a direct influence on nuclear safety culture. These insights can help policymakers examine and improve Saudi Arabia's nuclear safety culture.</p>
<p>(Al-Arnous et al., 2022)</p>	<p>To look into the impact of safety measures on the safety accountability (SA) of frontline workers at the Saudi Arabian Aramco Company.</p>	<p>A quantitative approach was adopted, with data collected using a survey questionnaire distributed randomly to the company's frontline staff. Out of 450 questionnaires distributed, 242 valid replies were received, representing a 53% response rate. Structural Equation Modeling</p>	<p>The study discovered that safety measures, specifically safety policies (SP), safety training (ST), safety communication (SC), safety commitment (SCT), and safety incentives (SIs), have a favorable and significant impact on frontline workers' safety responsibility (SA). The</p>

		(SEM) was used to assess the data.	findings provide policymakers and industry leaders with guidance on how to adopt further safety efforts, improve frontline worker protection, and contribute to the literature on safety challenges in the energy sector.
(Abdurabuh et al., 2024).	The purpose of this study is to look into how hospital accreditation affects the organizational safety culture among Saudi healthcare personnel.	A cross-sectional study was done in five public hospitals in Makkah, with 340 healthcare personnel completing a self-administered questionnaire. The data were examined via descriptive statistics, ANOVA, one-sample t-tests, and multiple regression.	The regression analysis found substantial gender differences in patient safety ratings, with older age being positively associated with higher safety scores. Differences were also linked to nationality and education level. The highest ratings were given to catastrophe preparedness and training, while leadership, dedication, and support received the lowest rankings. The study shows that accreditation is significantly associated with increased patient safety, emphasizing the importance of quality improvement and strong leadership commitment in healthcare settings.
(Alghadir et al., 2021).	The purpose of this study was to look at how work-related safety and health recommendations affected knowledge levels and the prevalence of occupational back pain	A cohort research was undertaken with 116 registered rehabilitation nurses from various locations of Saudi Arabia who took part in an ergonomic workshop. A self-administered questionnaire was used	The study demonstrated a substantial improvement in the perceived knowledge score from a baseline average of 68.2 to 81.6 post-intervention ( $t = 4.691$ ; $p < 0.001$ ). Additionally, the

	<p>among Saudi rehabilitation nurses.</p>	<p>to assess knowledge, risk perceptions, and the prevalence of OBP at baseline and six months later.</p>	<p>prevalence of OBP was reduced from 71.5% to 65.0%. This suggests that the ergonomic session successfully raised awareness and reduced the prevalence of OBP among rehabilitation nurses.</p>
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*Fig. 1. PRISMA 2009 Flow Diagram*

## **Discussion**

The findings of this systematic review on safety protocols and practices in Saudi healthcare workplaces provide important insights into the current landscape of patient safety culture (PSC) and occupational health, as illuminated by diverse studies conducted in a variety of healthcare settings. This chapter addresses the consistency and variations between the analyzed research, providing a thorough understanding of how to improve safety measures in the Kingdom's healthcare system.

The study by Aljaffary et al. (2021) provides a foundational investigation of PSC at King Fahd University Hospital. Their survey of healthcare professionals revealed strengths in continuous organizational learning, effective communication, and reporting of safety occurrences, but also identifying problems in staffing, unit coordination, and non-punitive error reactions. These findings highlight the complexities of developing a strong safety culture, which involves not only policies but also personnel and organizational dedication. This insight is corroborated by Abdurabuh et al. (2024), who discovered comparable trends in numerous public hospitals throughout Makkah. They emphasised how demographic variables, such as age and educational background, influenced perceptions of patient safety, underscoring the idea that a one-size-fits-all approach may be inadequate. Both studies highlight the importance of organizational commitment and competent leadership in developing a proactive patient safety culture.

In contrast to the findings at KFUH and Makkah, Alshehri et al. (2023) focused on nuclear safety culture in sectors that deal with radioactive materials. Their methodology identified key aspects that influence personal safety behaviors and commitments, demonstrating both individual and managerial implications on safety culture. Unlike the healthcare contexts previously addressed, the nuclear business brings distinct obstacles and regulatory needs. However, the methodological rigor of utilizing structural equation modeling to analyze the variables on safety culture reveals a sector-wide commitment to evidence-based procedures. The implementation of a strong safety culture framework across numerous industries, including healthcare, is critical for improving outcomes, and mutual learning may be drawn from each.

Al-Arnous et al. (2022) add another dimension by investigating safety accountability among frontline workers in an oil firm. Their studies indicated that safety policies, training, communication, commitment, and incentives have a substantial impact on workers' safety accountability. This relates to the healthcare setting, particularly when considering the critical importance of continuing education and training, as emphasized by Alghadir et al. (2021). The latter study hypothesized that structured ergonomic training for rehabilitation nurses increased awareness and reduced occupational back pain (OBP). Both findings support the premise that training and policy are crucial in establishing long-term safety cultures, emphasizing that collaborative efforts across sectors can lead to better safety outcomes.

## Conclusions

This systematic review has delivered an extensive overview of the existing evidence about safety measures and practices in healthcare settings in Saudi Arabia. The results demonstrate an urgent necessity for enhancements in patient safety culture (PSC) throughout diverse healthcare environments. Numerous studies identified strengths in areas like organizational learning and communication, although they also uncovered substantial obstacles that require attention, including staffing deficiencies, insufficient unit collaboration, and the necessity for non-punitive error management strategies. The review highlights the varied settings of healthcare, wherein insights from research in nuclear safety and occupational health can be effectively amalgamated to improve the overall safety culture.

The analyzed literature highlights that cultivating a strong safety culture is a complex undertaking necessitating coordinated efforts across many tiers of healthcare institutions. Improvements in safety protocols not only promote the welfare of healthcare staff but also result in superior patient outcomes and enhanced quality of treatment. As Saudi Arabia progresses in enhancing its healthcare system in accordance with national objectives, emphasizing a safety culture is crucial for attaining sustained advancements.

## Recommendations

To improve safety protocols and practices in healthcare settings in Saudi Arabia, it is advised that organizations augment staffing levels to reduce workload stress on current employees and establish comprehensive, continuous training programs centered on patient safety and non-punitive error reporting. Establish clear and open communication channels to encourage discussions regarding safety problems, while conducting frequent assessments of safety culture to identify areas for enhancement. Moreover, promoting interprofessional collaboration, customizing safety programs for particular healthcare settings, and integrating ergonomics training are essential. Prioritization of leadership commitment to patient safety as an organizational value is essential, and additional research should be endorsed to investigate the efficacy of diverse safety efforts within the Saudi environment. By implementing these steps, healthcare companies can substantially elevate their safety culture and boost overall healthcare outcomes.

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