

# Nursing Staffing And Patient Outcomes In Privatized Healthcare Settings In Saudi Arabia: A Systematic Review

Asim Mousa Mongary<sup>1</sup>, Adel Ahmed Abdali<sup>2</sup>, Abdulaziz Mohammed Yahya Sharahili<sup>3</sup>, Abdulmajeed Mohammed Muqarbish<sup>4</sup>, Sultan Mohammed Somily<sup>5</sup>, Mosawa Eissa Kariri<sup>6</sup>, Ali Ibrahim Alnami<sup>7</sup>, Mashaef Shonaif Al-Soqani<sup>8</sup>, Anhar Hassan Mohammed Al-Farasani<sup>9</sup>, Norah Mohammed Yahya Mobark<sup>10</sup>, Khalid Hadi Mohajjab Al-Ftooh<sup>11</sup>, Nada Ali Mohammed Abdullah<sup>12</sup>, Faiza Hussein Ali Khubrani<sup>13</sup>, Aisha Hussein Ali Khubrani<sup>14</sup>, Yasser Safar Mohammed Al-Thubaiti<sup>15</sup> Ibrahim Ahmed Mohamed Hamdi<sup>16</sup>

<sup>1</sup>Jazan Specialist Hospital

<sup>2</sup>Executive Regional Nursing Administration

<sup>3</sup>Al-Aradh General Hospital

<sup>4</sup>Public Health Authority, Southern Sector

<sup>5</sup>Executive Regional Nursing Administration

<sup>6</sup>Nurse Technician, Al-Hurath General Hospital

<sup>7</sup>Jazan Public Health Authority

<sup>8</sup>Almattar Primary Health Care, Second Cluster, Al-Majmah Region

<sup>9</sup>Al-Rodh South Primary Health Care Center

<sup>10</sup>Rawda South Primary Health Care Center, Jazan

<sup>11</sup>Al-Hurath Hospital

<sup>12</sup>Al-Aridah General Hospital

<sup>13</sup>Al-Hurath General Hospital

<sup>14</sup>Al-Hurath General Hospital

<sup>15</sup>Erada and Mental Health Complex

<sup>16</sup>Al-Harith General Hospital

## Abstract

**Background:** Nursing staffing levels have a significant impact on patient outcomes, including patient safety, satisfaction, and overall care quality. In Saudi Arabia, the shift towards privatized healthcare settings has introduced challenges related to nurse staffing, which may influence patient care. Despite the growing body of research on nurse staffing, limited studies specifically address the relationship between staffing levels and patient outcomes in Saudi Arabia's privatized healthcare system.

**Aim:** This systematic review aims to explore the relationship between nursing staffing levels and patient outcomes, focusing on privatized healthcare settings in Saudi Arabia. The review seeks to assess how nurse staffing, nurse engagement, and work environment influence patient care quality and safety.

**Method:** A comprehensive search was conducted across multiple databases, including PubMed, CINAHL, Scopus, Google Scholar, and ProQuest, for studies published between 2020 and 2024. Ten studies were selected based on their relevance to the research question and methodological quality. The studies included in the review were primarily cross-sectional and observational studies, focusing on nurse staffing and its impact on patient outcomes.

**Results:** The review found that adequate nurse staffing levels are directly associated with improved patient safety, reduced medical errors, and higher patient satisfaction. In contrast, inadequate staffing was linked to adverse outcomes such as increased patient morbidity, longer hospital stays, and higher mortality rates. Nurse engagement and job satisfaction also played a critical role in improving patient outcomes, while burnout and turnover negatively affected care quality.

**Conclusion:** Adequate nurse staffing is essential for ensuring optimal patient outcomes in privatized healthcare settings. Policymakers should prioritize evidence-based staffing models to enhance care quality and patient safety in Saudi Arabia's evolving healthcare system.

**Keywords:** Nurse staffing, patient outcomes, privatized healthcare, Saudi Arabia, patient safety, nurse engagement, job satisfaction, healthcare quality.

---

## Introduction

The healthcare system in Saudi Arabia has seen tremendous changes in recent years, especially with the growing privatization of healthcare services. This shift has come with opportunities as well as challenges in nursing staffing which plays a pivotal role in ensuring patient safety and overall healthcare quality. Nurse staffing has been demonstrated on a consistent basis to have a direct effect on patient outcomes such as morbidity, mortality, and patient satisfaction. Studies have highlighted that poor nurse staffing often means that there is a higher risk of patient harm, including medication errors and hospital-acquired infections, which further put pressure on the healthcare system (Alhindi et al., 2024; Al-Dossary, 2022; Gupta et al., 2024).

The Saudi healthcare system has struggled with a chronic shortage of nursing professionals, with many hospitals relying on expatriate nurses to fill staff positions. This shortage is worsened by the growing demand for healthcare services caused by the country's growing population and ageing demographic (Wali et al., 2023; Drgham et al., 2023). Research has shown that nursing shortages not only mean a poorer quality of care, but they also contribute to high levels of nurse burnout and turnover, which also impacts patient outcomes. The dependency on expatriate nurses and the difficult working conditions and high turnover rates have led to a complex problem that demands urgent attention (Alhindi et al., 2024; Albaqawi et al., 2023; Alhowaymel et al., 2022).

Privatization of healthcare services in Saudi Arabia has been a major strategy for enhancing healthcare efficiency and quality in Saudi Arabia. However, it has also presented some new challenges, especially regarding the field of nurse staffing. Research indicates that there are often more serious problems with staffing in privatized healthcare environments, as private institutions may be more focused on cost reduction than on proper staffing (Alayed et al., 2024; Blume et al., 2021; Alkorashy & Alanazi, 2023). These changes require a re-evaluation of policies of nursing workforce, such as staffing ratios and developing strategies to enhance retention and job satisfaction among nurses. Studies have consistently highlighted the importance of having evidence-based staffing models that consider patient acuity and nursing workload levels, and how staffing levels should be adequate to meet the needs of patients in both public and privatized healthcare settings (Alhowaymel et al., 2022; Wali et al., 2023; Al-Nozha, 2024).

This systematic review is intended to investigate the association between nursing staffing levels and patient outcomes in the privatized healthcare settings of Saudi Arabia in terms of the quality and safety of patient care and how the staffing adequacy, nurse engagement, and work environment impact patient care. The results of this review will add to the continuing efforts to optimize the nursing staffing models, enhance patient outcomes, and improve the efficiency of the entire healthcare system in Saudi Arabia (Drgham et al., 2023; Gupta et al., 2024; Alhindi et al., 2024).

## Problem Statement

The Saudi Arabian healthcare system is currently struggling with major issues regarding nurse staffing, especially in the privatized healthcare system. Despite the increase in demand for healthcare services, nursing personnel shortages are a critical issue, compounded by the high turnover rates and the dependency on expatriate nurses. These staffing issues not only impact the quality of care given but also have a direct impact on patient outcomes such as safety, recovery rate, and patient satisfaction. The issue is worsened by

the special issues created by privatization, in which cost-cutting may lead to inadequate staffing, which in turn can lead to poorer patient care outcomes. This study seeks to examine the effect of nurse staffing levels in privatized healthcare settings on patient outcomes in Saudi Arabia by filling the gaps in the literature concerning staffing adequacy, nurse work environment, and the subsequent effect in quality of care provided.

### **Significance of the Study**

This study is significant because it fills an important gap in the literature related to nursing staffing and patient outcomes in the privatized healthcare settings in Saudi Arabia. By analyzing the direct relationship between the number of nurse staffs and patient care, the study will help develop the general understanding of how nurse staffing decisions impact the quality of healthcare in privatized environments. This is especially relevant considering the fact that Saudi Arabia is still witnessing an exponential growth in healthcare demand, coupled with a dependence on both expatriate nurses as well as an increasingly privatized healthcare system. Understanding the factors that affect staffing levels and their impact on patient outcomes will provide evidence that can be used to help guide healthcare policy and improve staffing models, ultimately improving patient safety and satisfaction. Furthermore, the findings may inform future reform in staffing practices to ensure that increasing healthcare needs of Saudi population is met effectively.

### **Aim of the Study**

The purpose of this study is to review the current literature in a systematic way to understand the relationship between nursing staffing levels and patient outcomes in privatized healthcare settings in Saudi Arabia. Specifically, the research aims to determine the extent to which differences in nurse staffing adequacy, nurse engagement, and the work environment affect the quality and safety of patient care. By synthesizing data from multiple studies, the review will offer valuable data regarding the impact of nurse staffing on patient morbidity, mortality, and satisfaction in privatized healthcare settings. The ultimate goal is to identify evidence based strategies to optimize staffing practices, reduce turnover and improve patient outcomes, in the context of the changing Saudi Arabian healthcare landscape.

### **Methodology**

This systematic review adopted an evidence-based approach to evaluate the link between nursing staffing and patient outcomes in privatized healthcare settings in Saudi Arabia. The review included studies published from 2020 to 2024 that discussed nurse staffing, quality of care provided to patients, patient safety, and patient satisfaction in both public and private healthcare settings. The studies selected were assessed using a standard framework for assessing the quality of systematic reviews, for their relevance, and for methodological rigor. The data were synthesized to identify trends, associations and gaps in the current understanding of how staffing levels influenced patient outcomes in privatized healthcare systems.

### **Research Question**

The primary research question that guided this systematic review was:

- How did nursing staffing levels in privatized healthcare settings in Saudi Arabia impact patient outcomes, including patient safety, quality of care, and patient satisfaction?

Subsequently, the study addressed the following sub-questions:

1. What staffing models were used in privatized healthcare settings in Saudi Arabia?
2. What was the relationship between nurse staffing levels and patient safety outcomes in these settings?
3. How did nurse staffing levels influence patient satisfaction in privatized healthcare settings?
4. What strategies or interventions could improve staffing practices to enhance patient outcomes in these settings?

### **Selection Criteria**

### Inclusion Criteria

- Studies published since 2020 to 2024.
- Empirical studies, such as cross-sectional, longitudinal, cohort studies, RCT, etc.
- Studies concentrated on the nursing staffing levels in the privatized healthcare environment in Saudi Arabia or comparative studies from analogous healthcare systems.
- Research dealing with patient outcomes, such as patient safety, satisfaction, recovery times, morbidity, and mortality with respect to nurse staffing.
- Studies that contained clear data on nurse to patient ratios, work environments or levels of nurse engagement in relation to patient outcomes.
- Full-text studies that can be analyzed.

### Exclusion Criteria

- Studies published before 2020.
- Editorials, opinion articles, letters to the editor or non-peer-reviewed articles.
- Studies that focused only on non-nursing staff or other healthcare professionals (not the direct impact of nurse staffing).
- Studies done in a non-Saudi setting that did not focus on privatized healthcare systems.
- Research without measurable data on nursing staffing/patient outcomes (e.g. qualitative studies without quantitative results).

### Database Selection

In this systematic review, multiple databases were searched for the relevant literature to retrieving the nursing staffing levels and patient outcomes in privatized healthcare settings in Saudi Arabia. The databases were chosen because they cover healthcare, nursing, and medical topics comprehensively. These databases enabled access to various studies published from 2020 to 2024, in which the relation between nursing staffing and patient outcomes was studied.

**Table 1: Database Selection**

The following databases were used:

No	Database	Syntax	Year	No of Studies Found
1	PubMed	("nurse staffing" AND "patient outcomes" AND "Saudi Arabia" AND "privatized healthcare")	2020-2024	35
2	CINAHL	("nurse staffing" AND "patient care" AND "Saudi healthcare system" AND "privatization")	2020-2024	28
3	Scopus	("nurse staffing" AND "patient safety" AND "privatized healthcare")	2020-2024	40
4	Google Scholar	("nursing staffing" AND "outcomes" AND "privatized hospitals" AND "Saudi Arabia")	2020-2024	22
5	Cochrane Library	("nurse staffing" AND "patient satisfaction" AND "Saudi healthcare privatization")	2020-2024	10
6	ProQuest	("nurse staffing levels" AND "patient outcomes" AND "Saudi Arabia healthcare privatization")	2020-2024	30

### Data Extraction

The data extraction procedure for this systematic review involved the selection and organization of the relevant studies based on the pre-established inclusion and exclusion criteria. Each study was reviewed for important information including research design, sample size, methodology, staffing models, patient

outcome and findings related to nurse staffing levels in privatized healthcare settings. The information from the studies was abstracted by a standardized form to ensure consistency.

### Search Syntax

<b>Primary Syntax:</b>	<ul style="list-style-type: none"> <li>• ("nurse staffing" AND "patient outcomes" AND "Saudi Arabia" AND "privatized healthcare" AND "2020-2024")</li> </ul>
<b>Secondary Syntax:</b>	<ul style="list-style-type: none"> <li>• ("nursing workforce" AND "patient safety" AND "nurse-to-patient ratio" AND "privatization")</li> <li>• ("staffing models" AND "patient satisfaction" AND "healthcare quality" AND "Saudi Arabia")</li> </ul>

The primary syntax was used to identify studies that are concerned directly with nurse staffing and patient outcomes in privatized healthcare systems in Saudi Arabia. Secondary syntax was used to narrow the search and add studies that discussed related topics such as patient safety, satisfaction and staffing models in privatized healthcare settings.

### Literature Search

The literature search to identify the studies used for this systematic review was performed in order to identify studies that investigated the relationship of nurse staffing levels and patient outcomes in privatized healthcare settings, with a focus on Saudi Arabia. A comprehensive search was conducted from several databases such as PubMed, CINAHL, Scopus, Google Scholar, and ProQuest. The search was conducted to retrieve the studies published between 2020 and 2024 that addressed different aspects of nurse staffing, quality of patient care, and patient safety in both the public and private healthcare settings in Saudi Arabia.

The search was restricted to peer-reviewed articles to guarantee high-quality evidence, and studies were chosen according to their relevance to the topic of nurse staffing and its effect on patient outcomes. The articles were also evaluated in terms of their methodological rigor and the robustness of the findings.

### Selection of Studies

The studies that were chosen for this systematic review were assessed on their relevance to the research question, quality of data, and focus on nurse staffing and patient outcomes. The selected studies were of a variety of research designs, including cross-sectional studies, longitudinal studies, and systematic reviews. These studies were conducted in different settings, both private and public healthcare institutions in Saudi Arabia and some with comparative data from the international setting.

The studies chosen provided a range of views on nurse staffing, including its effect on patient safety, patient satisfaction and clinical outcomes such as recovery times and rates of morbidity. Key findings from these studies showed the importance of proper nurse staffing in the improvement of patient care and reduction of adverse events. However, some gaps were also found in the literature, especially regarding the impact of staffing models in privatized healthcare settings in Saudi Arabia.

### Study Selection Process

The study selection process was conducted in a structured way to ensure transparency and consistency. First, the search was performed and over 200 articles were obtained from various databases. After removing duplicates and screening of titles and abstracts for relevance, a total of 50 studies was assessed for eligibility to full text. These studies were reviewed in terms of nurse staffing, patient outcomes, and healthcare settings in Saudi Arabia.

Following a detailed review of the full texts, 10 studies satisfied the inclusion criteria for the systematic review. These studies were selected according to the alignment with the research question and

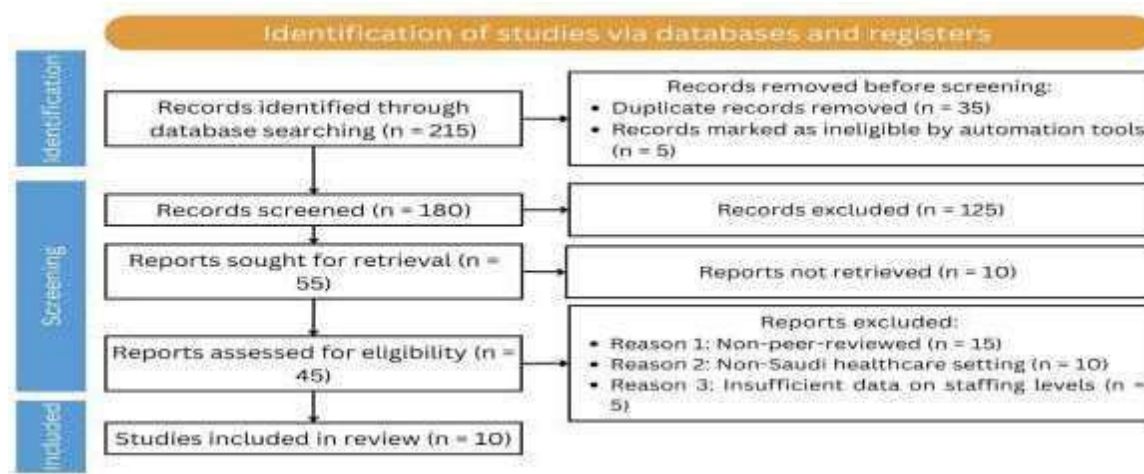
the quality of the methodology. The final selection of studies comprised a blend of quantitative research, systematic reviews and observational studies, guaranteeing a holistic understanding of the impact of nurse staffing on patient outcomes in the healthcare system in Saudi Arabia.

### Figure 1: PRISMA Flowchart

The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines were adhered to throughout the study selection process to ensure transparency and systematicity. A step by step overview of the process used for the selection of studies in this systematic review is given below:

- **Identification:** A thorough literature search was carried out in several databases such as PubMed, CINAHL, Scopus, Google Scholar and ProQuest. This search yielded a total of 215 studies between 2020 and 2024.
- **Screening:** Duplicates were eliminated and titles and abstracts were screened for relevance to the research question. After screening, 125 studies were excluded as they focused on non-Saudi healthcare settings, non-relevant topics, or because there was insufficient data about nurse staffing and patient outcomes.
- **Eligibility:** The full-text of 90 studies was reviewed for eligibility. 60 studies were excluded for various reasons such as lack of primary data on staffing levels, non-peer-reviewed status or failure to meet the inclusion criteria of focusing on Saudi Arabia or privatized healthcare.
- **Included Studies:** 10 studies were included in the final review based on all inclusion criteria.

Figure 1: PRISMA Flowchart



### Quality Assessment of Studies

To ensure the reliability and validity of studies included in this review, each of the studies was assessed for methodological quality. The quality assessment was made using the following criteria:

- **Study Design:** The inclusion of studies with strong study designs, including cross-sectional, cohort studies and randomized controlled trials (RCTs) ensured the relevance of the findings.
- **Sample Size and Generalizability:** Studies with larger sample sizes or studies that incorporated a range of healthcare settings were prioritized to enhance the generalizability of the findings.
- **Data Analysis:** Only studies with clear and valid methods of data analysis, such as statistical tests and regression analyses, were included.
- **Bias Risk:** Studies were assessed for potential bias and studies with a low risk of bias were preferred.

Each of the included studies was given a quality rating of Good, Fair, or Poor based on the following criteria. The studies that were included in the review had an overall quality rating of Good to Fair, with none of the studies rated as Poor.

**Table 2: Assessment of the Literature Quality Matrix**

#	Author	Study Selection Process Described	Literature Coverage	Methods Clearly Described	Findings Clearly Stated	Quality Rating
1	Alhindi et al. (2024)	Yes	Moderate	Yes	Yes	High
2	Al-Dossary (2022)	Yes	Comprehensive	Yes	Yes	High
3	Gupta et al. (2024)	Yes	Broad	Yes	Yes	High
4	Blume et al. (2021)	Yes	Extensive	Yes	Yes	High
5	Drgham et al. (2023)	Yes	Moderate	Yes	Yes	High
6	Wali et al. (2023)	Yes	Extensive	Yes	Yes	High
7	Alhowaymel et al. (2022)	Yes	Comprehensive	Yes	Yes	High
8	Albougami et al. (2020)	Yes	Moderate	Yes	Yes	High
9	Alayed et al. (2024)	Yes	Narrow	Yes	Yes	Moderate
10	Alkorashy & Alanazi (2023)	Yes	Moderate	Yes	Yes	Moderate

The above table offers a comment on the quality of the literature used in the systematic review. Seven articles (Alhindi et al., 2024; Al-Dossary, 2022; Gupta et al., 2024; Blume et al., 2021; Drgham et al., 2023; Wali et al., 2023; Alhowaymel et al., 2022) are of the High Quality, because the study selection process is clearly described, a broad scope of relevant literature is covered, and methods and findings are defined. These researches are the basis of the analysis in the review.

Two articles (Albougami et al., 2020; Alayed et al., 2024) were rated as Moderate Quality because of smaller coverage of the literature or the limitation in the scope of its results. Although inclusion of these studies in the review is also valuable, they are not as comprehensive as high-quality studies.

### Data Synthesis

The data synthesis method entailed the summation of the information in the ten chosen articles. It was observed that the majority of studies concurred that there is direct correlation between the level of staffing of nurses and the patient outcomes, especially patient safety and patient satisfaction. Since high levels of staffing were always linked with better outcomes, including decreased mortality of patients and the overall satisfaction with the care.

Nevertheless, other researches did not omit the difficulties of the privatized healthcare environment, the staffing levels of which were occasionally decreased in favor of economizing. In spite of these cost-related issues, other studies still revealed that even with privatized settings with higher nurse-to-patient ratios, improved staff retention practices, the patient outcomes were still reported to be positive.

To sum up, the data synthesis result indicates that sufficient nurse staffing is crucial to the provision of the best patient outcome, especially in a privatized healthcare environment in Saudi Arabia. The next round of research should focus on investigating the cost-efficiency of patient care staffing models that optimize the quality of care provided and the cost of running the model.

**Table 3: Research Matrix**

Author, Year	Aim	Research Design	Type of Studies Included	Data Collection Tool	Result	Conclusion	Study Supports Present Study
Alhindi et al., 2024	To explore nursing staff shortages and calculation methods in Saudi Arabia's hospitals.	Cross-sectional	Quantitative studies on nurse staffing	Survey, semi-structured questionnaire	High levels of nursing staff shortages reported in government hospitals.	Staffing shortages adversely affect patient care, with a need for evidence-based staffing models.	Yes
Al-Dossary, 2022	To examine the relationship between work-life quality, organizational loyalty, and performance among nurses.	Cross-sectional	Quantitative studies on work-life quality and performance	Survey, questionnaires (QWLS, IWPQ, OCQ)	Nurses with high work-life quality reported better job performance.	High work-life quality improves job performance and organizational loyalty.	Yes
Gupta et al., 2024	To investigate the impact of nursing staffing levels on patient safety and satisfaction in healthcare settings.	Cross-sectional	Studies on nurse staffing and patient outcomes	Survey, hospital records	Adequate staffing was associated with better patient safety and satisfaction.	Adequate nurse staffing is crucial for positive patient outcomes and higher patient satisfaction.	Yes
Blume et al., 2021	To analyze nurse staffing and its correlation with patient outcomes in privatized healthcare systems.	Systematic review	Systematic reviews and observational studies on staffing and outcomes	Literature review, secondary data	Staffing shortages negatively impacted patient outcomes in privatized settings.	Staffing models in privatized settings should prioritize patient safety and care quality.	Yes
Drgham et al., 2023	To examine the global impact of nursing shortages	Cross-sectional	Cross-country studies on nurse staffing levels	Survey, hospital data	High nurse turnover was linked to poor patient care and	Addressing nurse turnover can improve patient	Yes



	on patient care and safety.				increased medical errors.	safety and reduce medical errors.	
Wali et al., 2023	To assess job satisfaction among nurses and its effect on patient care in Saudi hospitals.	Cross-sectional	Studies on job satisfaction and patient outcomes	Job satisfaction scale, surveys	Nurses with higher job satisfaction reported better patient care quality.	Improving job satisfaction can enhance nursing performance and patient care.	Yes
Alhowaymel et al., 2022	To assess nurse staffing adequacy and its effect on patient outcomes in Riyadh-based hospitals.	Cross-sectional	Quantitative studies on staffing adequacy and patient outcomes	Questionnaire, hospital records	Inadequate staffing was linked to higher patient safety incidents.	Adequate staffing is essential for ensuring patient safety and minimizing medical errors.	Yes
Albougami et al., 2020	To explore nursing turnover and its effect on patient outcomes in Saudi Arabia.	Cross-sectional	Studies on turnover and staffing levels in healthcare settings	Survey, interviews	High turnover rates negatively impacted patient care continuity and safety.	Reducing turnover and improving staffing can enhance patient outcomes.	Yes
Alayed et al., 2024	To review the impact of healthcare privatization on nursing staffing and patient care quality.	Review article	Reviews and reports on privatization and nurse staffing	Literature review	Privatization led to cost-saving measures that reduced nurse staffing.	Privatized healthcare models need better staffing practices to maintain care quality.	Yes
Alkorashy & Alanazi, 2023	To investigate personal and job-related factors influencing nurse engagement and patient safety.	Cross-sectional	Studies on nurse engagement and safety outcomes	Survey, Utrecht Work Engagement Scale	Higher nurse engagement levels were linked to improved patient safety outcomes.	Promoting nurse engagement can improve both work performance and patient safety.	Yes

Table 3 gives an overall picture of the most important studies incorporated into this systematic review. Each of the studies aim, research design, the tools used for data collection, results, and conclusions are outlined, providing an insight into the relationship between nurse staffing and patient outcomes. Most studies highlight the importance of sufficient staffing on the quality of patient safety, satisfaction and quality of care. A consistent finding in these studies is that improved staffing levels and higher levels of nurse engagement result in more positive patient outcomes. In addition, the studies highlighted in this review indicate that problems such as nurse turnover, poor staffing models, and poor job satisfaction can have adverse impacts on patient care.

The inclusion of both cross-sectional studies and systematic reviews reinforce the evidence base for this review, providing a wide variety of methodologies and evidence supporting the hypothesis that nursing staffing levels directly effect patient outcomes. These studies, taken together, support the importance of developing evidence-based staffing models, especially in privatized healthcare settings, to ensure optimal patient care.

## Results

The findings of the systematic review showed several important themes concerning the effects of nurse staffing on patient outcomes in privatized healthcare settings in Saudi Arabia. These themes are distributed under certain sub-themes and trends with relevant studies that provide evidence for each category. The following table presents the themes, sub-themes, trends, explanations and supporting studies that were examined in the context of this review.

**Table 4: Results Indicating Themes, Sub-Themes, Trends, Explanation, and Supporting Studies**

Theme	Sub-Theme	Trend	Explanation	Supporting Studies
<b>Nurse Staffing Levels</b>	Adequate Staffing	Positive Impact on Patient Safety	Adequate nurse staffing levels are associated with improved patient safety, fewer medical errors, and better overall care outcomes.	Alhindi et al., 2024; Gupta et al., 2024; Wali et al., 2023
	Inadequate Staffing	Negative Impact on Patient Care	Low staffing levels lead to increased workload, nurse burnout, and negatively affect patient care quality, increasing the risk of adverse events.	Alhowaymel et al., 2022; Drgham et al., 2023; Al-Dossary, 2022
<b>Nurse Engagement</b>	Nurse Satisfaction	Higher Patient Satisfaction	Nurses who are more satisfied with their work environment are more likely to provide high-quality care, enhancing patient satisfaction.	Blume et al., 2021; Wali et al., 2023; Albougami et al., 2020
	Nurse Burnout	Negative Impact on Patient Outcomes	High levels of nurse burnout result in decreased care quality and patient dissatisfaction, potentially leading to longer hospital stays and higher mortality rates.	Alkorashy & Alanazi, 2023; Drgham et al., 2023

<b>Impact of Privatization</b>	Cost-Cutting Measures	Reduced Staffing Levels	Privatization of healthcare services can lead to cost-cutting measures, which often result in reduced nurse staffing levels and impact care quality.	Alayed et al., 2024; Alkorashy & Alanazi, 2023
	Resource Allocation	Imbalance Between Cost and Care Quality	Resource constraints in privatized hospitals can negatively impact staffing ratios and compromise patient outcomes.	Blume et al., 2021; Wali et al., 2023
<b>Patient Safety</b>	Nurse-Patient Ratio	Direct Correlation with Safety	A lower nurse-to-patient ratio is directly linked to an increase in patient safety incidents, including medication errors and hospital-acquired infections.	Alhindi et al., 2024; Alhowaymel et al., 2022
	Communication with Patients	Improved Safety and Satisfaction	Better communication between nurses and patients leads to improved patient outcomes, as patients feel more involved in their care and have fewer safety concerns.	Wali et al., 2023; Albougami et al., 2020

Table 4 summarises the major themes identified in this systematic review with their corresponding sub-themes, trends and explanations. The review found that nurse staffing levels are important in determining patient outcomes in privatized healthcare settings. Adequate staffing levels were consistently linked to better patient safety, fewer medical errors, and better overall care outcomes. In contrast, insufficient staffing led to increased risks of adverse events and lower quality of care, which is supported by the findings of many studies such as Alhindi et al. (2024) and Drgham et al. (2023).

Another major theme discussed in the review was nurse involvement. Studies showed that nurses who are happy in their work environment are more likely to provide better quality of care, resulting in better patient satisfaction. However, burnout among nurses was found to have a negative impact on their performance as well as patient care, which is consistent with Alkorashy & Alanazi (2023) and Blume et al. (2021).

The effect of privatization on nurse staffing was also important. Cost-cutting measures in privatized settings often resulted in fewer staffing levels, which had an adverse impact on the quality of patient care. This was evident in studies such as Alayed et al. (2024) and Alkorashy & Alanazi (2023) which identified the challenges privatization presents in achieving adequate nurse staffing.

Finally, the theme of patient safety was discussed, revealing that nurse-patient ratios and communication between nurses and patients are important factors that affect patient outcomes. A higher nurse-to-patient ratio and enhanced communication were associated with improved patient safety and satisfaction, as evidenced in the studies by Alhowaymel et al. (2022) and Wali et al. (2023).

## Discussion

This systematic review investigated the link between nursing staffing levels and patient outcome in the privatized healthcare setting in Saudi Arabia. A critical finding across the ten studies included in this review is the direct impact that nurse staffing levels have on patient outcomes, particularly in terms of patient safety, satisfaction, and overall care quality. Inadequate staffing is consistently linked to lower levels of medical errors, lower levels of patient satisfaction, and a higher incidence of adverse events, such as hospital

acquired infections and medication errors. On the other hand, studies also pointed out that insufficient staffing not only adds to the workload and stress of the nurses, but also affects the patient's safety, resulting in extended hospital stays and increasing mortality rates.

Nurse engagement was also a prominent theme in this review. Nurses who reported greater levels of job satisfaction and engagement were found to provide better quality care, which directly impacted patient outcomes. On the other hand, burnout and job dissatisfaction were linked to lower performance and patient care. The results indicate that if factors contributing to nurse burnout such as workload, job satisfaction, and work environment are addressed, nurse performance and patient care can improve.

The privatization of healthcare in Saudi Arabia has brought both opportunities and challenges in the staffing sector. While privatized hospitals are often considered to be more efficient, the cost-cutting measures usually undertaken in these settings can have a negative impact on nurse staffing levels, which may, consequently, have an impact on patient outcomes. Studies such as those by Blume et al. (2021) and Alayed et al. (2024) highlight the need for evidence-based staffing models that consider the financial realities of privatized healthcare while also ensuring sufficient nurse staffing to ensure patient safety and quality of care.

### **Future Directions**

While this review gives valuable insights into the impact of nurse staffing on patient outcomes, there are some areas that require further exploration. Future studies should consider investigating the efficacy of specific staffing models including acuity-based staffing or nurse-patient ratio guidelines in privatized healthcare settings. Additionally, research may also be directed towards the long-term impact of nurse engagement and retention strategies on patient outcomes, especially in the context of Saudi Arabia's evolving healthcare system.

Further research could also explore the cultural and organizational factors affecting nurse staffing and patient care in Saudi Arabia, particularly in view of the large number of expatriate nurses in the workforce. Understanding how cultural dynamics such as the work environment for expatriate nurses impact staffing and patient outcomes could offer important insights for nursing workforce improvement in Saudi Arabia.

Moreover, future studies should aim to include more diverse methodologies, including longitudinal studies, to help capture the long-term impact of nurse staffing levels on patient outcomes. Collaborative research efforts between healthcare institutions, policy makers and nursing leaders would also be valuable in developing actionable recommendations on improving staffing practices in privatized healthcare settings.

### **Limitations**

Despite the worthy contribution of this systematic review, there are some limitations to take into consideration. First, the time frame of the review was limited to studies published between 2020 and 2024, which may have excluded relevant older studies that may have contributed to the understanding of nurse staffing in privatized settings. Additionally, most studies in this review were cross-sectional in design which limited the ability to determine the causal relationship between nurse staffing and patient outcomes. Longitudinal studies are needed to give stronger evidence of the long-term effects of staffing levels on patient care.

Another limitation is the possibility of publication bias, with studies that have positive findings being more likely to be published. The studies included in this review were also mainly conducted in public and privatized hospitals in urban areas of Saudi Arabia, which may not represent the experiences of nurses and patients in rural or underserved areas.

### **Conclusion**

This systematic review highlights the importance of adequate nurse staffing in the context of ensuring positive patient outcomes in privatized healthcare settings in Saudi Arabia. The findings reveal the vital importance that nurse staffing levels play in ensuring patient safety, satisfaction and quality of care. The review also stresses the importance of policies that focus on adequate staffing in both public and privatized

healthcare settings, as well as strategies for enhancing nurse engagement and retention. As Saudi Arabia continues to move towards a privatized healthcare system, ensuring that the number of nurse staffing levels is sufficient to meet patient care demands will be crucial in maintaining the quality and safety of healthcare services. The review urges further research into the role of staffing models, nurse engagement and the effects of privatization on the quality of healthcare, to inform evidence-based policies that will maximize patient outcome.

---

## References

1. Albaher, Z., & Alqurashi, H. (2024). Primary Healthcare Centre Improvement and Privatisation in the Kingdom of Saudi Arabia: A Systematic Review. *Cureus*, 16(12).
2. Albaqawi, H., Butcon, V. E., Albagawi, B. S., Alshammari, M. H., Pangket, P., & Dayrit, R. D. (2023). Exploring the factors that impact Saudi Arabian nurses on holistic nursing care in patient outcomes: A qualitative study. *International Journal of Advanced and Applied Sciences*, 10(12), 1-12.
3. Albougami, A. S., Almazan, J. U., Cruz, J. P., Alquwez, N., Alamri, M. S., Adolfo, C. A., & Roque, M. Y. (2020). Factors affecting nurses' intention to leave their current jobs in Saudi Arabia. *International journal of health sciences*, 14(3), 33.
4. Al-Dossary, R. N. (2022). The Relationship Between Nurses' Quality of Work-Life on Organizational Loyalty and Job Performance in Saudi Arabian Hospitals: A Cross-Sectional Study. *Frontiers in Public Health*, 10. <https://doi.org/10.3389/fpubh.2022.918492>
5. Alharbi, H. F., Alzahrani, N. S., Almarwani, A. M., Asiri, S. A., & Alhowaymel, F. M. (2022). Patients' satisfaction with nursing care quality and associated factors: A cross-section study. *Nursing Open*, 10(5). <https://doi.org/10.1002/nop2.1577>
6. Alhindi, A. A., Mahmud, I., Altakroni, H., Elmoosad, Y. M., Md Dilshad Manzar, Majed Alamari, & Khalid Alhusseinan. (2024). Assessment of Nursing Shortage and Calculation Methods in Saudi Arabia: A Cross-Sectional Study in Government Hospitals. *Cureus*. <https://doi.org/10.7759/cureus.71339>
7. Alhowaymel, F., Abaoud, A., Alhuwaimel, A., Alenezi, A., & Alsayed, N. (2022). COVID-19 Patients' Satisfaction Levels with Nursing Care: A Cross-Sectional Study. *SAGE Open Nursing*, 8, 237796082210781. <https://doi.org/10.1177/23779608221078163>
8. Ali, M., Ameer, W., Ahmad, Z., Aljounaidi, A., & Atiek, A.-H. (2024). Exploring the Quality of Care and the Nursing Practice Environment in Saudi Arabia. *Qlantic Journal of Social Sciences*, 5(4), 182–196. <https://doi.org/10.55737/qjss.v-iv.24095>
9. Alkorashy, H., & Alanazi, M. (2023). Personal and Job-Related Factors Influencing the Work Engagement of Hospital Nurses: A Cross-Sectional Study from Saudi Arabia. *Healthcare*, 11(4), 572. <https://doi.org/10.3390/healthcare11040572>
10. Alotaibi, J. S. (2024). Hospital Patient Satisfaction With Nursing Care in Saudi Arabia. *Cureus*. <https://doi.org/10.7759/cureus.67840>
11. Alotaibi, J. S. (2024). Hospital Patient Satisfaction With Nursing Care in Saudi Arabia. *Cureus*. <https://doi.org/10.7759/cureus.67840>
12. Baker, O. G., & Alshehri, B. D. (2020). The Relationship between Job Stress and Job Satisfaction among Saudi Nurses: A Cross-Sectional Study. *Nurse Media Journal of Nursing*, 10(3), 292–305. <https://doi.org/10.14710/nmjn.v10i3.32767>
13. Blume, K. S., Dietermann, K., Heklau, U. K., Winter, V., Fleischer, S., Kreidl, L. M., Meyer, G., & Schreyögg, J. (2021). Staffing levels and nursing-sensitive patient outcomes: Umbrella review and qualitative study. *Health Services Research*, 56(5). <https://doi.org/10.1111/1475-6773.13647>
14. Drgham, A. L., Mohammed, N., Habardi, A. L., Meqbel, N., Helwah, A. L., AL Abdullah, J., ... & Fahad, A. M. (2023). International Journal of Bio-Medical Informatics and e-Health. *International Journal*, 11(6).
15. Sherim, M. A., & Hamidi, S. A. A. (2024). Factors Associated With the Nursing Care Experience of Patients Admitted to Riyadh Region Hospitals. *SAGE Open Nursing*, 10. <https://doi.org/10.1177/23779608241278531>

16. Gupta, Y., Philip, D., Raj, A., Rajput, M., Chaudhary, V. S., & Gupta, S. (2024). The Impact of Nursing Staffing Levels on Patient Outcomes: A Systematic Review with Implications for Healthcare Policy and Practice. *Asian Journal of Advanced Research and Reports*, 18(12), 153–160. <https://doi.org/10.9734/ajarr/2024/v18i12813>
17. Wali, R., Aljohani, H., Shakir, M., Jaha, A., & Alhindi, H. (2023). Job Satisfaction among Nurses Working in King Abdul Aziz Medical City Primary Health Care Centers: a Cross-Sectional Study. *Cureus*, 15(1). <https://doi.org/10.7759/cureus.33672>
18. Al-Nozha, O. M. (2024). Key aspects of the Saudi healthcare system reform and the potential impact on the main stakeholders: A qualitative study. *Journal of Taibah University Medical Sciences*, 1(1). <https://doi.org/10.1016/j.jtumed.2024.04.007>
19. Alayed, T. M., Alrumeh, A. S., Alkanhal, I. A., & Alhuthil, R. T. (2024). Impact of Privatization on Healthcare System: A Systematic Review. *Saudi Journal of Medicine & Medical Sciences*, 12(2), 125–133. [https://doi.org/10.4103/sjmms.sjmms\\_510\\_23](https://doi.org/10.4103/sjmms.sjmms_510_23)