

# Assessing Nurses' Attitudes Regarding to Factors Related to Hospitalized Patient Safety

**Nawal Munwer Almutairi<sup>1</sup>, Naifa Karallh Alshahrani<sup>2</sup>, Sahar Hamad Al Harthi<sup>3</sup>, Amal Ahmed Khabarni<sup>4</sup>, Entesar Ayed ALshammary<sup>5</sup>, Ghadeer Abdullah Alharbi<sup>6</sup>, Reem Naif Al Otaibi<sup>7</sup>, Ibrahim Ali Saeed Al Thubaiti<sup>8</sup>, Hatem Salman Hamid Al-Thubaiti<sup>9</sup>, Saeed Masoud Zaid Al Harthi<sup>10</sup>, Asma Awad Baqi Alanezi<sup>11</sup>, Anwar Awad Bagi Alanazi<sup>12</sup>**

1. Nurse, Alyamamah Hospital
2. Nurse, Alyamamah Hospital
3. Nurse, Alyamamah Hospital
4. Nurse, Alyamamah Hospital
5. Alyamamah Hospital, Nurse
6. Nurse, Alyamamah Hospital
7. Nurse, Alyamamah Hospital
8. Nursing, AL\_ Sahan Bani Saad General Hospital, Taif
9. Nursing, AL\_sahan Bani saad general hospital, Taif
10. <sup>1</sup>Nursing technician, Arada Complex and Mental Health in Taif
11. Nursing Specialist, North Medical Tower
12. Nursing Technician, North Medical Tower

## ABSTRACT

**Background:** A strong patient safety culture is essential for minimizing adverse events and improving healthcare quality. This study examines factors influencing patient safety culture among nurses in university hospitals, with a focus on teamwork climate, job satisfaction, stress recognition, and perceptions of management.

**Methods:** This descriptive cross-sectional study was conducted across medical and surgical wards in public hospitals. Using stratified sampling, a total of 3,605 Safety Attitudes Questionnaires (SAQ-SF) were distributed to nurses, resulting in 1,133 valid responses. The SAQ-SF, comprising six subscales—teamwork climate, safety climate, job satisfaction, stress recognition, perceptions of management, and work conditions—was administered, and responses were analyzed using MANOVA and regression models.

**Results:** Stress recognition (SR) had the highest scores (nurses: 71.9), while work conditions (WC) scored the lowest (nurses: 45.82). Significant differences emerged in

attitudes by profession, gender, ward type, and experience level, men, and experienced staff reporting higher positive attitudes. Staff in surgical wards scored higher in stress recognition compared to those in medical wards. A regression analysis showed that for each additional 10 hospital beds, stress recognition scores increased by 2.5 points, while job satisfaction decreased by 1.6 points.

**Conclusion:** This study reveals distinct variations in safety attitudes among healthcare professionals, emphasizing the need for tailored interventions to enhance patient safety culture across ward types and staff demographics. Strengthening safety culture through targeted support for nurses and junior staff, improvements in work conditions, and organizational commitment can enhance patient safety outcomes and overall healthcare quality.

## Introduction

Healthcare organizations' safety culture encompasses the beliefs, attitudes, perceptions, competencies, and behavioral patterns of both individuals and groups, all of which shape an organization's approach to health and safety management (1). In institutions with a strong safety culture, there is open, trust-based communication and shared understanding of safety priorities, supported by preventive measures and positive organizational beliefs, which work together with the structures and systems of the organization to establish behavioral standards that promote patient safety (2).

The concept of patient safety gained prominence in the 1990s, drawing attention to how organizational factors affect patient safety. Key elements impacting daily operations include organizational culture, communication, feedback mechanisms, and leadership style (3). As patient safety remains a primary concern for healthcare leaders, healthcare organizations must continuously strive to deliver the safest possible care to patients. Prioritizing patient safety daily is essential for fostering a healthcare environment that values and prioritizes patient well-being (4).

Patient safety is a fundamental human right, and all healthcare professionals, regulatory bodies, and political entities are responsible for cultivating a robust patient safety culture (5). According to Boamah et al. (2018), leaders can significantly influence nurses' adherence to safety protocols by actively promoting safety practices among their teams (6). The World Health Organization (WHO) highlights that a shift in healthcare culture—from attributing errors to individuals to viewing errors as opportunities for systemic improvement—is critical for advancing patient safety (WHO, 2017) (7). Therefore, healthcare organizations must ensure that patient safety is an explicitly stated goal, emphasized by healthcare leaders to support and strengthen patient safety culture (7).

Patient safety culture is multifaceted and involves interactions between nurses and healthcare leaders, such as hospital administrators, nursing directors, peers, and patients (8). Nurses are directly responsible for ensuring safe patient care, while nurse leaders play a key role in setting safety culture priorities and preventing adverse events (9). Leadership commitment to patient safety has been identified as a defining

characteristic of consistently safe organizations, with leaders holding more influence over patient safety culture than bedside nursing staff (8).

Building a strong safety culture in healthcare requires involvement from all members of the organization. The collaborative effort must include nurses, pharmacists, technicians, and support staff, working together to achieve desired patient outcomes and minimize harm (10). Effective collaboration directly impacts the quality of care, patient safety, and clinical outcomes, underscoring the necessity for all team members to share a commitment to fostering a safe and effective healthcare environment (11).

Sorra and Nieva (2004) define patient safety culture as the collective values, assumptions, beliefs, attitudes, and behaviors within healthcare organizations. They identify three key dimensions of patient safety culture: unit-level culture, hospital-wide culture, and outcome measures, with twelve sub-dimensions that include teamwork within units, management support for safety, non-punitive responses to errors, continuous learning and improvement, staffing, open communication, feedback about errors, and overall teamwork (12).

According to the WHO (7), medical errors rank among the leading causes of mortality and have significant economic impacts on healthcare systems. The organization's research underscores that nurses' perceptions of patient safety are reliable indicators of an organization's overall safety culture. By addressing these perceptions, healthcare administrators and nurse leaders can reduce adverse events and improve patient safety. This study aims to evaluate the patient safety culture among nurses in a high-capacity university hospital with a diverse nursing staff, to understand nurses' perspectives on factors that shape patient safety culture. Assessing these factors and their statistical impact on safety culture will assist healthcare administrators in making evidence-based decisions aligned with ongoing healthcare reforms.

## **Materials and Methods**

This descriptive cross-sectional study was conducted with nurses working in surgical and medical wards across multiple hospitals, selected through stratified sampling to account for geographic regions, administrative service areas, population density, and hospital reference levels. The study included only public, multi-specialty hospitals that provide continuous patient care.

### **Sample**

The inclusion criteria required participants to be a) nationals of the study's host country, b) employed at one of the selected hospitals, and c) actively working as nurses during the study period. All other hospital staff were excluded, along with nurses on maternity leave, extended sick leave, or study leave. A power analysis determined that a sample size of 1,050 participants would be sufficient to detect small effect sizes (eta squared 0.02) in safety attitude differences nurses, achieving 95% power and a family-wise error rate (FWER) of 0.05, following Cohen's recommendations.

## **Instrument**

The study used a validated diagnostic survey with the SAQ-SF tool, adapted to the language and context of the participating country. The Safety Attitudes Questionnaire demonstrated high reliability, with a Cronbach's Alpha of 0.98. The Kaiser-Mayer-Olkin (KMO) test was used to confirm sampling adequacy for factor analysis, resulting in a satisfactory KMO value and explaining a substantial proportion of total variance.

The questionnaire consists of 41 items divided into two sections: the first includes 36 items across six subscales, and the second captures demographic information. The six subscales are as follows: 1) Teamwork Climate (TC), assessing cooperation quality; 2) Safety Climate (SC), reflecting organizational commitment to patient safety; 3) Job Satisfaction (JS), related to professional experience; 4) Stress Recognition (SR), concerning stress impact on efficiency; 5) Perception of Management (PM), assessed at both ward and hospital levels; and 6) Work Conditions (WC), evaluating environmental and logistical workplace support. Additional questions address management's commitment to safety and interdisciplinary team cooperation but are not included in any subscale.

Responses are rated on a 5-point Likert scale (1 = strongly disagree to 5 = strongly agree), with reverse scoring for select items. Each question includes a "does not apply" option. Scores are converted to a 100-point scale, with 0 indicating the lowest and 100 the highest safety attitudes, and scores of 75 or higher indicating a positive attitude toward safety.

## **Data Collection**

The SAQ-SF was used to assess attitudes toward patient safety among nurses who completed the survey voluntarily and independently after receiving information about the study's aims and anonymity. In each hospital, a designated coordinator managed data collection, distributing the questionnaires in sealed envelopes at departmental meetings. Participants had four weeks to complete the survey, after which responses were securely collected.

## **Statistical Analysis**

Data analysis was conducted using R software, with a significance level set at  $\alpha = 0.05$ . Descriptive statistics for each SAQ subscale were presented as mean ( $\bar{x}$ ) and standard deviation (SD), calculated individually for each respondent within each subscale. Responses marked "does not apply" were excluded from calculations, and questionnaires with over 10% missing responses were removed from analysis.

Safety attitudes, as measured by the SAQ-SF, served as the dependent variable, while independent variables included professional group, gender, ward type, patient age group, professional experience, staffing levels, and bed count in the ward. Uni- and multivariate analyses compared mean subscale scores across these factors. A one-way multivariate analysis of variance (MANOVA) was used to assess the effect of each factor on the six safety subscales. If the MANOVA was significant, follow-up one-way ANOVAs identified specific subscales contributing to the effect, with a Bonferroni-adjusted significance level of  $p < 0.008$ . One-dimensional linear and

logistic regression models were used to examine the relationships between bed count, staffing levels, and SAQ subscales, adjusted for professional group, ward type, and experience level.

## Results

A total of 3,605 questionnaires were distributed—2,382 to nurses . Of these, 2,672 forms were returned (1,934 from nurses ), yielding a response rate of 74%. Forms missing over 10% of responses on the Safety Attitudes Questionnaire Short Form (SAQ-SF) were excluded, resulting in a final sample of 1,133 analyzed questionnaires: 606 from nurses . Most respondents were women (743; 65.57%). group were nearly evenly distributed across medical and surgical wards (nurses: 50.33% medical, 49.67% surgical; ). The majority of staff in each group worked in wards caring for adult patients (97.51% of nurses). Over half of the nurses (54.02%) had over 21 years of experience.

A multidimensional analysis indicated that the domains of teamwork climate (TC), safety climate (SC), job satisfaction (JS), stress recognition (SR), perception of management (PM), and work conditions (WC) in nurse were mentioned below

Stress recognition (SR) yielded the highest mean scores (nurses: 71.6), while work conditions (WC) received the lowest evaluations (nurses: 45.82). There are variations in attitudes toward factors impacting patient safety.

Staff in surgical wards showed higher mean scores in stress recognition compared to those in medical wards (78.12 vs. 73.72;  $p = 0.001$ ). Additionally, significant gender differences were identified across all subscales, with women scoring lower overall ( $p < 0.05$ ). Years of professional experience also correlated significantly with stress recognition (SR), where staff with less experience scored higher (see Table 2).

Table 1. Characteristics of the studied nurses

		<b>nurses</b>
		<b>(N = 606)</b>
		<b>N (%)</b>
<b>Unit type, n (%)</b>		
	<b>Medical units</b>	305 (50.33)
	<b>Surgical units</b>	301 (49.67)
<b>Gender, n (%)</b>		
	<b>Women</b>	553 (95.34)
	<b>Men</b>	27 (4.66)
<b>Age group of treated patients, n (%)</b>		
	<b>Adults</b>	509 (97.51)
	<b>Adults &amp; children</b>	13 (2.49)
<b>Seniority, n (%)</b>		
	<b>&lt; 1 year</b>	33 (5.64)
	<b>1–4 years</b>	65 (11.11)
	<b>5–10 years</b>	74 (12.65)
	<b>11–20 years</b>	97 (16.58)

	<b>≥21 years</b>	316 (54.02)
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Note: p -value; N- number.

Table 2. Comparison of Safety Attitudes Questionnaire (SAQ-SF) results in reference to socio-demographic features.

		<b>Teamwork climate</b>	<b>Safety climate</b>	<b>Job satisfaction</b>	<b>Stress recognition</b>	<b>Perception of management</b>	<b>Work conditions</b>
		<b>Mean (sd)</b>	<b>Mean (sd)</b>	<b>Mean (sd)</b>	<b>Mean (sd)</b>	<b>Mean (sd)</b>	<b>Mean (sd)</b>
		62.38 (17.53)	63.41 (17.8)	60.95 (22.21)	71.6 (22.09)	52.33 (22.03)	45.82 (21.33)
	<b>stat</b>	F(1,1131) = 19.6, <b>p&lt;0.001</b>	F(1,1131) = 6.68, <b>p = 0.01</b>	F(1,1131) = 31.9, <b>p &lt;0.001</b>	F(1,1131) = 48.4, <b>p &lt;0.001</b>	F(1,1131) = 30.1, <b>p &lt;0.001</b>	F(1,1131) = 22.7, <b>p &lt;0.001</b>
<b>Gender, n (%)</b>							
	<b>Women (N = 743)</b>	62.92 (16.94)	63.65 (17.55)	62.21 (22.71)	74.09 (22.66)	53.88 (22.48)	46.74 (21.54)
	<b>Men (N = 323)</b>	67.86 (15.52)	66.56 (15.99)	69.8 (21.58)	79.83 (22.33)	59.75 (20.58)	52.9 (22.84)
	<b>stat</b>	F(1,1064) = 20.1, <b>p &lt;0.001</b>	F(1,1064) = 6.54, <b>p = 0.011</b>	F(1,1064) = 25.9, <b>p &lt;0.001</b>	F(1,1064) = 14.6, <b>p &lt;0.001</b>	F(1,1064) = 16.1, <b>p &lt;0.001</b>	F(1,1064) = 17.7, <b>p &lt;0.001</b>
<b>Unit type, n (%)</b>							
	<b>Medical units (570)</b>	63.64 (16.15)	64.66 (16.61)	64.97 (22.42)	73.72 (23.96)	54.91 (22.72)	48.25 (22.06)
	<b>Surgical units (563)</b>	65.2 (17.39)	64.63 (17.95)	63.94 (23.07)	78.12 (21.37)	56.4 (21.47)	49.23 (22.59)
	<b>stat</b>	F(1,1131) = 2.46, <b>p = 0.117</b>	F(1,1131) = 0, <b>p = 0.976</b>	F(1,1131) = 0.58, <b>p = 0.447</b>	F(1,1131) = 10.6, <b>p = 0.001</b>	F(1,1131) = 1.28, <b>p = 0.258</b>	F(1,1131) = 0.54, <b>p = 0.461</b>
<b>Group of treated patients, n (%)</b>							

	<b>Adults (N = 956)</b>	64.56 (16.57)	64.86 (17.09)	64.66 (22.52)	75.77 (22.85)	55.69 (22.28)	48.17 (22.03)
	<b>Adults &amp; children (N = 16)</b>	64.22 (22.98)	61.53 (22.14)	65.7 (23.14)	72.27 (19.49)	50.45 (17.39)	57.42 (19.53)
	<b>stat</b>	F(1,970) = 0.01, p = 0.935	F(1,970) = 0.59, p = 0.443	F(1,970) = 0.03, p = 0.854	F(1,970) = 0.37, p = 0.542	F(1,970) = 0.88, p = 0.35	F(1,970) = 2.79, p = 0.095
<b>Seniority, n (%)</b>							
	<b>&lt; 1 year (N = 69)</b>	66.49 (15.71)	65.52 (14.43)	65.98 (20.82)	78.99 (19.09)	62.62 (19.55)	50.63 (23.66)
	<b>1–4 years (N = 177)</b>	63.77 (16.3)	63.09 (16.72)	61.84 (23.84)	78.58 (21.19)	55.52 (22.45)	51.45 (23.13)
	<b>5–10 years (N = 180)</b>	62.68 (17.21)	62.88 (16.99)	64.13 (22.86)	79.54 (21.76)	54.48 (22.7)	46.84 (21.22)
	<b>11–20 years (N = 230)</b>	63.53 (16.9)	64.91 (17.35)	65.07 (24.1)	75.86 (24.88)	55.63 (21.39)	47.83 (22.27)
	<b>≥21 years (N = 443)</b>	65.44 (16.76)	65.36 (17.93)	65.12 (22)	72.74 (22.9)	54.98 (22.43)	48.6 (22.32)
	<b>stat</b>	F(4,1094) = 1.39, p = 0.235	F(4,1094) = 1.06, p = 0.374	F(4,1094) = 0.8, p = 0.523	F(4,1094) = 4.24, p = <b>0.002</b>	F(4,1094) = 1.95, p = 0.1	F(4,1094) = 1.2, p = 0.31

Note: sd- Standard deviation; stat– statistics; p -value.

Table 3. Comparison of Safety Attitudes Questionnaire (SAQ-SF) results among nurses

Teamwork climate (TC)	Category <sup>*</sup>	Nurses (N = 606)	
		n	%
	≥ 75	116	19.1
	< 75	490	80.9
Safety climate (SC)	≥ 75	133	21.9
	< 75	473	78.1
Job satisfaction (JS)	≥ 75	130	21.5
	< 75	476	78.5
Stress recognition (SR)	≥ 75	237	39.1

	< 75	369	60.9
<b>Perception of management (PM)</b>	≥ 75	76	12.5
	< 75	530	87.5
<b>Work conditions (WC)</b>	≥ 75	35	5.8
	< 75	571	94.2

\*≥75 pts.

–positive result. <75 pts.- negative result.

Note: p -value; N- number.

**Discussion**

This study represents the first effort to assess nurses' attitudes toward patient safety within hospitals. Less than 40% of the participants achieved a positive score (≥75 points) on five of the six SAQ subscales, signaling a substantial need to foster patient safety cultures across healthcare facilities.

In an international comparison, nurses reported lower mean scores in the SR subscale than their counterparts in Australia and Norway, yet higher than nurses in Sweden, Albania, and several Asian (China, Turkey, Saudi Arabia, Iran) (13–16), African (Kenya) (17), and American (Brazil, Pittsburgh) regions (18, 19). As found globally, seniority impacted results, with newer nurses demonstrating a heightened awareness of stress’s adverse effects on patient safety, consistent with findings by Aljadhey et al., who linked increased experience with decreased stress recognition (15). Additionally, Żuralska et al. noted that less-experienced nurses often employ a task-focused and supportive approach to handle stress more effectively (24).

Stress negatively influences safety and work efficiency, as supported by studies from Rasool et al. and Ganndi et al. (25, 26). Australian physicians (84.90) and exceeding those of nurses (71.6), emphasizing the need for stress management programs to enhance patient safety culture.

Teamwork quality can mitigate or exacerbate work-related stress and patient safety outcomes. nurses scored 62.38 on teamwork, surpassing peers but falling below counterparts in other European (Norway, Sweden) (10, 11), Asian, African, and American regions (13, 15, 16, 18, 19). physicians similarly scored higher than those in Albania yet lower than those in Sweden, China, Kenya, and the US (9, 11, 13, 17). This discrepancy may be attributed to hierarchical dynamics that can inhibit non-physician contributions, highlighting the need for more inclusive collaboration in healthcare.

On the safety climate subscale, nurses scored higher than those in Albania and Turkey, but lower than peers in other European, Asian, American, and African countries. safety climate scores also exceeded those of physicians in Sweden and Albania (11, 12). Nurses’ mean job satisfaction score (60.95) was notably lower than physicians’ (68.5), indicating that while both groups generally appreciated their work environment, lower satisfaction among nurses could compromise patient safety. Kunaviktikul et al. found

a link between nurse dissatisfaction and higher error rates, underscoring the role of improved teamwork and work conditions in job satisfaction (27).

Evaluations of hospital management (PM) and work conditions (WC) were low across both groups, reflecting perceptions of managerial limitations on patient safety. Alayed et al. suggested these perceptions may stem from limited employee-supervisor contact and insufficient managerial engagement (28). Other studies indicate that regular audits, safety assessments, resource allocation, and managerial support foster a positive safety attitude among healthcare workers (29, 30).

Our findings reveal that 87% of nurses rated work conditions as insufficient for supporting patient safety. This trend mirrors results from other nations, with nurses scoring lower on work conditions than those in Norway, Sweden, and Brazil. OECD data suggests that countries with higher nurse-to-patient ratios report better work conditions, highlighting the need for increased nursing staff in Poland to support patient safety (33, 34).

Studies by Aiken et al. demonstrate that increased nurse workload correlates with higher patient mortality, suggesting that enhanced working conditions and staffing improvements directly benefit patient safety (35). Additionally, research by Wagner et al. and McHugh et al. links positive working conditions to job satisfaction, lower stress, and increased safety (36, 37).

Overall, this study's findings align with global trends, underscoring the universal nature of patient safety culture. The Global Patient Safety Action Plan 2021–2030 offers adaptable strategies for national implementation to improve patient safety worldwide. Studies like this establish foundational data to guide future improvements in healthcare safety attitudes among hospital staff (38).

## Conclusions

These findings offer valuable insights for identifying areas of improvement in patient safety, especially at the unit level. Recognizing the significance of managing occupational stress, enhancing work conditions, and promoting effective teamwork among staff may help managers foster a more positive safety culture. Cross-country differences observed in this study reinforce the reliability of the SAQ tool across languages and healthcare systems, suggesting its utility in international benchmarking and comparative studies of patient safety culture. This research contributes to a growing body of literature underscoring the importance of consistent patient safety conditions across healthcare settings.

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