

## Identifying Critical Patient Safety Dimensions and the Impact of Culture on Nurse Turnover

Abdulrahman Saleem Almalki<sup>1</sup>, Amal Hamad Mohammad Alhassoon<sup>2</sup>, Ahmed Juwaybir Onayz Alsulami<sup>3</sup>, Mazen Hamdan Salem Altalhi<sup>4</sup>, Alanazi Yazeed Atallah B<sup>5</sup>, Majed Hamoud Alotaibi<sup>6</sup>, Fatemah Hussain Ali Hothan<sup>7</sup>, Fahad Saeed Burayz Almutairi<sup>8</sup>, Abdullah Saleh Abdullah Alhujaylan<sup>8</sup>, Kayed Farah Al Otaibi<sup>9</sup>, Khalid Mihmas Aljish<sup>10</sup>, Bander Barak Saud Alotabi<sup>11</sup>

<sup>1</sup>Senior specialist health administration, Maternity and Children's Hospital in Makkah, Saudi Arabia.

<sup>2</sup>Social worker, Dawadmi General Hospital, Saudi Arabia.

<sup>3</sup>Health Informatics Technician, Maternity and Children's Hospital in Makkah, Saudi Arabia.

<sup>4</sup>Specialist in health management and hospitals, Ministry of Health Branch in Makkah, Saudi Arabia.

<sup>5</sup>Nursing Health Assistant, Buraidah Central Hospital, Saudi Arabia.

<sup>6</sup>Nursing Specialist, Dawadmi General Hospital, Saudi Arabia.

<sup>7</sup>Staff Nurse, Samatah General Hospital, Saudi Arabia.

<sup>8</sup>Health Assistant-Health Care security, Erada Hospital and Mental Health in Qassim, Saudi Arabia.

<sup>9</sup>Nursing specialist, Al Khasira General Hospital, Saudi Arabia.

<sup>10</sup>Nursing Specialist, Shaqra General Hospital, Saudi Arabia.

<sup>11</sup>Anesthesia technician, Sajer General Hospital, Saudi Arabia.

---

Received: 15.07.2024

Revised: 25.08.2024

Accepted: 04.09.2024

---

### ABSTRACT

**Background:** The primary threat to patient safety is a lack of understanding of the causes of nurse turnover, which directly impacts the care provided by staff in accordance with the patient safety culture (PSC). Identifying key factors influencing nurse turnover is crucial.

**Aim of the study :** it assess the 1 critical patient safety culture dimension and its relationship with nurses turnover at KSA

**Method Research design:** Descriptive cross sectional research design was utilized to conduct this research

**Setting:**The study was conducted in the largest five Hospitals Dammam, Saudi Arabia .

**Participants :**All healthcare workers actively nurses in the largest five Hospitals Dammam . 290 out of 350 nurses of the five hospitals participating facilities received a self-administered survey through a special email link over the course of two weeks in February and March of 2024.a convenience sampling method was used to recruit nurses Informed consent was acquired, and participation in the survey was anonymous and voluntary. Out of an estimated 350 nurses professionals working across the facilities, 290 completed surveys were returned, resulting in an 88.5% response rate.

**Study questionnaire:** Patient Safety Culture and Attitudes Questionnaire. to assess the patient safety culture in hospital. Intention to Stay Questionnaire (ISQ) to measure nurses intentions to stay with the organizationData collection: The researcher approached selected nurses during breaks with hand-delivered questionnaires. Before distributing the questionnaire, the researcher stated the study's purpose and provided any necessary instructions.

**Results:**The perception of patient safety culture has a percentage score of  $56.80 \pm 14.83$ . The most significant subscale was perception of the unit's patient safety culture (mean  $\pm$  SD =  $59.95 \pm 15.20$ ), followed by communication (mean  $\pm$  SD =  $53.02 \pm 19.53$ ). The supervisor/manager subscale had the lowest mean  $\pm$  SD ( $48.31 \pm 19.86$ ). Table 2 shows that more than half (53.1%) of the nurses polled had a moderate inclination to stay.Also, there is a somewhat negative correlation ( $r = -0.32$ ,  $p = 0.015$ ) between patient safety culture and anticipated turnover (19.86).

**Conclusion:**This study adds to the previous literature by highlighting the link between patient safety culture and intent to depart. Improving patient safety culture can increase nurses' retention and reduce turnover, according to the findings. Fostering a patient-safety culture through strong leadership is vital for retaining nurses.

**Keywords:** safety, literature, Questionnaire, Hospital

## INTRODUCTION

Patient safety is crucial for providing great care and ensuring no damage occurs during treatment. The increasing complexity of medical activities can lead to adverse occurrences, which pose a severe threat to patient safety (Hall & Scott, 2012). A medical organization's open culture and reflective approach to patient safety can help staff learn from mistakes and decrease harm to patients [1]. A positive safety culture can foresee possible dangers, influence staff conduct, and provide hospital initiatives for patient safety [2, 3]. Improving patient safety culture (PSC) is crucial for improving healthcare quality globally [4]. According to Bowman et al. (2005), nursing adverse events include patient falls, medication errors, wandering, aspiration or asphyxiation, burns, and other safety-related incidents during hospitalization. Patient safety is a serious concern, including adverse events and medical blunders. According to Chenet et al. (2019), unfavorable occurrences can create both physical and psychological suffering for patients as well as a psychological cost on healthcare practitioners. The safety culture of an organization is influenced by the values, talents, attitudes, and behavior patterns of individuals and groups, resulting in a commitment to safety, a safety strategy, and effective implementation [2]. Hospitals prioritize patient safety by preventing and correcting adverse events during treatment [17]. The PSC plays a crucial role in reducing adverse occurrences in hospitals [18]. A positive attitude towards patient safety among medical staff can foster harmonious relationships, minimizing medical malpractice and compensation costs [19, 20, 21]. Failure to correctly analyze the PSC can lead to higher safety risks for patients (22). Establishing a PSC involves both management and medical staff to maintain quality and prevent medical errors [23]. Hospital management's dedication to patient safety may lead to greater job satisfaction among physicians and nurses [24]. Sexton et al. devised the SAQ, which measures six dimensions: teamwork climate, safety climate, management perspectives, job satisfaction, stress recognition, and working circumstances [2]. When a healthcare practitioner confronts an unexpected unfavorable patient occurrence, they may experience trauma as a result of medical errors or patient-related injury (Scott et al., 2009). Nurses are more vulnerable to adverse outcomes than other occupations due to their excessive workload, close contact with patients, and inadequate staffing.

Second-victim pain, including psychological and physical suffering, is influenced by multiple factors, with patient safety culture being the most significant (Quillivan et al., 2016). Our populous country struggles with limited medical resources and nursing staff.

Nurses have a crucial role in patient contact, medical service delivery, and mistake reduction [5, 6]. According to Badr et al. [7], nurses' direct interaction with patients leads to improved perceptions of patient safety, which is a crucial component in investigating the PSC. An increasing workload for nursing staff may result in more medical mishaps [8]. Healthcare institutions globally, including Taiwan, are facing nursing staff shortages and high turnover rates [9, 10]. Chang et al. [11] found that high turnover among nurses is associated with job dissatisfaction, low organizational commitment, and higher patient dissatisfaction. Negative job satisfaction has been linked to higher turnover intentions among nurses (12, 13, 14). The significant turnover rate among nursing personnel in recent years poses a danger to the medical care system and patient care quality [40]. Research suggests that turnover intention is a strong predictor of future employee behaviors (41, 42), although it does not always predict actual turnover. Takase [43] defined turnover intention as an employee wanting to leave their current workplace. Nursing staff turnover may be caused by a variety of variables, including hard workloads, high pressure, and low job satisfaction (16, 44). The loss of nursing staff causes a shortage, significantly impacting patient care and increasing the expense of training new people [45, 46].

### Significant of the study:

According to Trivellas et al. [47], nurses who experience high job pressure and low job satisfaction are more likely to leave their jobs. Job satisfaction and organizational commitment have significant causal connections with turnover intention [42]. Excessive work pressure and low job satisfaction might significantly impact patient care and increase the likelihood of staff departure [48].

To reduce turnover, healthcare organizations must address employee turnover intentions [49]. According to Mobley et al. [50], individual turnover is mostly influenced by satisfaction. Previous research have mostly focused on nursing staff turnover and retention strategies. Research has shown that employing the safety attitudes questionnaire (SAQ) to develop the PSC can improve medical staff views of patient-centered care and reduce turnover intentions [1, 15, 11-16]. No studies have been discovered to uncover important factors influencing nurses' leaving through SAQ analysis. Uncertainty about the reasons for nurse turnover poses a significant risk to patient care. This study use the Safety Attitudes Questionnaire (CSAQ) to examine the PSC in hospitals and identify significant factors influencing nurse turnover.

### Aim of the study :

Assess the critical dimensions of patient safety culture and its relationship to nurses turnover level

### Research question :

What are the critical dimension of patient safety culture?

What is the relationship between patient safety culture and its related dimension with nurse intention to leave ?

**Method:****Research design:**

Descriptive cross sectional research design was utilized to conduct this research

**Setting:**

The study was conducted in the largest five Hospitals Dammam, Saudi Arabia .

**Participants :**

All healthcare workers actively employed in the thelargest five Hospitals Dammam . All nurses of the five hospitals participating facilities received a self-administered survey through a special email link over the course of two weeks in February and March of 2024.a convenience sampling method was used to recruit nurses Informed consent was acquired, and participation in the survey was anonymous and voluntary. Out of an estimated 350 nurses professionals working across the facilities, 290 completed surveys were returned, resulting in an 88.5% response rate.

**Study questionnaire:****Patient Safety Culture and Attitudes Questionnaire.**

It was developed by Sextonet al. [25] developed the SAQ. to assess the patient safet culture in hospital. It has been validated cross-culturally and translated into multiple languages, including English, Turkish, Swedish, Norwegian, and Chinese, with high internal consistency and reliability (Deilkås and Hofoss [25]; Huang et al. [5]; Ulrich and Ker [26]). [27, 28, 29, 30]. It consisted of, which includes six dimensions: teamwork climate, safety climate, management perceptions, job satisfaction, stress recognition, and working conditions.

**Tool (3): Intention to Stay Questionnaire (ISQ)**

This tool developed by Lambert and Hogan (2012)to measure nurses intentions to stay with the organizationit includes 5 items. Nursesresponse were be measured on a 5 - point likert scale ranging from (1) strongly disagree to (5) strongly agree. The maximum and minimums scoring level ranging from 1 to 25. The scoring system was as the following:

- The range of scores from 17 to 25 refers to high intention to stay .
- The range of scores from 9 to 16 refers to moderate intention to stay.
- The range of scores from 1 to 8 refers to low intention to stay.

In addition, a part of socio demographic data questionnaire were developed by the researcher and it included its : age, sex, educational qualification, working unit, years of experience in nursing profession , years of experience in current unit and working settings.

**Data collection**

The researcher approached selected nurses during breaks with hand-delivered questionnaires. Before distributing the questionnaire, the researcher stated the study's purpose and provided any necessary instructions.

**Statistical analysis**

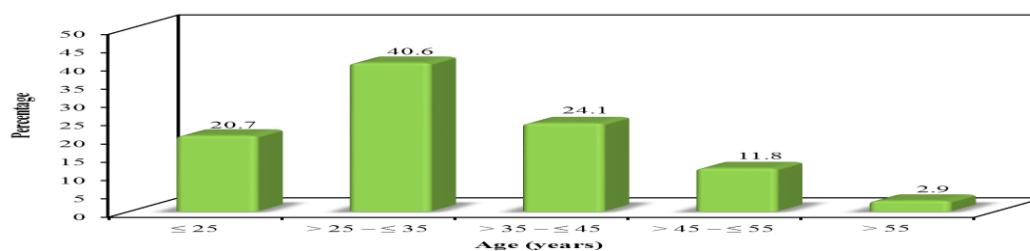
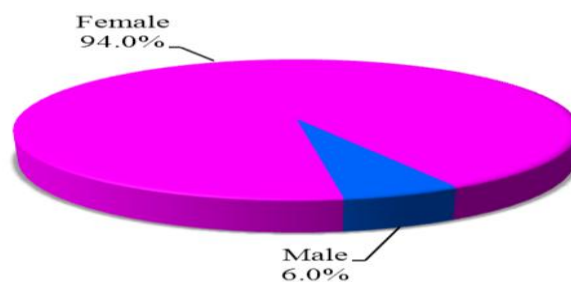
SPSS software was used for the analysis. The sample was described using descriptive statistics. The significance of the relationships between utilization frequency and demographics was evaluated using chi-square testing. The mean scores of TAM variables for each employment role were compared using a one-way ANOVA. Common themes were used to group the qualitative replies. The threshold for statistical significance was  $p < 0.05$ .

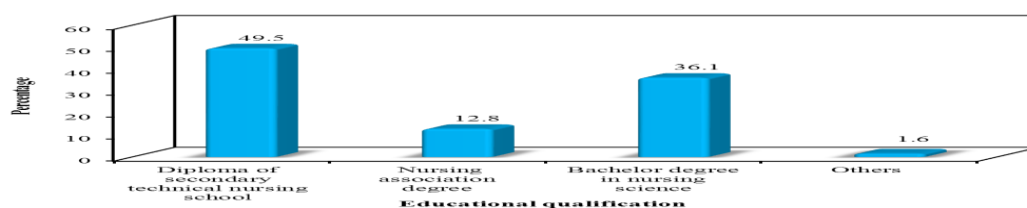
**4. RESULTS****4.1 Sample Characteristics**

Table 1 reveals that 40.6% of researched nurses were in the age range of 25 to less than 35 years old. Only 2.9% of studied nurses were in the age group >55 years old (mean  $\pm$  SD =33.90  $\pm$ 14.41). The majority of nurses, 94%, were women. In terms of educational qualifications, over half (49.5%) of the researched nurses held a diploma from a secondary technical nursing school, while slightly more than one-third (36.1%) held a bachelor's degree in nursing science. In terms of working units, slightly more than half (50.52%) of investigated nurses worked in inpatient units, 31.1% in critical care units (ICUs), and only 18.3% in outpatient units.In terms of nursing experience, 29.8% of nurses had 1-5 years of experience, whereas only 6.2% had less than 1 year (mean  $\pm$  SD = 9.76  $\pm$  10.03). In terms of working experience, 35.6% of individuals had 1-5 years of experience (mean  $\pm$  SD = 7.20  $\pm$  10.03).

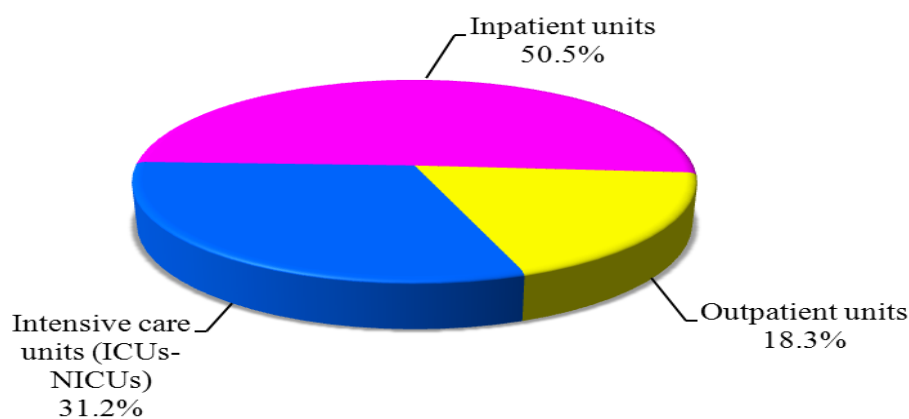
**Table 1.** Distribution of studied nurses according to their demographic and professional characteristics.

| Demographic data                                   | No.                 | 382 | %    |
|--|---------------------|-----|------|
| <b>Age (years)</b>                                 |                     |     |      |
| ≤ 25   | 79                  |     | 20.7 |
| > 25 – ≤ 35  | 155                 |     | 40.6 |
| > 35 – ≤ 45  | 92                  |     | 24.1 |
| > 45 – ≤ 55  | 45                  |     | 11.8 |
| > 55   | 11                  |     | 2.9  |
| <b>Mean ± SD</b>                                   | <b>33.90 ±14.41</b> |     |      |
| <b>Sex</b>   |                     |     |      |
| Male   | 23                  |     | 6.0  |
| Female   | 359                 |     | 94.0 |
| <b>Educational qualification</b>                   |                     |     |      |
| Diploma of secondary technical nursing school      | 189                 |     | 49.5 |
| Nursing association degree.                        | 49                  |     | 12.8 |
| Bachelor degree in nursing science                 | 138                 |     | 36.1 |
| Others   | 6                   |     | 1.6  |
| <b>Study Units</b>                                 |                     |     |      |
| Intensive care units (ICUs-NICUs)                  | 119                 |     | 31.1 |
| Inpatient units                                    | 193                 |     | 50.5 |
| Outpatient units                                   | 70                  |     | 18.3 |
| <b>Years of experience in nursing profession</b>   |                     |     |      |
| <5   | 24                  |     | 6.3  |
| 5 – <10  | 114                 |     | 29.8 |
| 10 – <15   | 108                 |     | 28.3 |
| 15 – < 20  | 78                  |     | 20.4 |
| > 20   | 58                  |     | 15.2 |
| <b>Mean ± SD</b>                                   | <b>9.76 ± 10.03</b> |     |      |
| <b>Years of experience in nursing working unit</b> |                     |     |      |
| <5   | 63                  |     | 16.5 |
| 5 – <10  | 136                 |     | 35.5 |
| 10 – <15   | 97                  |     | 25.5 |
| 15 – < 20  | 50                  |     | 13.1 |
| > 20   | 36                  |     | 9.4  |
| <b>Mean ± SD</b>                                   | <b>7.20 ±10.03</b>  |     |      |

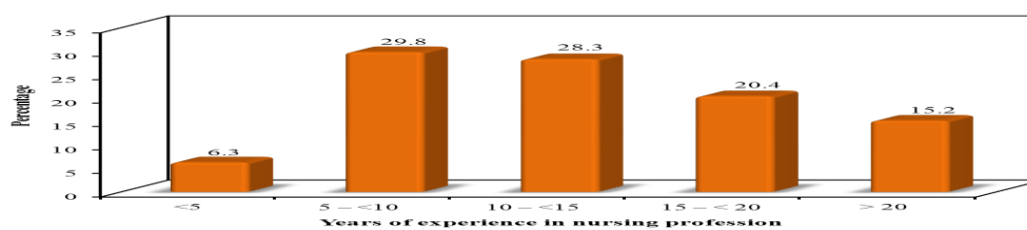
**Figure 1:** Distribution of studied nurses according to age**Figure 2:** Distribution of studied nurses according to sex



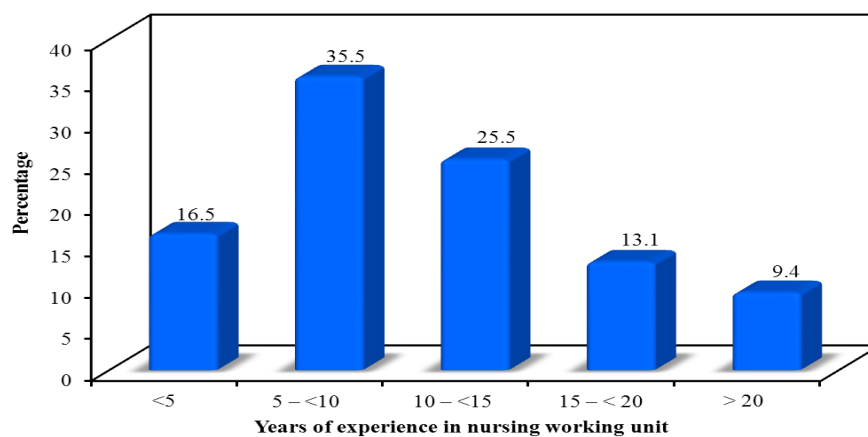
**Figure 3:** Distribution of studied nurses according to educational qualification



**Figure 5:** Distribution of studied nurses according to study units



**Figure 6:** Distribution of studied nurses according to years of experience in nursing profession

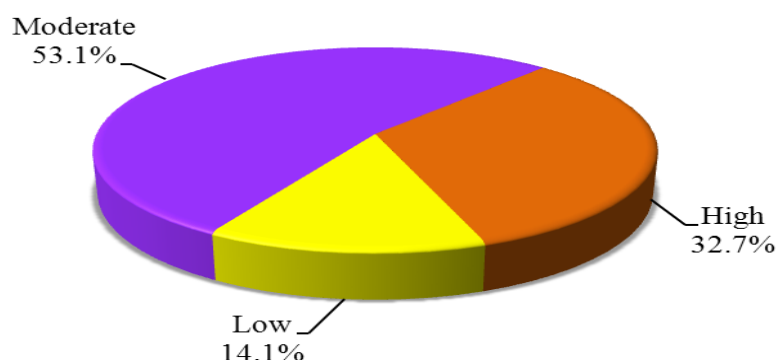


**Figure 7:** Distribution of studied nurses according to years of experience in nursing working unit

Table 2 shows that more than half (53.1%) of the nurses surveyed indicated a moderate level of intention to stay.

**Table 6.** Distribution of studied nurses according to their intention to stay.

| Intention to stay | Low |                  | Moderate |            | High |      | Total |       |
|-------------------|-----|------------------|----------|------------|------|------|-------|-------|
|                   | No. | %                | No.      | %          | No.  | %    | No.   | %     |
|                   | 54  | 14.1             | 203      | 53.1       | 125  | 32.7 | 382   | 100.0 |
| High: (17-25)     |     | moderate: (9-16) |          | low: (1-8) |      |      |       |       |



**Figure 8:** Distribution of studied nurses according to intention to stay

Table (3) shows the perception of patient safety culture, with an overall percent score of  $56.80 \pm 14.83$ . The most significant subscale was perception of patient safety culture within the unit (mean  $\pm$  SD =  $59.95 \pm 15.20$ ), followed by communication (mean  $\pm$  SD =  $53.02 \pm 19.53$ ). The lowest subscale was supervisor/manager (mean  $\pm$  SD =  $48.31 \pm 19.86$ ).

**Table 3 :** The level of patient safety culture

| Patient safety culture                           | Total Score                               | % Score           |
|--|---|-------------------|
| Perception of patient safety culture within unit | (18–90) Mean $\pm$ SD. $61.17 \pm 10.95$  | $59.95 \pm 15.20$ |
| Supervisor/Manager                               | (4–20) Mean $\pm$ SD. $11.73 \pm 3.18$    | $48.31 \pm 19.86$ |
| Communication                                    | (6–30) Mean $\pm$ SD. $18.73 \pm 4.69$    | $53.02 \pm 19.53$ |
| Overall Patient safety culture                   | (28–140) Mean $\pm$ SD. $91.62 \pm 16.61$ | $56.80 \pm 14.83$ |

Table 4 shows a somewhat negative connection ( $r = -0.32$ ,  $p = 0.015$ ) between patient safety culture and projected turnover (19.86).

**Table 4:** The correlation matrix of patient safety culture and nurses turnover:

|                            | r     | p     |
|----------------------------|-------|-------|
| Patient safety culture     | -0.32 | 0.015 |
| Anticipated turnover scale |       |       |

## DISCUSSION

The study aimed to examine nurses' perceptions of patient safety culture and its impact on their intention to leave. This study adds to the previous literature by highlighting the link between patient safety culture and intent to depart. Improving patient safety culture can increase nurses' retention and reduce turnover, according to the findings. Fostering a patient-safety culture through strong leadership is vital for retaining nurses.

This study found that cooperation, hand-off, and information exchange obtained the best marks in the patient safety culture composites. Staffing, workspace, and responsiveness to error had the lowest rankings. Ammouri et al.'s (2015) Jordanian study using the HSOPSC (Version 1) yielded similar results. In all investigations, teamwork was viewed as the most beneficial factor, whereas responsiveness to error and staffing received the lowest scores [5]. However, variances in the technique utilized may cause discrepancies in the findings.

A study of 380 nurses in Iran (2017) indicated that handoffs and transitions of care received the lowest score, whereas organizational learning received the highest. The total mean score for safety culture composites was comparable to our findings. Differences in study settings may explain variability in composite-level outcomes [1]. In an Iranian randomized controlled trial, organizational learning and teamwork were determined to be the most effective, whereas non-punitive error response and staffing received the lowest scores. The study found that introducing a nursing empowerment program led to considerable improvements in safety culture and certain parameters. The study found that introducing a nursing empowerment program led to considerable improvements in safety culture and certain parameters. Our findings confirm the need for staff assistance and a blame-free culture when responding to errors to improve safety culture (15). Our survey found that nurses had a strong propensity to leave their occupations. Lagerlund et al. (2015) found a link between perceived leadership and intention to leave among nurses, which supports our findings. One-third of the nurses in the survey planned to depart within a year. Intention to leave was linked to less years of experience, inadequate work-related education, more burnout, and lower leadership perceptions (references 2, 3). Our study found that most participants planned to leave their occupations within a year, but the reasons for these intentions were not investigated.

A survey in Arab countries indicated that a large proportion of nurses planned to leave their positions due to issues like income and benefits, nurse-to-bed ratio, and lack of recognition. Dissatisfaction with poor salary, work overload, and lack of recognition led to their intention to leave [16]. The data confirm that nurses are likely to abandon their professions due to work constraints, low pay, and lack of support and recognition. A study in Thailand found that nurses working in better conditions experienced lower burnout, discontent, and intention to leave. Key environmental factors influencing nurse retention include nursing quality of care, managerial ability, leadership and support, perception of hospital affairs, collegial nurse-physician relations, and staff resource adequacy (17).

Our analysis found a moderate negative connection between patient safety culture and expected turnover. Previous research have found a negative link between turnover intentions and safety atmosphere [18]. Research suggests a link between organizational safety behaviors, safety culture features, and intent to stay (19, 20).

## CONCLUSION

This study emphasizes the significance of patient safety culture in predicting nurses' intention to leave their positions. The study emphasizes the importance of improving patient safety culture and addressing variables that contribute to turnover intentions. To promote nurse retention, hospital management should work with department managers and unit leaders to identify and address the reasons behind their intention to quit.

Establishing magnet hospitals, strengthening organizational culture, and addressing nurses' concerns can reduce their desire to leave their professions

## REFERENCES

1. Lee YC, Huang CH, Wu CF, Hsueh HW, Wu HH. A longitudinal[1] study of identifying critical variables influencing patient safety culture from nurses' viewpoints in Taiwan. *J Test Eval* 2019;47(5): 3387-98. <http://dx.doi.org/10.1520/JTE20180060>
2. Nieva VF, Sorra J. Safety culture assessment: A tool for improving[2] patient safety in healthcare organizations. *Qual Saf Health Care* 2003; 12(90002) (Suppl. 2): 17ii-23. [http://dx.doi.org/10.1136/qhc.12.suppl\\_2.ii17](http://dx.doi.org/10.1136/qhc.12.suppl_2.ii17) PMID: 14645891
3. Braithwaite J, Herkes J, Ludlow K, Testa L, Lamprell G.[3] Association between organisational and workplace cultures, and patient outcomes: Systematic review. *BMJ Open* 2017; 7(11): e017708. <http://dx.doi.org/10.1136/bmjopen-2017-017708> PMID: 29122796
4. Li L, Wu HH, Huang CH, Zou Y, Li XY. Key drivers of promoting[4] patient safety culture from the perspective of medical staff at a tertiary hospital in China. *TQM J* 2023; 35(6): 1556-67. <http://dx.doi.org/10.1108/TQM-02-2022-0061>
5. Huang CH, Wu HH, Lee YC, Van Nieuwenhuyse I, Lin MC, Wu CF.[5] Patient safety in work environments: Perceptions of pediatric healthcare providers in Taiwan. *J Pediatr Nurs* 2020; 53: 6-13. <http://dx.doi.org/10.1016/j.pedn.2020.03.005> PMID: 32299035
6. Top M, Tekingündüz S. Patient safety culture in a Turkish public[6] hospital: A study of nurses' perceptions about patient safety. *Syst Pract Action Res* 2015; 28(2): 87-110. <http://dx.doi.org/10.1007/s11213-014-9320-5>
7. Badr HE, AlFadallah T, El-Jardali F. Towards promoting patient[7] safety practices: Baseline assessment of patient safety culture in three private hospitals. *Int J Healthc Manag* 2020; 13(3): 207-14. <http://dx.doi.org/10.1080/20479700.2017.1390958>
8. Thompson BJ. Does work-induced fatigue accumulate across three[8] compressed 12 hour shifts in hospital nurses and aides? *PLoS One* 2019; 14(2): e0211715. <http://dx.doi.org/10.1371/journal.pone.0211715> PMID: 30730927
9. Lin TC, Lin HS, Cheng SF, Wu LM, Ou-Yang MC. Work stress,[9] occupational burnout and depression levels: A clinical study of paediatric intensive care unit nurses in Taiwan. *J Clin Nurs* 2016; 25(7-8): 1120-30. <http://dx.doi.org/10.1111/jocn.13119> PMID: 26914523
10. Niskala J, Kanste O, Tomietto M, et al. Interventions to improve[10] nurses' job satisfaction: A systematic review and meta-analysis. *J Adv Nurs* 2020; 76(7): 1498-508. <http://dx.doi.org/10.1111/jan.14342> PMID: 32128864
11. Chang HY, Shyu YIL, Wong MK, Chu TL, Lo YY, Teng CI. How[11] does burnout impact the three components of nursing professional commitment? *Scand J Caring Sci* 2017; 31(4): 1003-11 <http://dx.doi.org/10.1111/scs.12425> PMID: 28439914
12. Ahanchian M, Ganji SFG. The effect of perceptions of ethical[12] context on job satisfaction with emphasis on work values: The case of female staff at an Iranian university. *Int J Work Organ Emot* 2017; 8(2): 118-30. <http://dx.doi.org/10.1504/IJWOE.2017.086438>
13. Yahya Muabbar H, Zayyan Alsharqi O. The impact of short-term[13] solutions of nursing shortage on nursing outcome, nurse perceived quality of care, and patient safety. *American Journal of Nursing Research* 2020; 9(2): 35-44. <http://dx.doi.org/10.12691/ajnr-9-2-1>

14. Chen IH, Brown R, Bowers BJ, Chang WY. Work-to-family conflict[14] as a mediator of the relationship between job satisfaction and turnover intention. *J Adv Nurs* 2015; 71(10): 2350-63.
15. <http://dx.doi.org/10.1111/jan.12706> PMID: 26043649
16. Mannion R, Davies H. Understanding organisational culture for[15] healthcare quality improvement. *BMJ* 2018; 363: k4907. <http://dx.doi.org/10.1136/bmj.k4907> PMID: 30487286
17. Lee EK, Kim JS. Nursing stress factors affecting turnover[16] intention among hospital nurses. *Int J Nurs Pract* 2020; 26(6): e12819. <http://dx.doi.org/10.1111/ijn.12819> PMID: 31997511
18. WiekeNoviyanti L, Ahsan A, Sudartya TS. Exploring the[17] relationship between nurses' communication satisfaction and patient safety culture. *J Public Health Res* 2021; 10(2): 125-8. <http://dx.doi.org/10.4081/jphr.2021.2225> PMID: 33855410
19. Kakemam E, Gharaee H, Rajabi MR, et al. Nurses' perception of[18] patient safety culture and its relationship with adverse events: A national questionnaire survey in Iran. *BMC Nurs* 2021; 20(1): 60. <http://dx.doi.org/10.1186/s12912-021-00571-w> PMID: 33845822
20. Huang CH, Wu HH, Lee YC. The perceptions of patient safety[19] culture: A difference between physicians and nurses in Taiwan. *Appl Nurs Res* 2018; 40: 39-44. <http://dx.doi.org/10.1016/j.apnr.2017.12.010> PMID: 29579497
21. Wu CF, Wu HH, Lee YC, Huang CH. What attributes determine[20] overall satisfaction in patient safety culture? an empirical study of the perceptions of hospital staff in Taiwan. *J Test Eval* 2021;49(1): 629-39. <http://dx.doi.org/10.1520/JTE20180713>
22. Huang CH, Wu HH, Lee YC, Li X. The critical role of leadership in[21] patient safety culture: A mediation analysis of management influence on safety factors. *Risk Manag Healthc Policy* 2024; 17: 513-23 <http://dx.doi.org/10.2147/RMHP.S446651> PMID: 38476201
23. Khosravizadeh O, Vatankeh S, Jahanpour M, Yousefzadeh N,[22] Shahsavari S, Yari S. Predicting inpatient length of stay in Iranian hospital: Conceptualization and validation. *Asian Pac J Cancer Prev* 2020; 21(8): 2439-46. <http://dx.doi.org/10.31557/APJCP.2020.21.8.2439> PMID: 32856876
24. Weng SJ, Kim SH, Wu CL. Underlying influence of perception of[23] management leadership on patient safety climate in healthcare organizations - A mediation analysis approach. *Int J Qual Health Care* 2017; 29(1): 111-6. PMID: 27920245
26. Wang X, Chontawan R, Nantsupawat R. Transformational[24] leadership: Effect on the job satisfaction of registered nurses in a hospital in China. *J Adv Nurs* 2012; 68(2): 444-51. <http://dx.doi.org/10.1111/j.1365-2648.2011.05762.x> PMID: 21771039
27. Sexton JB, Helmreich RL, Neilands TB, et al. The safety attitudes[25] questionnaire: Psychometric properties, benchmarking data, and emerging research. *BMC Health Serv Res* 2006; 6(1): 44. <http://dx.doi.org/10.1186/1472-6963-6-44> PMID: 16584553
28. Deilkås ET, Hofoss D. Psychometric properties of the Norwegian[26] version of the safety attitudes questionnaire (SAQ), generic version (short form 2006). *BMC Health Serv Res* 2008; 8(1): 191. <http://dx.doi.org/10.1186/1472-6963-8-191> PMID: 18808693
29. Al-Surimi K, Almuhayshir A, Ghailan KY, Shaheen NA. Impact of Patient Safety Culture on Job satisfaction and intention to leave among Healthcare Workers: evidence from Middle East Context. *Risk Management and Healthcare Policy*; 2022. pp. 2435–51.
30. Jarrar MT, Ali B, Shahrudin N, Al-Mugheed R, Aldhadi K, Al-Bsheish BK, M., & Alumran A. (2023). The impact of the working hours among Malaysian nurses on their Ill-Being, Intention to leave, and the Perceived Quality of Care: a cross-sectional study during the COVID-19 pandemic. *J Multidisciplinary Healthc*, 119–31.
31. Payne SC, Bergman ME, Beus JM, Rodríguez JM, Henning JB. Safety climate: Leading or lagging indicator of safety outcomes?. *Journal of Loss Prevention in the Process Industries*. 2009 Nov 1;22(6):735-9.
32. Barlow KM, Zangaro GA. Meta-analysis of the reliability and validity of the anticipated turnover scale across studies of registered nurses in the United States. *J Nurs Adm Manag*. 2010;18(7):862–73.
33. El-Jardali F, Fadlallah R. A review of national policies and strategies to improve quality of health care and patient safety: a case study from Lebanon and Jordan. *BMC Health Serv Res*. 2017;17(1):1–13.
34. Al Momani M. Factors influencing public hospital nurses' intentions to leave their current employment in Jordan. *Int J Community Med Public Health*. 2017;4(6):1847–53.
35. Nantsupawat A, Srisuphan W, Kunaviktikul W, Wichaikhum OA, Aungsuroch Y, Aiken LH. Impact of nurse work environment and staffing on hospital nurse and quality of care in Thailand. *J Nurs Scholarsh*. 2011;43(4):426–32.
36. Tondo JCA, GuirardelloEdB. Perception of nursing professionals on patient safety culture. *Revistabrasileira de enfermagem*. 2017;70:1284–90. 19. Rodríguez-García MC, Martos-López IM, Casas-López G, Márquez-HernándezVV, Aguilera-Manrique G, Gutiérrez-Puertas L. Exploring the relationship



- between midwives' work environment, women's safety culture, and intent to stay. *Women Birth*. 2023;36(1):e10–6.
37. Dorigan GH, Mingato DFP, Guirardello EDB. (2020). Nursing safety attitudes: relationship with time of experience and intention to leave the job. *RevistaGaúcha de Enfermagem*, 41. PMID: 26295088