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Determinants of Nurses' Safety Attitudes in a Hospital Setting

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Abstract

Hospital patient safety socialization is a routine part of nursing care. Although nurses' knowledge of patient safety affects nurses' safety attitudes, such knowledge may not be optimal. This study explored potential factors determining nurses' safety attitudes in a hospital setting. This was a quantitative study with a cross-sectional design. The study population comprised 376 nurses who were recruited using the purposive sampling method. The instruments were valid and reliable. The test results were as follows: job satisfaction: 0.356 – 0.575 (Cronbach's alpha: 0.724); workload: 0.338 – 0.613 (Cronbach alpha: 0.736), job stress: 0.542 – 0.719 (Cronbach's alpha: 0.756); head nurse's management function: 0.401 – 0.822 (Cronbach's alpha: 0.760); working conditions: 0.488 – 0.670 (Cronbach's alpha: 0.767); and nurses' safety attitudes: 0.300–0.827 (Cronbach's alpha: 0.771). The data were analyzed by bivariate and multivariate analyses, using structural equation modeling (SEM). The results revealed a relationship between the following variables and nurses' safety attitudes: age (p = 0.001), work experience (p = 0.001), job satisfaction (p = 0.001), gender (p = 0.025), clinical nurses' career path (p = 0.001), patient safety training (p = 0.032), workload (p = 0.001), work stress (p = 0.009), head nurse's management function (p = 0.001), and working conditions (p = 0.001). Workload was the most influential factor affecting nurses' safety attitudes (original sample = -0.776). To improve nurses' safety attitudes, hospitals need to pay attention to nurses' job satisfaction, workload, work stress, and working conditions and optimize the head nurse's management function to improve nurses' safety attitudes.

Keyword: determinant, nurses, safety attitudes, workload

Abstrak

Determinan Sikap Keselamatan Perawat di Rumah Sakit. *Sosialisasi keselamatan pasien rumah sakit telah rutin dilakukan, tetapi pengetahuan perawat tentang keselamatan pasien yang akan memengaruhi sikap keselamatan perawat masih belum optimal. Penelitian ini bertujuan untuk mengetahui faktor-faktor yang memengaruhi (determinan) sikap keselamatan perawat di rumah sakit. Penelitian kuantitatif dengan desain cross sectional ini dilakukan pada 376 perawat yang diambil dengan metode purposive sampling. Instrumen tersebut valid dan reliabel dengan hasil uji kepuasan kerja adalah 0,356 – 0,575 (*Cronbach alpha's *0,724), beban kerja adalah 0,338 – 0,613 (*Cronbach alpha's *0,736), stres kerja adalah 0,542 – 0,719 (*Cronbach alpha's *0,756), fungsi manajemen kepala ruangan adalah 0,401 – 0,822 (*Cronbach alpha's *0,760), kondisi kerja adalah 0,488 – 0,670 (*Cronbach alpha's *0,767), sikap keselamatan adalah 0,300 – 0,827 (*Cronbach alpha's *0,771). Data dianalisis secara bivariat dan multivariat dengan menggunakan* Structural Equation Model. *Ada hubungan antara umur (p = 0,001), pengalaman kerja (p = 0,001), kepuasan kerja (p = 0,001), jenis kelamin (p = 0,025), jenjang karir perawat klinik (p = 0,001), pelatihan keselamatan pasien (p = 0,032), beban kerja (p = 0,001), stres kerja (p = 0,009), fungsi manajemen kepala perawat (p = 0,001), dan kondisi kerja (p = 0,001) dengan sikap keselamatan perawat. Faktor yang paling berpengaruh terhadap sikap keselamatan perawat adalah beban kerja (*Original sample *= -0,776). Rumah sakit perlu memperhatikan kepuasan kerja perawat, beban kerja, stres kerja, kondisi kerja, dan optimalisasi fungsi manajemen kepala perawat untuk meningkatkan sikap keselamatan perawat.*

Kata Kunci: *beban kerja, determinan, perawat, sikap keselamatan*

Introduction

A nurse's safety attitude is one of the most important factors affecting patient safety. According to the literature, nurses' attitudes affect the implementation of patient safety guidelines (El-

Azzab & Abd El-Aziz, 2018). Avia and Hariyati (2019) found that nurses' safety attitudes increased patient safety by 54 – 54% in an accredited hospital. Other research found that nurses' safety attitudes affected patient safety implementtation 13,940 times positively (Nihayati et al., 2019). A number of studies reported that good safety attitudes reduced the number of errors, increased patient safety, increased the number of safe behaviors, and reduced work-related accidents in hospitals (Alanazi et al., 2022; Bottcher et al., 2019; Lillykutty et al., 2018; Saberi et al., 2017). Thus, nurses' safety attitudes have a significant impact on the safety of patients in hospitals.

Nurses' attitudes toward patient safety in hospitals are not good. In a study of nurses (N = 424) in four Palestinian Gaza Strip hospitals, Bottcher et al. (2019) found that only 41.9% of the nurses had positive attitudes toward patient safety. Nihayati et al. (2019) found that only 52.2% of nurses in Tehran Hospital, Iran had positive patient safety attitudes. Research on 185 nurses in a government hospital and 120 nurses in a private hospital in Jambi found that only 45.48% and 56.22%, respectively, of nurses had positive attitudes towards patient safety (Bukhari, 2019). In a research hospital in Jakarta, Indonesia, Suganda et al. (2021) reported that 50.91% of nurses had poor safety attitudes. Unsafe patient safety attitudes among nurses can lead to errors and incidents in hospitals (Niknejad et al., 2019).

The results of an observational study on the implementation of patient safety procedures in a government hospital in Jakarta, Indonesia between September and December 2019 revealed good implementation of procedures among the nurses. However, the results of a questionnaire survey of 176 nurses found that 100 (56.8%) nurses had poor knowledge about patient safety. As reported previously, the greater the level of nurses' knowledge about patient safety, the more positive their safety attitudes (Lillykutty et al., 2018). The results of an interview with a nurse at the hospital in December 2019 found that some patients were treated for falls during 2019. Safety attitudes are influenced by nurses' compliance with applicable policies and standards (Kwon et al., 2019). Standard Operating Procedures stimulate that nurses must reassess patients with a low, moderate, and high risk of falls in each shift. As the patients did not have a high fall risk, it could be assumed that nurses' compliance with Standard Operating Procedures was poor.

The phenomenon found in this hospital indicates that nurses' attitudes toward patient safety are not optimal, possibly due to various reasons. The factors influencing nurses' safety attitudes need to be identified because they affect patient safety and can prevent patient incidents (Lee et al., 2016; Tetuan et al., 2017). There has been no research on the determinants of nurses' safety attitudes. Based on the background description, the researcher is interested in identifying the factors influencing nurses' safety attitudes in the hospital.

Methods

This quantitative study used a cross-sectional design and included 376 nurses of 668 nurses who worked in a government hospital in Jakarta, Indonesia. The participants were selected using the purposive sampling method. The inclusion criteria were as follows: who had worked for at least 1 year, nurses who worked in inpatient services (practitioners), nurses who were not on leave, and nurses who were willing to anger questions after receiving an explanation about the research.

This study adhered to the following ethical principles: (1) minimizing harm to the respondents by considering their comfort during the study and allowing them to fill out the questionnaire according to a specified time, (2) respecting human dignity by allowing the respondents to make their own decisions as regards participation in the research, (3) ensuring fair treatment of the respondents in the selection process by providing the same questionnaire

and the same information about the study, and (4) maintaining the confidentiality of the respondents' identities. This research was conducted after receiving the approval of the Faculty of Nursing Ethics Committee (number: SK-130/UN2.F12.D1.2.1/ETIK2020) and the hospital ethics review committee (number: LB.02.01/VII/442/KEP.037/2020). A research permit was also obtained from the hospital (number: LB.01.02/XX.2/1652/2020).

Data were collected using questionnaires that were developed and modified using various standardized instruments. The research questionnaires contained questions on the characteristics of the respondents, job satisfaction, workload, work stress, head nurse's management function, working conditions, and nurses' safety attitudes. The validity and reliability of the questionnaires were tested. The results were as follows; job satisfaction: 0.356 – 0.575 (Cronbach's alpha: 0.724), workload: 0.338 – 0.613 (Cronbach's alpha: 0.736), work stress: 0.542 – 0.719 (Cronbach's alpha: 0.756), head nurse's management function: 0.401 – 0.822 (Cronbach's alpha: 0.760), working conditions: 0.488 – 0.670 (Cronbach's alpha: 0.767), and nurses' safety attitudes: 0.300 – 0.827 (Cronbach's alpha: 0.771). Thus, the questionnaires were considered valid and reliable. Data were analyzed by bivariate and multivariate analyses. Structural equation modeling (SEM) was performed using the SMART PLS application.

Results

The first part of the survey was composed of seven items seeking demographic information about the participants, such as nurses' age, gender, clinical career path, educational background, work unit, patient safety training, and work experience in the hospital. Tables 1 and 2 present

Table 1. Demographic Data on the Respondents Based on Gender, Clinical Nurses' Career Path, Training, Education, and Work Unit

Variables	*N*	%
Gender		
Male	89	23.67
Female	287	76.33
Clinical Nurse's Career Path		
Clinical Nurses I	104	27.66
Clinical Nurses II	132	35.11
Clinical Nurses III	15	3.99
Clinical Nurses IV	121	32.18
Clinical Nurses V	4	1.06
Nurses' Education		
DIII	169	44.95
S1	35	9.31
Ners	165	43.88
S2	4	1.06
S2 specialist	3	0.80
Work Unit		
Outpatient	19	5.05
IGD	20	5.32
ICU	103	27.39
Surgery	59	15.69
Child care	47	12.50
Surgical treatment	38	10.11
Adult care	90	23.94
Patient Safety Training		
Never	155	41.22
Ever	221	58.78

Table 2. Demographic Data on the Respondents Based on Age and Work Experience

Variables	Median ± SD	CI 95%
Age	37 ± 8.295	[37.33, 39.01]
Work experience	12 ± 8.973	[13.31, 15.13]

Note: CI = confidence interval

Table 3. Overview of Job Satisfaction, Workload, Work Stress, Working Hours, Working Conditions, Head Nurse's Management Function, and Nurses' Safety Attitudes

Variables	Mean ± SD	% Max Value	CI 95%
Job satisfaction	26.30 ± 2.753	75.14	[26.02, 26.58]
Workload	48.59 ± 5.726	69.41	[48.01, 49.17]
Work stress	51.00 ± 13.620	57.30	[49.91, 52.68]
Working hours	40.00 ± 3.460	76.92	[41.68, 42.38]
Working conditions	19.00 ± 2.394	76.00	[18.85, 19.33]
Head Nurse's Management Function	105.00 ± 15.189	84.00	[103.56, 106.64]
Planning	26.00 ± 4.018	86.67	[24.98, 25.79]
Organizing	17.00 ± 2.901	85.00	[16.66, 17.25]
Staffing	22.00 ± 3.090	88.00	[21.38, 22.00]
Actuating	21.00 ± 3.154	84.00	[20.37, 21.01]
Controlling	20.00 ± 3.618	80.00	[20.01, 20.74]
Nurses' safety attitudes	140.00 ± 12 851	80.46	[142.51, 145.11]

Note: CI = confidence interval

demographic data on the nurses who participated in this study. Tables 3 and 4 presents the results of an analysis of the relationship between the nurses' demographics and their safety attitudes.

The characteristics of the respondents are shown in Tables 1 and 2. The majority of the respondents (n = 287, 76.33%) were females. In the study group, 169 (44.95%) nurses had a DIII nursing education, 103 (27.39%) nurses worked in the intensive care unit (ICU), 132 (35.11%) nurses had career paths as a clinical nurse level II, and 221 (58.78%) nurses had attended patient safety training. The median age of the respondents was 37 years, with an average between 37.33 and 39.01 years. The median length of work experience was 12 years, with an average between 13.31 and 15.13 years.

Table 3 shows the potential variables that influenced the nurses' safety attitudes. The table shows that the respondents reported average job satisfaction (26.30), a workload of 48.59, work stress of 51, 40 hours of work, good working conditions of 19, head nurses have performed 105 of its management functions and nurses' safety attitudes of 140.

Table 4 shows the results of the analysis of the relationship between internal factors and nurses' safety attitudes. As shown in the table, there was a significant relationship between nurses' safety attitudes and gender, clinical nurse career path, and patient safety training ($p < 0.005$) but not with education and work unit.

Table 5 shows the results of the analysis of relationship between external factors and nurses' safety attitudes. As shown in the table, that was a significant relationship between age, work experience, job satisfaction workload, work stress, working conditions, and head nurses management functions ($p < 0.005$) but no relationship between working hours and nurses' safety attitudes.

The factors that most influenced the nurses' sa-

fety attitudes were identified by a multivariate analysis using SEM. Figure 1 shows the relationship between nurses' safety attitudes and job satisfaction, workload, work stress, head nurse's management function, and working conditions after the validity and reliability tests.

Table 4. Analysis of the Relationship Between the Characteristics of the Respondents and Their Safety Attitudes

Variables	Nurses' Safety Attitudes	
	Mean ± SD	Significance Value (p)
Gender		
Male	211.10 ±12.494	0.025
Female	181.49 ±12.501	
Clinical Nurses' Career Path		
Clinical Nurses I	146.83 ±12.484	
Clinical Nurses II	188.89 ±12.502	0.001
Clinical Nurses III	227.47 ±12.488	
Clinical Nurses IV	216.49 ±12.489	
Clinical Nurses V	266.38 ±12.000	
Patient Safety Training		
Never	174.15 ±12.494	0.032
Ever	198.57 ±12.498	
Nurses' Education		
DIII	142.17 ± 12.832	
S1	145.17 ± 13.184	0.067
Ners	144.81 ± 12.626	
S2	156.75 ± 12.816	
S2 specialist	141.33 ± 11.846	
Work Unit		
Outpatient	142.26 ± 11.661	
IGD	142.80 ± 13.748	
ICU	144.02 ± 14.323	0.657
Surgery	144.95 ± 11.621	
Child care	140.96 ± 11.333	
Surgical treatment	143.26 ± 13.693	
Adult care	145.09 ± 12.363	

Table 5. Analysis of the Relationship between Age, Work Experience, Job Satisfaction, Workload, Work Stress, Working Hours, Working Conditions, and Head Nurse's' Management Function with Nurses' Safety Attitudes

Variables	Nurses' Safety Attitudes	
	r	Significance Value (p)
Age	0.247	0.001
Work experience	0.239	0.001
Job satisfaction	0.328	0.001
Workload	-0.338	0.000
Work stress	-0.135	0.009
Working hours	0.069	0.181
Working conditions	0.395	0.001
Head Nurse's Management Function	0.342	0.001
Planning	0.253	0.001
Organizing	0.307	0.001
Staffing	0.331	0.001
Actuating	0.352	0.001
Controlling	0.334	0.001

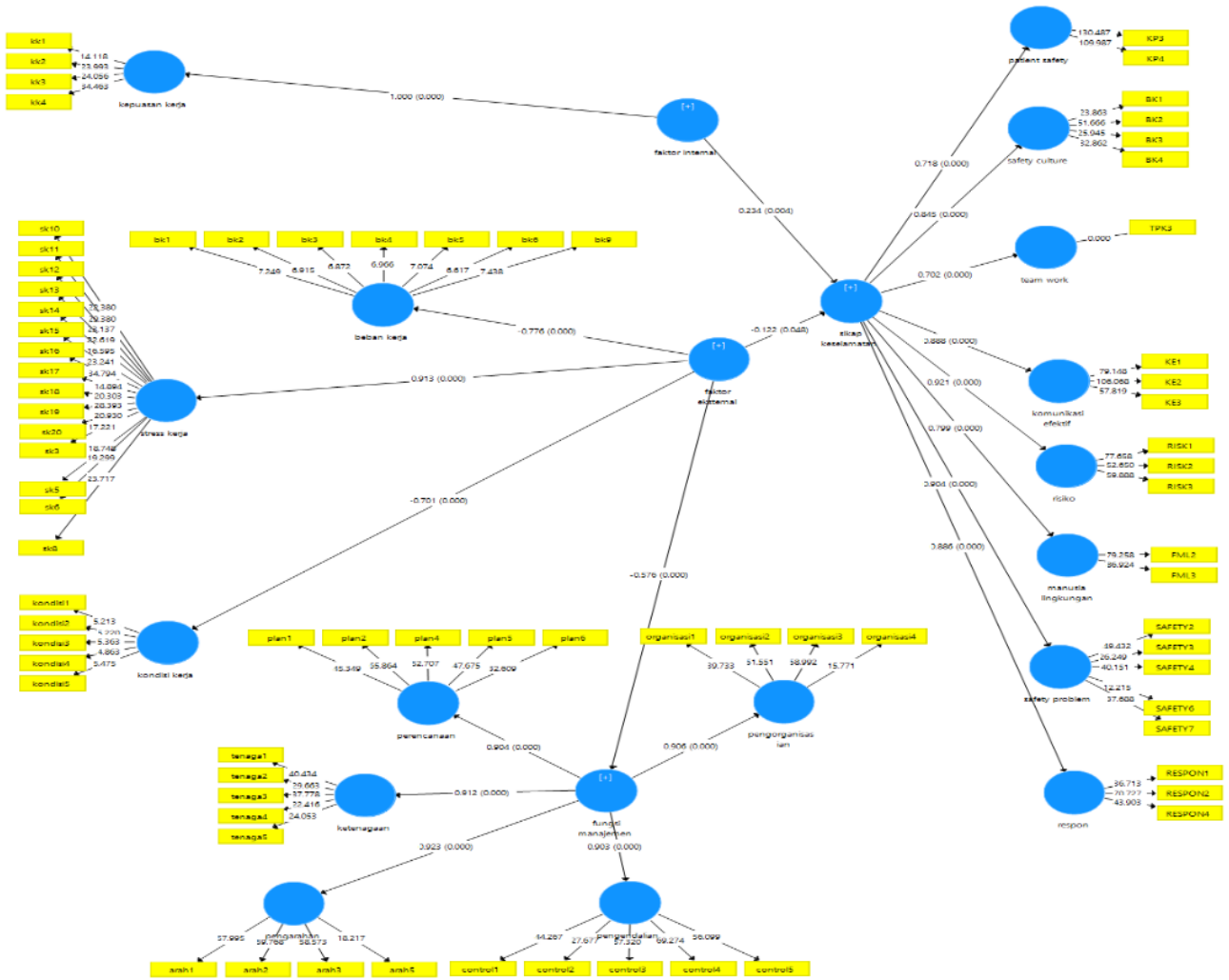

Figure 1. Inner model in Structural Equation Modeling (SEM) PLS

Table 6. Inner Model T Statistic Values in Structural Equation Modeling (SEM) PLS

Variables	Original Sample	Mean ± SD	Significance Value (p)
Job satisfaction	1.000	1.000 ± 0.000	0.001
Workload	-0.776	-0.767 ± 0.0854	0.001
Working stress	-0.634	-0.632 ± 0.080	0.001
Head nurse's management function	0,576	0.574 ± 0.061	0.001
Working conditions	0.701	0.690 ± 0.1007	0.001

As presented in Table 6, job satisfaction, workload, work stress, head nurse's management function, and working conditions were significantly associated with nurses' safety attitudes ($p < 0.05$). The relationship is shown by the following recession equation:

Equation 1.
Safety attitudes = 1,000 job satisfaction

Equation 2.
Safety attitude = 0.701 working conditions - 0.776 workload + 0.576 head nurse's management function - 0.634 work stress

Discussion

In this study, nurses' safety attitudes in a hospital setting were investigated. The results revealed a value of 140.00 (80.46% of the maximum value), with a minimum value of 105 and a maximum value of 174. Thus, the results of this analysis showed that nurses' attitudes were already in a good range. Based on our results, the factors determining nurses' safety attitudes in this hospital setting included age, work experience, gender, clinical nurse career path, patient safety training, job satisfaction, workload, work stress, working conditions, and head nurse management function.

Previous research found that older age was associated with better patient safety attitudes among nurses. Ünver and Seren (2018) reported that age was the main variable that influenced nurses' safety attitudes. In a study by Abu-El-Noor et al. (2019), nurses who were older than 35 years obtained higher nursing attitude scores. Liao et al. (2022) reported that safety attitudes were higher, on average, among older nurses in a study that focused on 16 tertiary hospitals in Sichuan Province, China, finding that nurses older than 36 years had better safety attitudes than those aged 20–35 years. Similar findings were found in a study by Zhang et al. (2018) on nurses older than 45 years. Older nurses can be expected to show greater responsibility and know their job better, which is reflected in a more positive attitude toward safety than younger nurses (Brasaite et al., 2016). With increasing age, nurses' work experience also increases, resulting in better safety attitudes.

Along with the increase in nurses' work experience, they will have a better safety attitude. This is relevant to Kong et al. (2019), Lillykutty et al. (2018), and Salih et al. (2021) who stated that the nurses' work experience affects good nurses' attitudes toward patient safety. In a previous study, the safety attitudes of nurses with 10 to 20 years of work experience were 4.56 times better than those of nurses with less than 10 years of experience (Lillykutty et al., 2018). Increasing clinical nurses' career paths based on nursing practical work experience also affects nurses' safety attitudes. Hariyati et al. (2018) found that more highly qualified nurses had a smaller chance of making medical errors than less qualified nurses. Suganda et al. (2021) reported similar findings, finding that highly qualified nurses were very unlikely to make making medical errors that threatened patient safety. Patient safety knowledge that nurses acquire based on their experience can be expected to make them more careful, leading to fewer mistakes at work.

Nurses' knowledge about patient safety affects their attitudes toward patient safety. Nurses must continue to be trained to increase their knowledge of patient safety procedures when providing nursing care to patients (Ünver & Seren, 2018). Abu-El-Noor et al. (2019) found that patient safety training improved nurses' safety attitudes, on average, by 44%. Patient safety training also increased job satisfaction and positively affected nurses' attitudes toward patient safety (Ünver & Seren, 2018).

Job satisfaction affects nurses' safety attitudes (Tondo & Guirardello, 2017; Ünver & Seren, 2018). Nurses who feel dissatisfied at work show reduced commitment to patient safety, decreased participation in patient safety activities, and patient neglect, failing to provide proper nursing care, thereby increasing patient safety incidents (Elsous et al., 2017; Sillero-Sillero & Zabalegui, 2019). Conversely, nurses who are satisfied at work show positive attitudes toward the implementation of patient safety measures (Sillero-Sillero & Zabalegui, 2019).

According to equation 1, there is a significant relationship between job satisfaction and nurses' safety attitudes ($p = 0.001$). Based on equation 2, the relationship between working conditions, workload, head nurse's management function, and work stress independently and simultaneously influence nurses' safety attitudes ($p = 0.001$). As shown by the prediction models based on equations 1 and 2, the factor determi-

ning nurses' safety attitudes was workload with -0.776 original sample value (O). According to these models, with each increase in nurse workload, the nurse's safety attitude decreases as much as 0.776 times after controlling for working conditions, head nurse's management function, and work stress. Thus, increasing nurses' workloads can be expected to negatively affect nurses' safety attitudes. Both Brasaite et al. (2016) and Lillykutty et al. (2018) found that a heavy nurse workload negatively affected patient safety. An increase in nurses' workloads also led to lower quality patient care and reduced patient safety (Carlesi et al., 2017; Delgado et al., 2017). According to studies by Nihayati et al. (2019) and Pérez-Francisco et al. (2020), an increase of 74% in nurses' workloads led to a decrease in the quality of patient care, increased mortality, and errors in patient care services. To address this issue, the decrease in safety attitudes in primary care nursing should be addressed.

According to the results of the present study, workload was the most influential determinant of nurses' safety attitudes. This finding suggests that with an increase in workload, nurses' safety attitudes can be expected to decrease. Workload and work-related pressures limit the time that nurses can dedicate to patient care (Pérez-Francisco et al., 2020. Under such conditions, nurses' attitudes toward patient safety may be more relaxed (Pérez-Francisco et al., 2020). In the present study, patient care was the responsibility of the nurse in charge of the patient, not all nurses in the work unit. Based on our results, this increased the workloads of many nurses. This should be a concern for hospital management. Hospitals have different goals at the same time, namely excellent service to patients, optimal quality of care, and operational excellence, using human resources as optimally as possible. Hospitals need a good balance between patient needs and nursing staff workload (Oetelaar et al., 2016).

As reported previously, a high workload is associated with a high level of work stress (Kokoroko & Sanda, 2019). Due to the specific nature of the nursing profession, which requires highly skilled teams working in stressful situations, providing 24-hour care and great emotional baggage. Keykaleh et al. (2018) found that workload was one of the most important stressors affecting patient safety attitudes besides patient mortality, uncertainty about treatment, conflict with coworkers, lack of well-being, and lack of support. In this study, the causes of work stress cited by the nurses were a lack of support from their superiors and a shortage of staff to meet the needs of the unit. Keykaleh et al. (2018) found that important sources of job stress among nurses were the number of nurses in the work environment, lack of support from superiors, unstable working hours, unsuitable physical conditions, inappropriate physical conditions, and high patient numbers. Tondo and Guirardello (2017) reported that prolonged stress affects nurses' safety attitudes and leads to clinical errors. Other studies reported similar findings (Elsous et al., 2017; Keykaleh et al., 2018). According to these studies, although work stress shows a weak relationship with nurses' safety attitudes, continual stress can lead to emotional exhaustion and reduce the quality of patient care, potentially resulting in clinical errors.

The workload will decrease if head nurses can control working conditions to prevent increased nurses' work stress, which will then affect nurses' safety attitudes. The attitude of hospital management toward patient safety is important. By implementing and supporting all dimensions of a positive safety culture, including nurses' attitudes (Barwari, 2021). According to Moghaddam et al. (2019), the main priorities of the head nurse are to improve the work environment and job satisfaction and reduce nurses' stress, thereby building a safe climate in the hospital. Winning et al. (2017) reported that good working conditions are necessary to avoid medical errors.

Thus, nurses need support from their head nurses to improve patient safety attitudes. Alzahrani

et al. (2018) asserted that the head nurse is at the center of nursing staff's safety attitudes. Others found that the head nurse plays a role in nurses' attitudes toward prioritizing patient safety by providing guidance, influencing nurses' beliefs and values, and monitoring and managing the quality of safety of nursing services (Bento et al., 2017; Smits et al., 2017; Yoo & Kim, 2017). Transparently informing staff of good and bad care is a way to communicate the impact of nurses' safety attitudes on improving patient safety or increasing medical errors (Echevarria & Thoman, 2017).

Conclusion

Nurses' attitudes toward patient safety influence the quality of the care services that they provide to patients. The present study revealed a significant relationship between a number of factors (age, gender, work experience, clinical nurses' career path, job satisfaction, workload, patient safety training, work stress, and working conditions) and the safety attitudes of the nurses in the hospital ($p < 0.05$).

Of these factors, workload was the most influential factor affecting nurses' safety attitudes, as identified by a multivariate analysis and SEM. Specifically, in this study, nurses with a high workload were 0.776 times more likely to have poorer safety attitudes. The hospital needs to pay attention to these factors because negative nurses' safety attitudes will have an impact on the quality of nursing services and patient safety.

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