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## Mediating Role of Work Environment in The Effect of Occupational Health, Safety Management System, And Teamwork over Patient Safety Climate According to Nurses' Perception

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Patient safety has been recognized as the biggest challenge in the global public health system. A good patient safety climate initiates planning for safe care. Also, the patient safety climate issue has become a top priority in the X Hospital. This study aims to reveal empirical evidence of the effect of occupational health and safety management systems, teamwork on patient safety climate with the mediation effect over work environment based on empirical research. In this research, we use cross-sectional method to processed path analysis with a 49 of total sampling at X Hospital. The data is obtained using a questionnaire form. The results show, path analysis of occupational health and safety management system had a positive effect on the patient safety climate, teamwork had a positive effect on the patient safety climate, the work environment had a positive effect on patient safety climate, and the safety and health management system had a positive effect on the work environment, teamwork had a positive effect on the work environment. In the case of the mediating effect of the work environment, the correlation of the occupational health and safety management system and teamwork was also positive. Improved occupational health and safety management systems, as well as teamwork mediated by the work environment, will enhance the patient safety climate

**Keywords:** Healthcare, Hospital, Patient Safety Climate, Occupational Health and Safety Management System, Teamwork, Work Environment.

### 1. INTRODUCTION

Patient safety has been a central issue in the global public health system [1]. Patients are exposed to safety risks during hospitalization [2]. One out of 10 patients suffer from harms while hospitalized where half of these incidents are preventable [3, 4]. Meanwhile, up to 4 of 10 patients are also disadvantaged from harms in primary health care and outpatient care, where roughly 80% of these incidents are also preventable [5]. The adverse events from health care services are among the top 10 leading causes of fatality in the world. Every year, 134 million patient safety incidents occur in hospitals in low- and middle-income countries which contribute to 2.6 million deaths [6]. Around 5 -10% of the health care cost burden is the result of medical errors [4]. Patient safety incidents account for 15% of hospital expenditures and activities [3]. In agreement with such a notion, the failure to ensure implementation of and financial -

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losses [7]. Numerous studies have indicated that safety climate plays a pivotal role in the reduction and prevention of safety incidents such as mistreatment or re-admission [8, 9, 10, 11, 12]. Patient safety issues also have become a major concern at the X Hospital. The X Hospital is a class D hospital owned by the DKI Jakarta Provincial Government which holds the status of a public service agency and has been fully accredited. Based on the 2019 Quality and Patient Safety Improvement Report (PMKP), there have been 3 patient safety incidents categorized as near-missed during 2019 at the X Hospital, which involved the pharmacy unit, operating room, and laboratory. Corrective management has been taken by X Hospital through a simple investigation. Compared to the number of patients per year, the average patient safety incident rate at the X Hospital is 0.005%. Preliminary studies showed a lower rate of patient safety incidents than the international and tend to decrease may indicate under-reporting conditions [13]. The PMKP's report also

shows that several national quality indicators which are in line with the Patient Safety Goals (SKP) in the Ministry Regulations of 11/2017 concerning Patient Safety have not fully reached the target, namely compliance with patient identification, hand- hygiene, and prevention of injuries caused by patient falling. The Institute of Medicine (IOM) as the initiator of patient safety stated that nursing is a critical component that determines the care quality and outcomes [14]. As the largest group of health professionals in a hospital, the majority of nursing duties are performed directly on patients. This makes nurses become an important subject in quality care [15, 16]. Nurses are the key to patient safety [17]. The factors that lead to an unsafe work environment for staff will contribute to patient safety incidents [18]. Patients will never be safe under a poor work environment with high levels of staff fatigue and stress [19]. The safety and quality of patient care largely rely on the work environment in which nurses are on duty [20]. Accidents and occupational diseases that occur among health workers also contribute to patient safety [21]. Meanwhile, teamwork and interprofessional collaboration help health organizations minimize medical errors [22]. Previous studies have indicated that occupational health and safety management systems, teamwork, and the work environment have a significant relationship with the patient safety climate. However, no study combines these four variables in a single research framework. Therefore, from the fact and its link with the data and theory, the present study was conducted to analyze the effect of occupational health and safety management and teamwork on the patient safety climate at the X Hospital, with the work environment as a mediating variable based on the nurses' perception.

## 2. METHODOLOGY

### A. Study Design

This study was conducted at X Hospital which is a Class D hospital in July 2020. Here, a cross-sectional study with a quantitative approach was proposed to analyze the variables consist of endogenous variables (Y), namely patient safety climate, exogenous variables, namely X1 occupational health and safety management system and X2 teamwork, as well as Z mediation variable, namely work environment (see Figure 1).

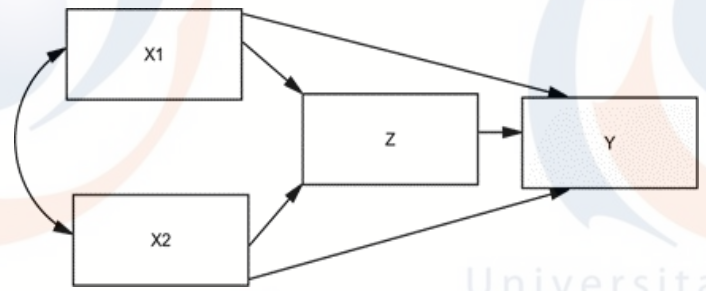


Figure 1. Research Constellation

### B. Data Collection Technique

The population in this study taken from all nurses at the X Hospital with a total of 49 people. The sampling technique was total sampling. The primary data was obtained using a questionnaire with an interval scale of 1-4 points. The validity test of the questionnaire was conducted using a factor analysis method with the Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO MSA) and Barlett's Test. The KMO MSA value was  $>0.50$  and Bartlett's test significance was  $<0.05$ , showing the validity of the instrument, and the analysis process can continue. The reliability test of the questionnaire used alpha Cronbach ( $\alpha$ ). The value of  $\alpha >0.60$  is reliable. Meanwhile, secondary data was obtained from RS X documents, literature studies, and other relevant studies. Here, the testing model of this study was conducted using path analysis. This study has obtained ethical approval from the ethics committee for research of Esa Unggul University, No.: 0193-20.158/DPKE KEP/ FINAL-EA/UEU/VII/2020.

## 3. RESULT AND DISCUSSION

### A. Respondent Characteristics

Based on the characteristics from respondent's profile, the majority of the respondents work in the emergency unit up to 34.7% or 17 people, are female accounted for 61.2% or 30 people, are 26-40 years-old up to 81.6% or 40 people, have a D1-D3 degree with 83.7% or 41 people, hold employment status of a government employee with work agreement with 89.8% or 44 people, have 1-5 years of work experience at the X Hospital by 71.4% or 35 people, have 1-5 years of work experience in their current work unit with 75.5% or 37 people, and have more than 40 hours a week of working hours with 57.14% or 28 people.

**B. Validity and Reliability Test**

The validity and reliability tests were statistically conducted in 30 nurses of the Y Hospital, where the Y Hospital was seen having the same characteristics as the X Hospital as the research location. The values of Measure of Sampling Adequacy (MSA) from the items of the research instrument to measure patient safety climate (PSC), occupational safety and health management system (OSHMS), teamwork (TW), dan work environment (WE) are as follows (see Table I).

**Table I.** Values of MSA

P	PSC	OSHMS	TW	WE
P1	0,643	0,776	0,773	0,802
P2	0,815	0,424	0,610	0,592
P3	0,683	0,592	0,687	0,831
P4	0,438	0,523	0,688	0,757
P5	0,792	0,690	0,704	0,694
P6	0,783	0,275	0,702	0,675
P7	0,622	0,708	0,686	0,827
P8	0,498	0,643	0,750	0,681
P9	0,826	0,571	0,711	0,766
P10	0,797	0,812	0,611	0,793
P11	0,680	0,429	0,748	0,722
P12	0,767	0,520	0,702	0,568
P13	0,893	0,582	0,624	0,586
P14	0,769	0,623	-	0,655
P15	0,694	0,517	-	0,577

The PSC instrument is valid and reliable with a KMO of 0.704 and Bartlett's test significance of <0.05. Item 4 and 8 with MSA < 0.05 were excluded from the instrument. The coefficient of Cronbach's alpha was 0.895. The OHSMS instrument is valid and reliable with KMO 0.577 and Bartlett's test significance of <0.05. Item 2, 6, and 11 with MSA < 0.05 were excluded from the instrument. The coefficient of Cronbach's alpha was 0.865. The TW instrument is valid and reliable with a KMO of 0.705 and Bartlett's test significance of <0.05. No item had MSA <0.05. The coefficient of Cronbach's alpha was 0.699. The WE instrument is valid dan reliable with KMO 0.695 and Bartlett's test significance of <0.05. No item had MSA <0.05. The coefficient of Cronbach's alpha was 0.884.

**C. Descriptive Analysis of Variable**

The index value for analyzing the responses of participants descriptively was carried out using a three-box method on the PSC, OHSMS, TW, and WE variables. The synthesis results are tabulated in Table II.

**Table II.** Synthesis of Description of Respondents' Responses

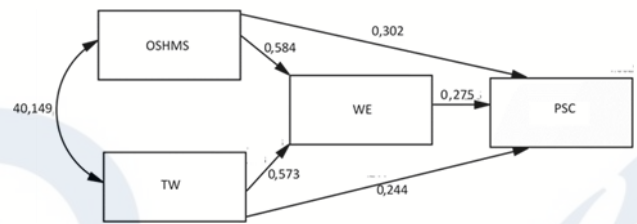
Variable	Index	Categories
PSC	36,60	Moderate
OSHMS	38,54	High
TW	36,40	Moderate
WE	37,30	High

**D. Assumptions of Path Analysis**

The identified model of the path diagram shows that the estimated model has reached the minimum limit of the Amos software. Chi-square (X2) is small (0.000) and thus the degree of freedom is 0; the probability level cannot be calculated. Assessment of univariate normality indicated critical skewness of all variables is below 1.96 (significance at 5%) and it can be concluded that the data were normally distributed. As for multivariate normality, the value of multivariate normality was 4.055 with a critical value of 2.048 which is above 1.96 (significance at 5%).

**E. Hypothesis Testing**

The relationships among variables of the model are presented in the following path diagram (see Figure 2).



**Figure 2.** Path Diagram

**F. Direct Effect**

The following table presents the result of estimation or testing the direct effect of the variables (see Table III)

**Table III.** Direct Effect

Effect	E*	SE**	CR***	P****
OSHMS on WE	0,584	0,170	3,431	< 0,05
TW on WE	0,573	0,126	4,564	< 0,05
WE on PSC	0,275	0,069	3,959	< 0,05
OSHMS on PSC	0,302	0,091	3,306	< 0,05
TW on PSC	0,244	0,072	3,372	< 0,05

\*E= estimate; \*\*SE = Standard Error; \*\*\* CR = Critical Ratio; \*\*\*\*p = p value

**G. Indirect Effect**

The indirect effect of the exogenous variable on the endogenous variable through the mediating variable is as follows (see Table IV).

**Table IV.** Indirect Effect

Indirect Effect	Z*	p**
OSHMS on PSC through WE	0,161 2,602	0,009
TW on PSC through WE	0,158 2,997	0,003

\*Z= Z Sobel; \*\*p = p-value

The value of Z Sobel of the indirect effect was  $\geq 1.96$  with  $p \leq 0.05$  at 5% alpha. Thus, the alternative hypothesis of indirect effect was accepted (there is a mediating effect).

### H. Relationship of Exogenous Variables

The estimate of the relationship of OSHMS and TW was 40,149 with standard error 8,417. The p-value of the relationship of the exogenous variable was  $\leq 0.05$  with CR 4,770. Thus, there was a positive association between the occupational health and safety management system and teamwork.

The results of the hypothesis testing indicated that the path coefficient of the effect of the occupational health and safety management system on the patient safety climate is positive, with 0.302. This result means that each one-point increase in the perceived value of the occupational health and safety management system will increase the perceived value of the patient safety climate by 0.302 points. This finding is in line with the theory from OSHA which entails that management system practices to improve occupational health and safety in hospitals help adapt and strengthen synergistic patient safety practices. Management system practices in improving worker safety in hospitals significantly support patient safety enhancement practices [21]. Here, the three variables had a direct effect on the patient safety climate, with which the occupational health and safety management system variables had the greatest effect. An occupational factor can be affected health and safety can also influence patient safety and health [18]. In addition, a managerial priority at hospital units make fewer errors [23]. Thus, staff and patient safety programs should not be made separately as organizational culture, principles, methods, and instruments used to create safety are the same for both staff and patients [24]. Patient safety culture and employee safety climate could be mutually reinforcing, such that investments and improvements in one domain positively impact the other [25]. Here, the individual and the work unit level to find a relationship between occupational health and safety and patient safety. The analysis of both levels shows a similar relationship in the effect size between the patient safety climate and the occupational safety domain. The safety management system components of organizing and assigning responsibilities and taking corrective actions were associated with the authors' measure of continuous patient safety improvement to a higher extent when the priority of safety within the organization was high [26].

The safety and health of the medical workers will determine procedures, practices, and behavior in realizing patient safety during the care service delivery. The patient safety climate in the X Hospital which is on the moderate level is influenced by the condition of the occupational health and safety management system of the hospital, specifically in terms of education and training. The nurses consider the hospital has not optimally provided additional training following a shift in the workplace or a new assignment. This training is so important that officers understand the new potential harms that threaten occupational health and safety, which in turn can affect patient safety in the workplace.

The result of the hypothesis testing affirmed that the path coefficient of the influence of the teamwork variable on the patient safety climate is positive, with 0.244. This means that each one point of an increase in the perceived value of teamwork will be followed an increase in the perceived value of the patient safety climate by 0.244 points. Here, teamwork and well-functioning communication are usually seen as key factors in enhancing patient safety. Conversely, poor teamwork is an independent cause of many system failures leading to preventable patient injuries [27, 28]. A teamwork is crucial to ensure patient safety. Thus, both of collaborative nurse-doctor and nurse-nurse relationships have a significant effect on patient safety outcomes [29, 30]. The leadership of supervisors and teamwork does not have a significant effect on patient safety culture [31]. However, the dominant factors for creating a good patient safety culture can vary based on profession [32]. A collaborative relationship that leads to effective interprofessional practices is a key factor to establish a patient safety climate as no single professional discipline has all the knowledge that needs to be promoted [33]. The study performed a hierarchical regression analysis showing that perceptions of senior leadership and teamwork had a significant relationship with the overall perception of the patient safety climate [34]. Furthermore, a strong positive association between the scores of the patient safety climate and teamwork climate [35]. Poor teamwork behavior has been associated with poor patient outcomes, including surgical complications and even death [36].

Good teamwork can help reduce problems related to patient safety and improve the morale and well-being among the team members, as well as team viability, the extent to which the team will function over time [37]. Teamwork has a direct effect on nurses' confidence and ability when it comes to patient safety [38]. The index value of the patient safety climate and the teamwork variable in this study was at a moderate level. The lowest dimensions of teamwork were leadership and communication. The effectiveness of leadership and communication in the team of the research subjects were suboptimal. Implementation of patient safety requires strong motivation and commitment from the team leaders throughout the hospital administrations. Also, communication that becomes the key ingredient of teamwork is one of the objectives in patient safety [39]. The results of the hypothesis testing indicated that the path coefficient of the effect of the work environment variable on the patient safety climate is positive, with 0.275. This means that each one-point increase in the perceived value of the work environment will enhance the perceived value of the patient safety climate by 0.275 points. Many organizational variables contribute to better patient safety outcomes, one of which is the work environment of nurses. As a key workforce in the health care system, nurse involvement has been recognized as a major contributor to better patient outcomes. Also, nurses are a reliable source

of information because of their close contact with patients [40]. A healthy work environment allows healthcare professionals to deliver the maximum standard of patient care in the workplace. An environment that ensures the physical and psychological safety of the workforce is fundamental to the safety climate. A large number of health workers have suffered from injuries, including bullying, exhaustion, physical injury, and offense while delivering treatment. This condition makes it difficult for health workers to reach goals in their work and threaten patient safety [41]. Here, a better quality of work environment is not a significant predictor of the patient safety climate and service outcomes. The work environment in the work system represents structural components. Thus, low to moderate variability in structural components may not have a direct effect, but influence the components in the care process that have direct contact with patients [42]. Thus, the supportive work environment for nursing practice tends to reduce adverse events and shorten the length of care [19].

In addition, a stress-related physiological mechanism in the work environment can harm patient safety [43]. A healthy work environment has a direct and indirect impact on patient safety and staff commitment. A healthy work environment is collaborative and productive, in which all of the staff are protected from psychosocial and physical harm. In a healthy work environment, staff can demonstrate their maximum ability to deliver safe and high-quality healthcare. They will also be able to fulfill their personal needs empowered with satisfying work experience [44]. A healthy work environment promotes collaborative partnerships and supports all health professionals in their practice [45]. The presence of risk factors in the environment of healthcare workers that lead to work-related injuries and hazardous incidents in patients [46]. Inadequate nursing staff resources will negatively influence the work environment, causing a lack of motivation, stress, or fatigue which in turn also affects the reported patient safety incidents [47]. The average nurse's perception of the work environment in this study is high. However, there are still dimensions that are categorized as moderate, namely the participation of nurses in hospital affairs and the ability of nurse managers and staff support. The work environment of the nursing practice becomes a catalyst for the patient safety climate. As an organizational characteristic related to nursing work, a good work environment will facilitate nursing practice in line with patient safety. In contrast, a poor work environment will deter the quality of delivered care that in turn threatens patient safety.

The results of the hypothesis testing showed that the path coefficient of the effect of the occupational health and safety management system variables on the work environment is positive, with 0.584. This means each one-point increase in the perceived value of the work environment will be followed by an increase in the perceived value of patient safety climate by 0.584 points. To prepare occupational health and safety policy programs,

the organizations can achieve high standards of occupational health and safety by developing policies that take the relationship between quality, environment, safety and health, and good management practices into account [48]. The safety and health management system are a systematic and integrated element to effectively control occupational health and safety risks on a large scale and in a complex work environment. This management system will help public hospitals to readily integrate various information required to manage occupational health and safety that is useful for the work environment [49]. Employees working in the hospital environment are at a high risk of being exposed to various occupational harms, both physically and psychologically. This can endanger their health and well-being and can have far-reaching consequences on the quality and efficiency of hospital care [50]. The occupational health and safety management system at the organizational level contributes to creating an environment that supports the safety, health, and well-being of health workers [51]. A good occupational health and safety management system in hospitals enables proactive identification of potential harms. Therefore, this can promote a good work environment required to conduct practical and procedural nursing works. The system also guarantees minimum risks for work-related injuries and illnesses. The result of hypothesis testing in this study demonstrated that the path coefficient of the effect of the teamwork on the work environment is positive, with 0.573. This means that each one-point increase in the value of teamwork will be followed by 0.573 points of an increase in the perceived value of the work environment. As previously believed, effective teamwork leads to an improved work environment and has a positive impact on staff and patients [52]. Thus, a teamwork had a positive effect on how employees perceive the quality of the work environment as it affects how an individual understands several related factors such as leadership and staffing, and subsequently the experience of the patient care team [53]. A manager must attend to several factors, namely commitment, communication, leadership, collaboration, teamwork, and learning in an attempt to improve the work environment [54]. Effective teamwork can assure supports for individual team members from the team that can bring satisfaction in their roles and works environment [55]. The active practice of teamwork is associated with increased perceptions of a positive work environment, autonomy, and control over the practice of nurses and doctors [29].

Teamwork is required in peer relationships, dealing with conflicts, and surviving in a stressful work environment [56]. Teamwork also creates a safe work environment. A teamwork is influential in improving the work environment in a stressful emergency unit. The impact of teamwork on complex care environments is described as increased collaboration, communication, and competence [57]. Here, teamwork as one of the factors that facilitate the work environment and is considered as an important factor to improve their work experience and to support quality patient care. Teamwork in health care is

essential to carry out safety practices and achieve optimal clinical outcomes [58]. Teamwork enhances a safe environment through effective communication [38]. The results of the hypothesis testing confirmed that the path coefficient of the indirect effect of the occupational health and safety management system on the patient safety climate through the mediation of work environment variables is positive, with 0.161. This effect is statistically significant based on the Z Sobel test of 2.602 ( $\geq 1.96$ ) with  $p 0.009 (\leq 0.05)$ . This means that enhancement in occupational health and safety management system can improve the patient safety climate through improving the work environment.

The occupational health and safety management system are associated with the service delivery environment. Employee safety and health become important determinants of productivity, retention, and quality of care. Maintaining staff is part of maintaining the performance of the health system because essentially whatever is good for employee safety and health is also good for patient safety and health [51]. Threatening risk factors in the health care environment that can cause injury among work-related officers also have an effect on harmful incidents [46]. Several studies have explored the association between the working conditions of injured patients and healthcare workers collectively. As a result, the safety climate promotes safe patient care and also ensures the safety of health workers [59]. Here, health service organizations would benefit from incorporating organizational climate factors into health and safety policies. Understanding the patient safety climate is crucial as organizational culture and team attitudes have been shown to influence patient safety outcomes [60]. Thus, nurses have a lower perception of patient safety than doctors. Structural components such as work environment, health professional characteristics (education, experience), and patient (severity) determine the quality of care, including patient safety and patient satisfaction. Unequal work system can disturb service processes that increase the risk of safety incidents [42].

The results of the hypothesis testing indicated the effect of teamwork on patient safety climate-mediated by the work environment is in a positive direction with 0.158. This effect was statistically significant based on the Z Sobel test of 2.997 ( $\geq 1.96$ ) with  $p 0,003 (\leq 0.05)$ . There was a significant effect of teamwork on the patient safety climate and this effect was mediated by the work environment. This means that increased teamwork can enhance the patient safety climate by improving the work environment. Furthermore, the effective cooperation equalizes workloads, prevents mistakes, and provides social support in the work environment. These factors indirectly provide resources required for patient care and patient safety [61]. Here, a sample to identify teamwork as a supporting factor for the work environment is described as one of the aspects that facilitates the work environment and is seen as important for improving their work

experience and supporting quality patient care [58]. Here, adequate staff and other resources, leadership, nursing, and hospital support in the nursing practice environment were associated with quality of care, patient safety, and better care outcomes [57, 62].

In the case of a dynamic work environment, teamwork can help ensure patient safety despite ongoing changes in patient conditions and workload [52]. Teamwork is an effective means of improving quality in the workplace environment, job satisfaction among healthcare workers, and quality of patient care [55]. The quality of teamwork affects patients, staff, and the organization [63]. In addition, a teamwork is an important predictor of patient safety outcomes [34]. The factors that influence interprofessional cooperation in emergency departments contribute to the safety climate. A congested work environment can become a major barrier to patient care [64]. A teamwork is essential to maintain worker safety [65]. The process of organizing and implementing the occupational health and safety management system requires a large capital investment. Besides, this requires an effective team that must comprehend the value that the company leaders put in place to provide a safe workplace for employees. After the program runs, collective work is needed to ensure its sustainability. Cooperation between management and workers or their representatives becomes a crucial element to prevent accidents and diseases in the workplace. Participation is one of the fundamental rights as well as duties of the workers [66]. Occupational health and safety work well in both the health care and management or corporate sectors. This means that the competency assessment focuses on clinical and non-clinical performance. Competencies are determined in such a way that the occupational health professionals can meet the challenges of an occupational health and safety management system. The cost and effectiveness demands will drive multidisciplinary teamwork and the development of evidence-based practices. Occupational health and safety competencies are determined by quantitative and qualitative factors. Quantitative measures are easier to construct, while qualitative measures involve communication effectiveness, teamwork, and customer service [67]. Hospitals that have more solid teamwork with a clear role for each staff member have a lower incidence of injury and occupational disease. Improving teamwork among health workers is increasingly seen as a viable strategy to manage various workforce challenges [63]. Teamwork is essential to ensure the effective operation of the occupational health and safety management system in hospitals. Every stage in the embodiment of an occupational health and safety management system, from planning, implementation, to evaluation requires vertical and horizontal teamwork. The occupational health and safety management system implemented in hospitals also influences teamwork, by its contribution to knowledge, skills, and the ability to work together in achieving common goals.

#### 4. CONCLUSION

The occupational health and safety management system, teamwork, and work environment positively influence the patient safety climate. Both of the occupational health and safety management system and teamwork also have a positive effect on the work environment. Work environment has a mediating role on the effect the occupational health and safety management system and teamwork on patient safety climate. Improvement and advancement of the patient safety climate can be performed by enhancing the occupational health and safety management system and teamwork, either directly or through the mediation of the improvement in the work environment. The results of this study strengthen the previous theory and fill the absence of research on the relationship between the four variables studied in this study so that this research can be the basis for future studies. The safety and health management system for staff should be integrated into patient safety that is clearly formulated within work regulations and programs, and staff should be actively involved in planning, implementation, and evaluation. Occupational health and safety training need to be carried out regularly based on the modules tailored to the performance objectives of the hospitals. Off-schedule training is carried out for staff in case a change in the workplace or new potential harm that can threaten the work environment, safety, and health of staff and patients is identified. Teamwork needs to be improved through certain ways, one of which is through creating a training system of interdisciplinary nurse team that provides the basis for patient safety strategies. The training can focus on the improvement of basic leadership, communication, support, and situation monitoring skills. Management should identify supporting components that make up an effective team structure by defining the roles and responsibilities of each individual in the team, maintaining their accountability, and involving the patient/family as part of the team. Teamwork between nurses and other professional caregivers can be enhanced by a round/visit that involves all professionals for patient safety cases. Optimization of the nursing work environment requires the optimal role of the committee and the nursing department of the hospital. The professional nursing practice model must be disseminated regularly as it needs to be properly comprehended and implemented by nursing staff. Management has to evaluate the ratio of the nurses and the workload based on the applicable standards to create a healthy work environment that can ensure a conducive patient safety climate.

From this study, there are some suggestions such as to evaluate regulation on patient safety climate, occupational health and safety system, teamwork, and work environment and then disseminate these with the relevant units and staff, to perform quality management activities which get staff involved in giving suggestion, quality control circle, quality control projects, or simply concepts for innovation, to monitor and evaluate implementation of

patient safety climate program, occupational health and safety system, teamwork, and work environment regularly, to build a “blame-free” system to identify threats for patient safety as the lowest perceptions among the dimensions of the patient safety climate of X Hospital are environment without complaint and work error, to provide education and training, particularly for newly appointed or mutated employees, or for those who just have been assigned to a task at risk of a new threat, to review restructuring plan or provide training to build supervisors’ given the fact that the leadership dimension with the lowest score was teamwork. Furthermore, for future studies can be conducted in class A, B, or C hospitals using different criteria of the sample, can be conducted among all professionals who deliver care, not merely among nurses. The data analysis can include different characteristics, respondent profiles such as age, gender, work experience, employment status, and work as determinants of the studied variable. It can be performed in a private-owned hospital to compare to the findings from the government-owned hospitals, can be simplified by modifying the design of the study into a longitudinal design so that the data can be collected in a certain period and researchers can study the pattern of findings from time to time.

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