

Relationship between Patient Safety Culture and Job Stress among Staff Nurses

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Abstract

Background: Patient safety is a key element of the quality of health services. Nurses are the largest group that care for patients, observing safety in nursing care would reduce injuries, disability, morbidity and mortality. However, high stress can lead to a decline in the quality of nursing care. **Aim:** The current study aimed to assess the relationship between patient safety culture and job stress among staff nurses. **Subjects and Method:** The subject of this study included (114) pediatric staff nurses. they were selected randomly. **Research design:** Cross –sectional analytical design was used to conduct this study. **Setting:** This study was conducted at all inpatient departments in Abou EL Reesh children’s Hospital which is affiliated to Cairo University Hospitals. **Tools:** Data was collected by using two tools namely: Hospital Survey on Patient Safety Culture Questionnaire and Expanded Nursing Stress Scale. **Results:** Only (8.8%) the staff nurses had high awareness regarding total patient safety culture. While the majority (91.2%) of them had low awareness regarding total patient safety culture. Almost all (98.2%) of the staff nurses had high job stress level, while only (1.8%) the staff nurses had low job stress level. **Conclusion:** There was significant statistical negative correlation between staff nurses awareness about patient safety culture and their job stress. **Recommendations:** Integrate patient safety culture as a part of the orientation and development program for nurses. Hospital top management, policy and decision makers should pay attention to tracking organizational factors causing stress. Keeping regular staff meeting allow staff nurses to express their feeling openly and get feedback and support.

Keywords: Job stress, Patient safety culture, Staff nurses.

Introduction:

Health systems and hospitals in modern societies are constructed to deliver high quality services to provide patients with health care and treatment. Quality of health care is composed of some elements, and patient safety is one of the most important of them (Campioni & Famolaro, 2018). The issue of patient safety culture means to avoid causing any damage or injury to the patients while providing health care, which has become more observed by health policymakers over the last few decades (Monfared et al., 2019).

Adverse events and medical errors are among challenges that health systems in all countries are faced with, and ministries of health in countries attempt to minimize adverse events and reduce the damages caused by them (Sexton et al., 2018). It is estimated that 5 to 10% of health-related costs are resulted from unsafe clinical services which lead to patients further suffering, and here, the failure of the system plays a greater role than that of the individual (Simsekler, 2019).

Patient safety is a key element of the quality of health service. The staff nurses are the largest group that care for patient. Providing safe nursing care will reduce injuries, disability, morbidity and mortality. And high job stress can lead to a decline in the quality of nursing care delivered to the patient (Teleş & Kaya, 2019).

Patient safety culture is the culmination “ of individual and group beliefs, values, attitudes, perceptions, competencies, and patterns of behavior that determine the organizations commitment to quality and patient safety. Essentially, a “patient safety culture” means that every member of a healthcare team is equally committed to putting patient safety first, and be continuously engaged in actions that reflect that commitment (Lee et al., 2019).

The characteristics of an efficient patient safety culture include the senior managers commitment with regard to learning from mistakes, documenting mistakes and improving patient safety, encouraging group work,

discovering potential risks, employing systems for reporting and analyzing adverse events, and applauding employees who help improve patient safety. In fact, the organizations long-term commitment to enhance quality will improve patient safety culture (Mohr et al., 2018).

Numerous studies of job stress among nurses showed that nurses have at least an average level of stress. Here, patient safety, the managers' belief about its special place, and observance of safety principles by nurses can be considered as main measures to be taken in order to reduce job stress among nurses. Since, along with providing health care, staff nurses are responsible for playing their role in keeping patient safety culture, observing safety principles while delivering daily care can lead to a decrease in adverse events and damages (Missen et al., 2016).

Work-related stress exists among the public and in all occupation, but it is far more important in professions that deal with people's health. Job stress among health professionals and health care staff especially nurses, is very prevalent (Yunita & Saputra, 2019). Due to the specific nature of the nursing profession, which requires high-skill, team working in stressful situations, providing twenty-four-hour care and a great emotional burden, staff nurses are faced with a variety of stressors (Gorgich et al., 2017).

In addition to these cases, other factors such as communication with patients and their companions, communication with physicians and other nurses, high workload, long working hours, dissatisfaction with wages and benefits, working on holidays also cause stress of staff nurses. This stress can lead to bad consequences, and if the intensity of the stressor exceeds thresholds of tolerance, it could lead to work-related events, including increased absenteeism and leave the job, decreased job satisfaction, reduced productivity and organizational commitment, reduced quality of patient care (Elmadag & Ellinger, 2018).

If the stresses continue, it will lead to burnout, the worst consequence of which is the reducing of quality of care patients receive because the patient was deprived of adequate care and his human rights. Sometimes this burnout can result in care errors and thus negative impact on

patients (Ouellette et al., 2018). Rising health care costs, emotional exhaustion, depersonalization and reduced personal accomplishment are the other consequences of accumulated and unmanaged job stress (Elshaer et al., 2018). Providing high quality and safe services to patients can lead to reduced referrals and admissions rate, increased patient satisfaction, improved health status and productivity (Keykaleh et al., 2018).

Staff nurses have the most direct contact with patients and are considered as the main foundation of the continuous quality improvement process. Since safe procedures are the core of nursing care to maintain and improve patient safety and if unsafe procedures are done, has not only legal consequences but also irreparable harms are incurred to patients (Nayomi, 2016). which can have dire consequences for the patients and their family, including long-term accommodation, patients suffering, additional costs, dissatisfaction with the hospitals and sometimes even patients death (Farzianpour et al., 2016).

Significance of the study:

Reducing the incidence of patient harm is a matter for everyone in health care. Understanding why preventable errors occur is key to develop strategies by which errors can be addressed and minimized. Patient safety culture is essential in instilling this concept in the health care settings (Morello et al., 2013).

Job stress is one of the main causes of decreased productivity in organizations and the reason for physical and psychological complications among employees. Since nurses are responsible for the patients' health and treatment, practitioners of medical professions are exposed to various stressful factors (Ramli, 2019) which is reflected negatively on patient quality and safety care.

It was mentioned by Schmidt et al., (2019) that, every week 7.4% of nurses choose to be absent from work due to fatigue or job stress-related disability, which is at 80% more than other jobs. In the study done in Ethiopia by Dagget et al., (2016). indicated that the highest level of job stress was related to the staff nurses faced with caring for dying patients, with a score of 62.94%. and job stress was

different across different working units. American National Institutes of Health (ANIH) stated that among 130 stressful jobs, nursing is placed as the 27th due to the problems caused by mental health (*Abdelmoteleb, 2019*).

At Abu Al Rish childrens Hospital, the researcher observed increased stress level among staff nurses, increased absenteeism and leave the job, decreased job satisfaction, reduced productivity and organizational commitment. This might reduce quality of patient care, and patient safety also suffering from work pressures, including role struggles, role ambiguity, physical work environment, and lack of participation in decision-making, and the sense of staff nurses that their superiors do not treat them with sufficient respect and appreciation may affect patient safety culture. So, the present study aims to assess relationship between patient safety culture and job stress among staff nurses.

Aim of the Study:

This study was aimed to assess the relationship between patient safety culture and job stress among staff nurses.

Subjects and Method

The present study aimed to assess the relationship between patient safety culture and job stress among staff nurses.

Research question

What is the relationship between patient safety culture and job stress among staff nurses?

Research design:

Cross sectional analytical design was used to conduct this study.

Setting:

This study was conducted among staff nurses at all inpatient departments in Abou EL Reesh childrens Hospital which is affiliated to Cairo University Hospitals and located at Cairo. This hospital is providing health service to a large number of children from all over Republic. The hospital consists of 20 departments in six floors namely:

- First floor (Emergency Intensive Care Unit, Emergency Department, Emergency Operating Room).
- Second floor (Medical Department, Neonatal Surgical Intensive Care Unit).
- Third floor (Medical Department, Cardiology Department).
- Fourth floor (General Operating Room, Special Operating Room, Surgical Department, Intermediate Surgical Intensive Care Unit, Intensive Care Unit)
- Fifth floor (Neonatal Surgical Intensive Care Unit, Neurological Intensive Care Unit, Neurological Department, Open Heart Operating Room, Open Heart Intensive Care Unit, Neonatal Intensive Care Unit).
- Sixth floor (Medical Intensive Care Unit).

Subjects:

The subjects of this study included (114) staff nurses out of (284) who are eligible to participate in the study. they were selected randomly. The sample size was calculated according to the following equation:

$$n = \frac{N \sum_{j=1}^{23} N_j \sigma_j^2}{AN^2 + \sum_{j=1}^{23} N_j \sigma_j^2}$$

(*Hooper et al., 2016*).

N: community size

A: Error rate

σ: Standard score corresponding to the level of significance 0.95

Inclusion criteria

The subject had at least one year of experience in nursing.

Tools of data collection:

The data were collected by using two tools.

Tool (I): Self-administrated questionnaire:

This tool was used to asses staff nurses awareness of patient safety culture, it based on the Hospital Survey on Patient Safety Culture Questionnaire (*Glance et al., 2008*); This tool consists of two parts:

Part 1: Demographic Characteristics:

This part intended to collect data related to personal characteristics of staff nurses such as: age, gender, place of work, educational qualification, years of experience, marital status, attending training programs.

Part 2:

This part aimed to assess the staff nurses awareness of patient safety culture. This part consisted of 12 patient safety culture dimensions with 42 items as follows:

Table (1): Hospital survey on patient safety culture dimensions.

scale dimensions	Items	Example
1. Teamwork within Units	4	People support one another in this unit.
2. Supervisor/ manager expectations & actions promoting patient safety.	4	My supervisor/manager seriously considers staff suggestions for improving patient safety
3. Organizational learning-continuous improvement.	3	We are actively doing things to improve patient safety.
4. Management support for patient safety	3	Hospital management provides a work climate that promote patient safety.
5. Overall perceptions of patient safety	4	Patient safety is never sacrificed to get more work done.
6. Feedback and communication about error	3	We are given feedback about changes put into place based on event reports
7. Communication openness	3	Staff feel free to question the decisions or actions of those with more authority.
8. Frequency of events reported	3	When a mistake is made, but is caught and corrected before affecting the patient, how often is this reported?
9. Teamwork across units	4	Hospital units do not coordinate well with each other.
10. Staffing	4	We have enough staff to handle the workload.
11. Handoffs and transitions	4	Important patient care information is often lost during shift changes.
12. Non-punitive response to errors	3	Staff feel like their mistakes are held against them.

❖ **Scoring system:**

The responses ranged from “strongly agree” to “strongly disagree” the scores of the statements of each type were scored respectively from 5 to 1. For the purpose of presentation of each item, the Likert scale was compressed into five categories: “strongly agree/ agree” “uncertain” and “strongly disagree/ disagree” and the mean \pm SD and medians with interquartile range were calculated with a maximum score five. The scores of the statements of each type were summed up, converted into percent scores, and the total was divided by the number of the items, giving a mean score for each domain.

The nurses perception regarding patient safety culture will be considered (Nieva and Sorra, 2003):

- High if the total score is more than 60%.
- Low if the subject has total score less than 60%.

Second tool: Expanded Nursing Stress Scale (ENSS)

This scale was used to assess job stress level among staff nurses. It was developed by **French et al. (2000)**, and it was adopted from **Abdel Salam et al. (2014)**. It includes 63 items divided into nine subscales as follows: death and dying (8) items, conflict with physicians (5) items, inadequate emotional preparation (3) items, problems relating to supervisors (8) items, problems relating to peers (8) items, workload (15) items, uncertainty concerning treatment (6) items, patients and their families (7) items and discrimination (3) items.

Table (2): Description of Expanded Nursing Stress Scale (ENSS).

	Title of subscales	Number of Items	Example
1.	Death and dying	8	Performing procedures that patient experiencing as painful, times, such as the installation of venous cannula etc.
2.	Conflict with physicians	5	Physician criticized me in front of my colleagues and patients.
3.	Inadequate emotional preparation	3	Inadequate readiness to meet the patient psychological needs of the patient.
4.	Problems relating to supervisors	8	Conflict with my head nurse.
5.	Problems relating to peers	8	There is no frank relationship between me and my peers in the unit.
6.	Workload	15	There is no break time because of work overload.
7.	Uncertainty concerning treatment	6	Inadequate information from a physician regarding the medical condition of a patient.
8.	Patients and their families	7	Increase patient's families demands.
9.	Discrimination	3	Discrimination between me & my peers from superiors.

❖ Scoring system:

Staff nurses responses were scored 1, 2, 3, 4, and 5 for “No stress, rarely stress, sometimes stress, often stress, and always stress” respectively.

For each unit, the scores of the items of subscales were summed-up and the total score divided by the number of the items, giving a mean score for the part. Stress rating scale score percentage was as follows guided by *Alnems et al.(2005)*.

- 60% or more means that the subjects suffer of high stress level.
- Less than 60% means that the subjects suffer of low stress level.

I-Operational design

The operational design for this study consisted of three phases, namely preparatory phase, pilot study, and fieldwork.

Preparatory phase:

This phase started with a review of current and past, national and international related literature concerning the subjects of the study, using textbooks, articles, journals, and websites. This review was helpful to the researcher to be more acquainted with the

research subject and reviewing and developing the data collection tools.

Pilot study:

A pilot study was conducted on 10 % (12 staff nurses) of the total study participants. The aim was to evaluate the study tools applicability, clarity, and comprehensiveness. It also served to estimate the time needed for each nurse to fill the questionnaires.

Validity

Content validity was ascertained by panel of three experts in nursing administration to review the tools clarity, relevance and comprehensiveness. Their opinions were elicited regarding the format, layout, consistency, accuracy and relevancy of the tool, based on experts` comments and recommendations; no modifications had been done.

Reliability

The reliability of the study tools was tested using Cronbachs alpha test to assess the internal consistency of the study tools. The test result for (staff nurses awareness of patient safety culture questionnaire) was 0.81 which reveals accepted internal consistency of this tool, and the test result for (Expanded Nursing

Stress Scale) was 0.87 which also reveals accepted internal consistency of this tool.

Fieldwork

It was carried out from the first week of October 2021 up to the end of December 2021. The researcher was available in the study settings 3 days per week in the study setting from 10 Am to 1 Pm by scheduled rotation. Data collection was done from nurses, who accepted to be included in the study after explaining the aim of the study. nurses asked to fulfill the study tools according to the availability of their free time throughout the day and some of nurses were allowed to fulfill the study tools at home to be received by the researcher in the next day. The average time required for fulfilling the two questionnaires was 30 minutes. Tools were collected and checked for completeness to ensure the absence of any nursing data.

Ethical Consideration:

The research approval was obtained from the Scientific Research Ethical Committee of The Faculty of Nursing, Ain Shams University before starting the study. Agreement was obtained from each nurse to participate in the study after explanation of the study aim and its implications. A clear and simple clarification of the study' and its expected outcomes was explained. They were assured that all data collected was used for scientific purpose. They informed that all the study subjects had the right to withdraw at any time from the study.

II- Administrative Design:

An official permission was obtained by submission of a formal letter issued from the Ain of Faculty of Nursing, Ain Shams University to the director of Abou EL Reesh Hospital to collect the necessary data for the current study after a brief explanation of the purpose of the study and its expected outcomes.

III- Statistical Design:

Computerized data entry and statistical analysis were fulfilled using the Statistical Package for Social Sciences (SPSS) version25.

The obtained data were organized, analyzed, and represented in tables and graphs as required. Data were presented using descriptive statistics in the form of Number, Percentage, mean score, Standard deviation (SD), Pearson's correlation coefficient (r) and simple linear regression were used to estimate the relationship between the variables. Chi square test was used to assess the relationship between participants' personal data and the study variables. statistical significance was considered at P-value ≤ 0.05 and highly significant at p-value ≤ 0.001 , while p-value was considered insignificant at > 0.05 .

Results:

Table (1): shows that slightly less than three quarters (72.8%) of staff nurses were < 30 years old, slightly less than two thirds (63.2%) of them were females, the percentage of them were working in critical care units, slightly less than half (43.9%) of them were single, also slightly less than half (43%) of them had technical nursing institute, slightly less than three quarters (72.8%) of them had < 15 years of experience in the current position, and about one third (34.2%) of them had attended training programs.

Table (2): Concludes that only (8.8%) the staff nurses had high awareness regarding total patient safety culture, while the majority (91.2%) of them had low awareness regarding total patient safety culture.

Figure (1): indicates that only (8.8%) the staff nurses had high awareness regarding total patient safety culture, while the majority (91.2%) of them had low awareness regarding total patient safety culture.

Table (3): concludes that almost all (98.2%) of the staff nurses had high job stress level. And more than one third (36%) of them had low job stress regarding discrimination, while all of them had high job stress regarding the problems related to peers.

Figure (2): shows that almost all (98.2%) of the staff nurses had high job stress level, while only (1.8%) the staff nurses had low job stress level.

Table (4): indicates that there were significant statistical relationships between staff nurses' total job stress level with both attendance of training programs ($\chi^2=3.92$, $p= 0.05$) and age ($\chi^2=11.51$, $p= 0.003$).

Table (5): concludes that there was significant statistical negative correlation ($r= -.141$, $p=.02$) between staff nurses' awareness about patient safety culture and their job stress.

Table (6): concludes that there was significant statistical negative correlation ($r= -.141$, $p=.02$) between staff nurses' awareness about patient safety culture and their job stress.

Table (7): concludes that there was significant statistical negative effect ($R=0.21$, $B=-.198$, $p=0.02$) from job stress on patient safety culture among the studied nurses.

Table (1): Demographic Characteristics of staff nurses' (n=114).

Demographic Characteristics	Categories	No.	%
Age	< 30 years	83	72.8
	30 - 40 years	20	17.5
	> 40 years	11	9.6
	Range	21-49 (28 y)	
	Mean \pm SD	29.08 \pm 6.93	
	Median	27	
Gender	Male	42	36.8
	Female	72	63.2
Work unit	Critical Care Units	72	63.2
	Non-Critical Care Units	42	36.8
Marital status	Single	50	43.9
	Married	52	45.6
	Divorced	5	4.4
Educational Qualification	Widow	7	6.1
	Nursing diploma	29	25.4
	Technical nursing institute	49	43
	Bachelors degree	36	31.6
Years of experience	< 15years	83	72.8
	15 - 25 years	20	17.5
	>25 years	11	9.7
	Range	1-30 (30y)	
	Mean \pm SD	8.32 \pm 3.16	
	Median	15	
Attending training programs	Yes	39	34.2
	No	75	65.8

Table (2): Total level of staff nurses' awareness of patient safety culture dimensions (n=114).

Patient safety culture dimensions	High		Low	
	No.	%	No.	%
1. Teamwork within units	23	20.2	91	79.8
2. Supervisor/manager expectations& actions promoting patient safety	11	9.6	103	90.4
3. Organizational learning-continuous improvement	10	8.8	104	91.2
4. Management support for patient safety	5	4.4	109	95.6
5. Overall perception of patient safety	18	15.8	96	84.2
6. Feedback & communication about error	5	4.4	109	95.6
7. Communication openness	2	1.8	112	98.2
8. Frequency of events reported	6	5.3	108	94.7
9. Teamwork across units	8	7.0	106	93.0
10. Staffing	6	5.3	108	94.7
11. Hand offs & transitions	4	3.5	110	96.5
12. Non punitive response to errors	4	3.5	110	96.5
Total	10	8.8	104	91.2

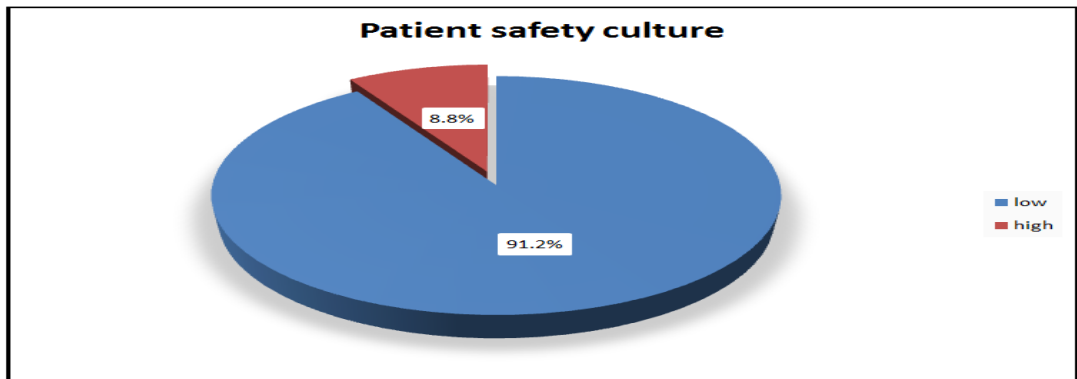


Figure (1): Total level of staff nurses’ awareness of patient safety culture (n=114).

Table (3): Level of staff nurses’ job stress dimensions (n=114).

Job stress	High		Low	
	No.	%	No.	%
Death and Dying	102	89.5	12	10.5
Conflict with physicians	94	82.5	20	17.5
Inadequate Emotional Preparation	102	89.5	12	10.5
Problems relating to supervisors	109	95.6	5	4.4
Problems relating to peers	114	100	0	0
Workload	107	93.9	7	6.1
Uncertainty concerning treatment	81	71.1	33	28.9
Patients and their families.	100	87.7	14	12.3
Discrimination	73	64	41	36
Total job stress	112	98.2	2	1.8

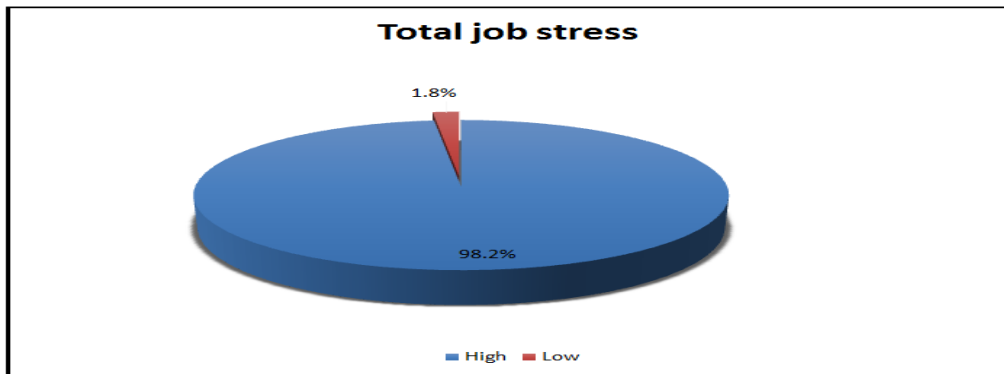


Figure (2): Total level of staff nurses’ job stress (n=114).

Table (4): Relationship between staff nurses’ demographic characteristics and total job stress.

Demographic characteristics	Categories	Job stress				Chi square test	
		High		Low		χ^2	P
		No.	%	No.	%		
Age	< 30 years	45	54.2	38	45.8	11.51	.003*
	31- 40 years	9	45	11	55		
	>40 years	0	0	11	100		
Gender	Male	42	100	0	0	1.19	.28
	Female	70	97.2	2	2.8		
Work unit	Critical Care Units	70	97.2	2	2.8	1.19	.28
	Non-Critical Care Units	42	100	0	0		
Marital status	Single	48	96	2	4	2.51	.46
	Married	52	100	0	0		
	Divorced	5	100	0	0		
Educational Qualification	Widow	7	100	0	0	2.7	.26
	Nursing diploma	29	100	0	0		
	High average Nursing diploma	47	95.9	2	4.1		
Years of experience	Bachelors degree	36	100	0	0	.76	.68
	< 15 years	81	97.6	2	2.4		
	15 - 25 years	20	100	0	0		
Attending training programs	>25 years	11	100	0	0	3.92	.05*
	Yes	37	94.9	2	5.1		
	No	75	100	0	0		

Table (5): Correlation between staff nurses’ job stress dimensions and patient safety culture (n=114).

Pearson Correlation	Death and Dying	Conflict with physicians	Inadequate Emotional Preparation	Problems relating to supervisors	Problems relating to peers	workload	Uncertainty concerning treatment	Patients and their families	discrimination	Total job stress
Teamwork within units	.181	.052	.031	.010	-.208*	.318**	-.005	-.094	-.208*	.216*
Supervisor/ manager expectations& actions	.027	.002	.027	.114	-.183	.268**	-.051	-.011	-.183	.111
promoting patient safety										
Organizational learning-continuous improvement	-.170	-.031	-.170	.297*	-.020	.092	.164	-.094	-.020	.048
Management support for patient safety	.240*	-.184	.042	-.011	-.234*	-.064	.094	-.093	-.234*	-.100
Overall perception of patient safety	.012	-.212*	-.065	-.012	.080	-.024	.075	-.107	.080	.246**
Feedback & communication about error	-.005	-.035	-.005	.099	.132	-.026	.128	.201*	.132	.157
Communication openness	.211*	.089	-.123	-.147	.014	-.033	-.022	.005	.014	.169
Frequency of events reported	.123	.001	.123	-.114	.138	-.136	-.064	.087	.138	-.071
Teamwork across units	-.116	-.032	-.024	-.049	.185*	-.106	-.029	.059	.185*	.098
Staffing	-.041	-.133	.056	.083	.166	.001	-.190*	.046	.166	.097
Hand offs & transitions	-.115	-.155	-.115	.314*	.087	-.086	-.214*	-.126	.087	-.045
Neo punitive response to errors	-.156	-.100	.048	.145	.172	-.192*	-.238*	-.090	.172	-.100
Total patient safety culture	-.096	-.160	.018	-.032	.345**	-.096	-.102	.127	.345**	-.141

Table (6): Correlation between total scores of staff nurses' job stress and patient safety culture (n=114).

Pearson Correlation		Total job stress
Total patient safety culture	r	-.141
	p	.02*

Table (7): Best fitting linear regression model of job stress on patient safety culture

Variable	R	B	F	Std. error	Beta	t	P
(Constant)	.21	181.55	5.37	16.93		10.73	.000
Total job stress		-.198		.09	-.21	-2.32	.02*

Dependent variable is patient safety culture

*p is significant at ≤ 0.05 , highly significant at ≤ 0.001

Discussion:

A culture of patient safety has been widely acknowledged as a critical measure of quality health service. Patient safety is critical to health care quality and remains a developmental challenge in primary care in many countries. In addition interventions addressing patient safety culture in primary care are limited compared to secondary care. To improve patient safety, an important first step is to address and understand the safety culture of an organization. Similarly assessment of safety culture helps health care organizations to assess areas for improvement and analyze changes over time (*Lawati et al., 2018*).

Job stress is an interactive situation between the job situation and the working person in that job, which leads to changes in the individual's psychological and physiological status and affects his/her normal performance. Work-related stress can damage a person's physical and mental health and ultimately have a negative effect on job productivity by increasing stress levels (*Unaldi Baydin et al., 2020*). Today, job stress has become a common and costly problem in the workplace and, according to the World Health Organization, a pervasive issue (*Babapour et al., 2022*).

Regarding total level of staff nurses' awareness of patient safety culture the current study result indicates that minority of the staff nurses had high awareness regarding total patient safety culture, while the majority of them had low awareness regarding total patient safety culture. This may be due to managers not give the first priority to patient safety problems, no periodical evaluation of nurse' perception of patient safety culture and an implementation, no

clear policy finally the shortage of staff number also affect the patient safety.

The present study result in agreement with *Elsehrawy et al. (2015)* who found that, more than half of the nurses under study have unawareness of the patient safety culture.

While this result in disagreement with *Hadad et al. (2021)* who applied study entitled " Perceptions of Staff Nurses about Patient Safety Culture at Minia General Hospital" and mentioned that, the highest percentage of staff nurses had moderate total scores regarding patient safety culture, more than one tenth of them had high responses, and low percentage of them had low perception regarding patient safety culture.

Regarding total level of staff nurses' job stress the current study result showed that almost all of the staff nurses had high job stress level, while minority of the staff nurses had low job stress level. These results may be due to a heavy workload and responsibility as well as high stress caused by the physical environment.

The current study result in agreement with *Davey et al. (2019)* who applied study entitled " Is work-associated stress converted into psychological distress among the staff nurses: A hospital-based study" and found that, the majority of the staff nurses were found to be under stress ranging from mild to severe. While this result contrasted with *Tavakoli et al. (2018)* who applied study entitled "Job Burnout, Stress, and Satisfaction among Emergency Nursing Staff after Health System Transformation Plan in Iran " and reported that, the most of the studied nurses had moderate level of job stress

and one tenth of them had low level while minority of them had high level of job stress.

Regarding correlation between staff nurses' job stress dimensions and patient safety culture the present study result concluded that there was significant statistical negative correlation ($r = -.141$, $p = .02$) between staff nurses' awareness about patient safety culture and their job stress

The present study finding was contrasted with *Elsehrawy et al. (2015)* who found that, there were no statistically significant differences between the awareness of nurses working in medical units and nurses working in surgical units regarding to patient safety culture in all sub dimensions. Also this result disagree with *Keykaleh et al. (2018)* who applied study entitled "The Relationship between Nurse's Job Stress and Patient Safety" and reported that, there was no statistically significant relationship between nurse's job stress and patient safety.

Regarding correlation between total scores of staff nurses' job stress and patient safety culture the current study result concluded that there was significant statistical negative correlation ($r = -.141$, $p = .02$) between staff nurses' awareness about patient safety culture and their job stress.

In agreement with *Güven (2021)* who applied study entitled "Relationships Between Nurses' Perceptions of Patient Safety Culture and Job Stress, Trust, Identification, and Leadership" and reported that, there was a negative but significant relationship between patient safety culture and job stress.

Regarding relationship between staff nurses' demographic characteristics and total patient safety culture the current study result indicated that there were insignificant statistical relationships ($p > 0.05$) between staff nurses' demographic characteristics and their awareness about patient safety culture

This finding was contrasted with *Abdou & Saber (2011)* who applied study entitled "A baseline assessment of patient safety culture among nurses at student university hospital" and

demonstrated that, there was significant relationship was observed between socio-demographic characteristics and all dimensions of safety culture.

Regarding relationship between staff nurses' demographic characteristics and total job stress the current study result indicated that there were significant statistical relationships between staff nurses' total job stress level with both attendance of training programs ($\chi^2 = 3.92$, $p = 0.05$) and age ($\chi^2 = 11.51$, $p = 0.003$).

This finding was in disagreement with *Mozhdeh et al. (2008)* who applied study entitled "Relationship of nurse's stress with environmental-occupational factors in Iran" and found that, there was no significant correlation with stress level and some demographic information such as age, gender, marriage status.

Also this finding was contrasted with *Faraji et al. (2019)* who applied study entitled "Occupational stress and its related demographic factors among Iranian CCU nurses: a cross-sectional study" and found that, there was no statistically significant difference between the mean occupational stress and variables of sex, age, academic degree and working experience.

Conclusion:

In the light of the current study findings, it can be concluded that, the minority of the staff nurses had high awareness regarding total patient safety culture with highest dimension level among staff nurses are regarding communication openness, while the majority of them had low awareness regarding total patient safety culture with highest dimension level among staff nurses are regarding Teamwork within units. While almost all of the staff nurses had high job stress level with highest dimension level among staff nurses are regarding problems relating to peers, While the minority of the staff nurses had low job stress level with highest dimension level among staff nurses are regarding discrimination. Additionally there was significant statistical negative correlation between staff nurses'

awareness about patient safety culture and their job stress.

Recommendations:

Based on the current study finding the following recommendations were proposed:

- Integrate patient safety culture as a part of the orientation and development program for nurses.
- Hospital top management, policy and decision makers should pay attention to tracking organizational factors causing stress.
- Regular evaluation of staff nurses' reward and promotion and relating them with good performance and behaviors.
- Keeping regular staff meeting allow staff nurses to express their feeling openly and get feedback and support.

Further research

- Further research are needed to explore factors affecting patient safety culture and job stress.
- Formulate and developed standards for efficiency of patient care.

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