ASSOCIATIONS BETWEEN NURSING WORK ENVIRONMENT, PATIENT SAFETY CULTURE, AND MISSED NURSING CARE AMONG STAFF NURSES

Ibrahim Abdullatif Ibrahim[1], Eltahra Elsayed abo Habieb[2]

Lecturer of nursing administration, Faculty of nursing, Mansoura university, Egypt1, 2

ABSTRACT

Background: The environment of work and culture of patient safety are crucial factors that had a major effect on missing nursing care. ***Aim****:* To explore the relationships between the work environment, patient safety culture, and missed nursing care among staff nurses. ***Method****:* Descriptive correlational design was used. The study included a convenience sample of 136 staff nurses who were working at all inpatient units of main Mansoura university hospital. Work environment scale, patient safety culture scale, and missed nursing care scale were utilized for data collection. ***Results****:* Staff nurses perceived average work environment, good patient safety culture, and low missing nursing care. The work environment and patient safety culture perceptions correlated negatively with missed nursing care. The work environment correlated positively with the culture of patient safety. ***Conclusion****:* Work environment and patient safety culture correlated negatively with missed nursing care among staff nurses. There was a positive relationship between work environment, and patient safety culture among staff nurses. ***Recommendations:*** Nurse Managers should maintain an effective work environment with adequate staffing, resources, and encourage teamwork to avoid missing nursing care. Nurse managers should continuously monitor and evaluate patient safety culture aspects among nurses to achieve a healthy and safe climate for patients. Clear communication and feedback system should be maintained about the error to avoid reoccurrence, and prevent its negative consequences for nurses, patients, and health care organizations

Keywords: Missed nursing care, Patient safety culture, Staff Nurses, Work environment

INTRODUCTION

Health care organizations with better work environments have been found to have a lower death following a complication, higher patient satisfaction, and reduced length of stay. The nursing work environment defined as the organizational characteristics of the workplace that facilitate or restrict professional nursing practices. In recent decades the nursing work environment has gained attention associations with patient safety culture (Norman and Sjetne, 2017; White, 2018; Lake, Riman and Sloane, 2020).

Patient safety culture results from group and individual values, perceptions, attitudes, competencies, and behavior patterns that determine the commitment as well as the style and proficiency of an organization’s health and safety management (Hayashi et al., 2020). A culture of patient safety has been associated with improving patient outcomes, whether it concerned with sharing perspectives of healthcare providers related the importance of safe, faithful and transparent communications, and confidence in the effectiveness of measures preventative. It is recognized that maintaining positive safety culture in the organizations of healthcare is crucial factor to continuously improve the quality of patient care (Reis, Paiva and Sousa, 2018; Hessels et al., 2019).

Patient safety culture and nursing work environment are crucial factors affecting missed nursing care among nurses. When the positive culture of patient safety maintained inside health care organizations, staff nurses engaged in patient safety behavior, and will be able to handle unanticipated or difficult problems effectively during executing their routine nursing activities, (Zeleníková, Jarošová and Janíková, 2020). Patient safety culture also generates the work environment that motivates staff nurses deal with repeated incidents of missed care, by immediately reporting and discussing incidents to resolve problems that may cause a major incident if it left unidentified (Song et al., 2020).

Missed nursing care concept means "a standard, required nursing care forgotten, unmet patient needs, left nursing care undone, and incomplete nursing care, completed partially, or missing clinical, emotional, or administrative aspect of nursing care due to possible reasons." It causes errors, complications, and reduces the quality of nursing care that ultimately causes negative outcomes for the patients such as dissatisfaction, increase length of stay, and readmission (Bragadóttir, Kalisch and Tryggvadóttir, 2017; Kim, Yoo and Seo, 2018). In hospitals, missed nursing care are widespread and report certain adverse outcomes for patient as increase incidence of infections, falls, pneumonia, medication error, increase length of stay, delayed discharge, increase pain and discomfort (Hessels, Weaver, Wurmser,2018).

The nursing work environment also is a key element that has a significant effect on missing nursing care. Also, it play important role in the recruitment and retention of healthcare providers and indirectly influences on quality of nursing care (Zhao et al., 2019). There is a closely relationship between missed care and work environment features such as inadequate staffing, time, communication among staff, peer or/ managers support, and working system (White, Aiken and McHugh, 2019).

Significance of the study

Competition is growing in the field of health care around the world, and hospitals seek to provide high quality of patient care, in the same time, it controls healthcare costs, enhance patients' safety, and increase accessibility of health care. Nurses are required to do more patient care and work in fast-paced situations where patients need more complex treatment where there is insufficient staffing, workload, and turnover increased. Each of these factors has an adverse effect on work environment of nurses, nurses' performance, and patient outcomes. The absent of essential elements of the work environment impedes the ability to provide high-quality, safe care, does not provide the nurse the time or resources required to complete comprehensive assessments or patient education, leading to missed care and other adverse effects. Missed nursing care is considers on of the major factors that affects negatively on patients, nurses, and health care organization, therefore exploring factors contributing to missing nursing care as work environment, and patient safety culture will help decision makers to pay their attention to these factors, and seek to prevent factors that may increase missed nursing care. Therefore the present study aims to explore the linking between work environment, patient safety culture, and missed nursing care among staff nurses.

AIM OF THE STUDY

The present study aims to explore the relationships between work environment, patient safety culture, and missed nursing care among staff nurses.

Research questions

1. What are staff nurses' perceptions toward their work environment, patient safety culture, and missed nursing care?
2. Do staff nurses' perceptions toward work environment, patient safety culture, and missed nursing care correlate with their personal characteristics?
3. Are there relationships between work environments, patient safety culture, and missed nursing care?

SUBJECTS AND METHOD

The research design: Descriptive correlational design was utilized for the current study.

Setting:

It was carried out at all inpatient units of Main Mansoura University Hospital (MMUH). MMUH provides different medical services for patients at Delta Region. It consists of five floors which includes 14 inpatient units with total bed capacity 1800 beds.

Subjects:

The study includes a convenience sample of 136 staff nurses who were responsible for providing nursing care during the time of data collection.

Tools of data collection

Data were collected through three scales as follows;

Tool (I): Work environment scale

This scale was developed by **Lake (2002)** to assess nurses' perceptions toward their work environment. It included two parts; the first part includes personal characteristics as age, marital status, educational level, and experience years. The second part includes 31 items classified into 5 dimensions namely as follows; (1) "Nurses' participation in hospital affairs" (9 items); (2) "Nursing foundations for quality of care" (10 items); (3) "Nurse manager leadership and support of nurses" (5 items); (4) "Staffing and resource adequacy" (4 items); and (5) "Collegial nurse and physician relations" (3 items).

Scoring system

The likert scale of nurses' responses includes 4 points that ranged from 1 for strongly disagree to 4 for strongly disagree. The total score was computed and classified into three levels as follows; low <50%, average 50-75%, and good >75% (**Aiken et al., 2008**).

Tool (II): Patient safety culture scale

The Agency for Healthcare Research and Quality (AHRQ) (2019) was developed this scale to assess the culture of patient safety among nurses. It includes 30 items categorized into nine domains as follows; (1) Teamwork (3 items); (2) Staffing and work pace (4 items); (3) Organizational learning (3 items); (4) Response to error (4 items); (5) Clinical managers support for patient safety (3 items); (6) Communication and feedback about error (3 items); (7) Communication openness (4 items); (8) Hospital management support for patient safety (4 items); (9) handoffs and Information exchange (3 items).

Scoring system

The Likert scale was utilized to rate nurses' responses on five point from 1 for strongly disagree to 5 for strongly agree for all items, except items of two domains (communication and feedback

about error and communication openness) were ranging from 1 for never to 5 for always. The higher scores indicate more positive perception of patient safety culture. Prior to computing total scores, items with negative direction were reversed coded. The total score was computed and classified into five levels as follows; poor <50%, fair 50->60 %, good 60->75%, very good (75-> 85%), and excellent ≥85% ((**AHRQ, 2019)**

Tool (III): Missed nursing care scale

This scale developed by Kalisch and Williams (2009) to determine missed nursing care. It includes two sections; the first section includes 22 items that represent missed nursing care (e.g., monitoring intake/output). The second section concerned with reasons for missing nursing care (15 items) (e.g., inadequate number of staff).

Scoring system

The responses were rated on Likert scale that includes 5 points from 1 for never to 5 for always. The total score of 22 items classified into four levels based on cutoff point as follows; no missing care ≤ 20%, low 21-40%, moderate >40-60%,and high >60%.

Pilot study

Pilot study was included 15 staff nurses that represents (10%) from total study sample (n=151), pilot study was done before data collection to assess applicability and clarity of the scales, explore obstacles, problems that may be during the phase of data collection, and estimate the time required to complete the questionnaire. The pilot study sample was omitted from the total sample. The data obtained from pilot study were analyzed.

Tools validity

The data collection tools were translated into Arabic and back translated into English to ensure accuracy and clarity. Panel of five professors in nursing administration specialty reviewed the tools to test its face and content validity.

Tools reliability

The Cronbach alpha test was used to test reliability of the scales, it was 0.81, 0.86, and 0.82 for work environment, patient safety culture, and missed nursing care respectively.

Field work

The researchers were utilized a self-administered questionnaire for collecting the data from the beginning of January to the end of March 2020. The time that staff nurses were spent to fill questionnaire was between 20 to 25 minutes**.**

Ethical considerations

The study aim was clarified to hospital director, head nurses and staff nurses. Written permission was attained from the director of hospital to carry out this study. Ethical approval was gained from ethical research committee - faculty of nursing, Mansoura University. Voluntary participation was assured and oral consent was gained from each participant. Confidentiality and privacy of the collected data were maintained. Subjects were informed that the content of the questionnaire used for the research purpose only, and they have right to withdrawal from the study at any time.

Statistical analysis

The SPSS software Version 25 was utilized for statistical analysis of the collected data. Frequencies and percentages were presented for qualitative data whereas mean & SD for quantitative data. Independent t-test was operated to evaluate differences between two mean scores of continuous variables. Whereas ANOVA test was utilized to compare more than two means of continuous variables. Pearson correlation coefficient was used to explore relationship between continuous variables. Statistically significant was at (p-value < 0.01 & 0.05).

RESULTS

Table (1): illustrates that more than half of the staff nurses aged from 20-30 years (60.1%) with mean aged 30.13±5.94, the majority was females (76.5%), married (74.3%), less than half of them having a technical degree of nursing (46.3%), and experienced more than 10 years (40.4%) with mean of experience years (9.61± 6.43).

Table (2): illustrates that mean of overall nurses' perception toward work environment was with mean ±SD (78.14±21.83). The highest mean of work environment domains was for nursing foundations for quality of care (26.86±7.78). While the lowest mean of work environment domains was for collegial nurse and physician relations (7.38±2.72). The overall nurses' patient safety culture was with mean ±SD (94.30±10.78). The highest mean of patient safety culture domains was for communication openness (12.49±2.65). While the lowest mean of patient safety culture domains was for manager, or clinical managers' support for patient safety (9.22±1.71).

Table (3): shows that mean score of missed nursing care was 34.39±15.79. The highest missed nursing care was ambulating patients 3 times daily (2.36±1.45) and the lowest missed nursing care was assessing patients' vital signs as physician order (1.37±0.94). The most reason for missing nursing care was inadequate number of staff with mean ± SD (3.03±1.46), while the lowest was inadequate handover from previous shift or sending unit with mean±SD (1.99±1.09).

Table (4): illustrates that slightly more than half of the staff nurses (52.2%) perceived average work environment, nearly one quarter of the of the studied nurses perceived (24.3%) good work environment, and other quarter of the studied nurses (23.5%) perceived poor work environment. More than two thirds (66.2%) of the staff nurses had good patient safety culture. The high percent of the staff nurses (70.6 %) reported a low missed nursing care level, followed by 12.5 % of the staff nurses reported no missed nursing care level, 9.6 % of the staff nurses reported a moderate missed nursing care level, and 7.4 % of the staff nurses reported a high missed nursing care level.

Table (5): illustrates that there was no statistically significant relationship between nurses' work environment, and their personal characteristics. There was statistically significant relationship between nurses' patient safety culture and their educational level. There was statistically significant relationship between missing nursing care, and nurses' age, gender, marital status, educational level, and experience years.

Table (6): illustrates that missed nursing care associated negatively with two domains of work environment "(nurse manager leadership, and support of nurses, / and staffing and resource adequacy)." Also missed nursing care correlated negatively with teamwork, Organizational learning, handoffs and information exchange, and hospital management support for patient safety domains of patient safety culture.

Table (7): shows that there was statistically significant relationship between the most domains of work environment and patient safety culture except staffing and work pace domain not correlated with all work environment domains. Response to error domain correlated only with nursing foundations for quality of care, and nurse manager leadership, and support of nurses. Hospital management support for patient safety correlated only with nurses' participation in hospital affairs.

Table (8): shows that missed nursing care had significant negative relation with the environment of work, and patient safety culture. Work environment positively correlated with culture of patient safety.

Table (1): Personal characteristics of the staff nurses (n=136).

Variables	No	%
Age years		
▪ 20-30	83	61.0
▪ 31-40	48	35.3
▪ >40	5	3.7
Mean±SD	30.13±5.94	
Gender		
▪ Male	32	23.5
▪ Female	104	76.5
Marital status		
▪ Single	35	25.7
▪ Married	100	74.3
Level of education		
▪ Diploma degree	43	31.6
▪ Technical degree	63	46.3
▪ Bachelor degree	30	22.1
Experience years		
▪ 1-5 years	48	35.3
▪ 6-10 years	33	24.3
▪ >10 years	55	40.4
Mean±SD	9.61± 6.43	

Table (2): Mean scores of nurses' perception toward their work environment and patient safety culture (n=136)

Work environment domains	Min - Max	Mean±SD
1. Nurses' participation in hospital affairs	9.0-36.0	22.33±7.30
2. Nursing foundations for quality of care	10.0-40.0	26.86±7.78
3. Nurse managers leadership, and support of nurses	5.0-20.0	12.19±4.42
4. Staffing and resource adequacy	4.0-16.0	9.36±3.58
5. Collegial nurse and physician relations	3.0-13.0	7.38±2.72
Total work environment	31.0-125.0	78.14±21.83
Patient safety culture domains		
1. Teamwork	3.0-15.0	10.20±2.14
2. Staffing and work pace	7.0-20.0	11.47±1.82
3. Organizational learning	5.0-14.0	9.65±1.85
4. Response to error	7.0-20.0	12.41±2.59
5. Clinical managers' support for patient safety	5.0-14.0	9.22±1.71
6. Communication and feedback about error	3.0-15.0	9.38±3.34
7. Communication openness	5.0-20.0	12.49±2.65
8. Handoffs and information exchange	5.0-15.0	9.47±1.83
9. "Hospital management support for patient safety"	5.0-15.0	9.97±1.99
Total patient safety culture	64.0-136.0	94.30±10.78

Table (3): Missed nursing care, and its reasons among the staff nurses (n=136).

Missed nursing care	Mean±SD
1. Ambulating patients 3 times daily or as physician ordered	2.36±1.45
2. Turn the patients every 2 hours as physicians' order	1.58±0.89
3. Give medications within thirty minutes before or after the scheduled time	1.47±0.83
4. Teach patient about his/her plans for care and when to call after discharge	1.59±0.98
5. Asses, and care IV/central line site according to hospital policy	1.49±0.90
6. Provide care for patients' mouth	1.73±1.10
7. Give emotional support for patients and/or their families	1.68±1.07
8. Teach patients about procedures, tests and other diagnostic steps	1.59±0.93
9. Document all necessary data completely	1.38±0.80
10. Assess medications' effectiveness	1.52±0.89
11. assist patients for toileting within 5 min of request	1.62±1.05
12. Monitoring intake/output	1.47±0.95
13. Response to call light within 5 min	1.48±0.86
14. PRN medication requests acted on within 15 min	1.54±0.90
15. Conduct reassessments according to patients' condition	1.50±0.91
16. Patient assessments performed each shift	1.44±0.90
17. Give the food to patients while it is still warm	1.53±0.94
18. Assess vital signs as physicians' order	1.37±0.94
19. Skin/wound care as ordered	1.42±1.01
20. Monitor glucose for patients as ordered	1.39±0.94
21. Hand washing	1.47±1.01
22. Patient bathing/skin care	1.68±1.13
Total	34.39±15.79
Reasons of missed nursing care	
1. Unexpected increase patient volume and/or patients' illness	2.69±1.49
2. Inadequate number of staff	3.03±1.46
3. Increase activities of patients' admission and discharge	2.90±1.43
4. "Inadequate assistive personnel number (e.g., unit secretaries)"	2.63±1.32
5. "Urgent patient situations (e.g., a patient's condition worsening)"	2.59±1.27
6. Unbalanced patient assignments	3.00±1.47
7. Tension or communication breakdowns with the medical staff	2.42±1.26
8. Medications not available when needed	2.38±1.14
9. "Lack of backup support from team members"	2.66±1.37
10. "Supplies/equipment not functioning properly when needed"	2.57±1.29
11. "Supplies/equipment not available when needed"	2.47±1.16
12. "Nursing assistant did not communicate that care was not done"	2.20±1.09
13. "Tension or communication breakdowns within the nursing team"	2.16±1.11
14. "Other departments did not provide the care needed (e.g., physical" therapy)	2.38±1.16
15. "Inadequate handover from previous shift or sending unit"	1.99±1.09

Table (4): levels of nurses' perception toward their work environment, patient safety culture, and missed nursing care (n=136)

Levels of the study variables	Score	No	%
Perception toward work environment			
▪ Poor (<50%)	31-61	32	23.5
▪ Average (50-75%)	62-93	71	52.2
▪ Good (>75%)	94-124	33	24.3
Patient safety culture			
▪ Poor (< 50%)	30-74	1	0.7
▪ Fair (50- >60%)	75-89	43	31.6
▪ Good (60 - >75)	90-112	90	66.2
▪ Very good (75- >85)	113-127	0	0.0
▪ Excellent (≥85%)	128-150	2	1.5
Missed nursing care			
▪ No missed nursing care (≤ 20%)	22	17	12.5
▪ Low (>20- 40%)	23-44	96	70.6
▪ Moderate (>40- 60%)	45-66	13	9.6
▪ High (> 60%)	67-110	10	7.4

Table (5): Work environment, patient safety culture, and missed nursing care in relation to personal characteristics of the studied staff nurses (n=136)

Variables	Work environment	Patient safety culture	Missed nursing care
Age years	Mean±SD	Mean±SD	Mean±SD
▪ 20-30	76.93±21.45	93.77±9.56	36.93±17.26
▪ 31-40	79.98±23.41	94.47±12.82	30.77±12.74
▪ >40	80.60±11.67	101.40±7.26	27.00±6.28
F-value / p-value	0.32 /0.72	1.19/0.31	2.97/**0.05***
Gender			
▪ Male	74.71±22.74	91.12±8.81	46.34±21.94
▪ Female	79.20±21.55	95.27±11.18	30.72±11.13
t-value / p-value	1.01 /0.31	1.92 /0.06	5.37 /**0.000****
Marital status			
▪ Single	75.08±23.63	92.68±8.15	40.22±20.01
▪ Married	79.20±21.20	94.86±11.54	32.37±13.58
t-value / p-value	0.96 /0.33	1.02/0.31	2.58 /**0.01****
Level of education			
▪ Diploma degree	79.09±17.17	95.51±9.24	33.23±13.80
▪ Technical degree	74.01±21.05	91.31±9.23	38.96±18.65
▪ Bachelor degree	85.46±27.40	98.83±13.90	26.46±5.36
F-value / p-value	2.93 / 0.06	5.69 /**0.004****	7.13 / **0.001****
Experience years			
▪ 1-5 years	77.22±20.77	93.37±9.53	38.52±17.81
▪ 6-10 years	73.21±24.03	94.27±10.14	34.51±15.26
▪ >10 years	81.90±21.07	95.12±12.22	30.72±13.43
F-value / p-value	1.71 /0.18	0.33/0.71	3.22 /**0.04***

* P statistically significant at ≤ 0.05 / ** P highly statistically significant at ≤0.01

Table (6): Relationships between work environment domains, patient safety culture domains, and missed nursing care as perceived by the studied staff nurses (n=136)

Work environment domains	Missed nursing care	
	r	p
1. Nurses' participation in hospital affairs	0.11	0.17
2. Nursing foundations for quality of care	0.11	0.18
3. Nurse managers leadership, and support of nurses	-0.24	**0.004****
4. Staffing and resource adequacy	-0.17	**0.04***
5. Collegial nurse and physician relations	0.12	0.14
Patient safety culture domains		
1. Teamwork	-0.31	**0.000****
2. Staffing and work pace	0.02	0.74
3. Organizational learning	-0.23	**0.005****
4. Response to error	0.14	0.10
5. Clinical managers' support for patient safety	0.10	0.21
6. Feedback and communication about error	0.14	0.09
7. Communication openness	0.03	0.71
8. Handoffs and information exchange	-0.21	**0.01***
9. Hospital management support for patient safety	-0.16	**0.05***

* P statistically significant at ≤ 0.05 / ** P highly statistically significant at ≤0.01

Table (7): Relationships between subscales of work environment, and patient safety culture among the staff nurses (n=136).

Patient safety culture domains	**Work environment domains**									
	1. Nurses' participation in hospital affairs		2. Nursing foundations for quality of care		3. Nurse manager leadership and support of nurses		4. Staffing and resource adequacy		5. Collegial nurse and physician relations	
	r	p	r	P	r	p	r	p	r	P
1. Teamwork	0.32	**0.000****	0.40	**0.000****	0.48	**0.000****	0.38	**0.000****	0.45	**0.000****
2. Staffing and work pace	0.7	0.37	0.03	0.65	0.09	0.28	0.06	0.43	0.09	0.28
3. Organizational learning	0.32	**0.000****	0.36	**0.000****	0.31	**0.000****	0.31	**0.000****	0.39	**0.000****
4. Response to error	0.16	0.06	-0.21	**0.02***	0.15	**0.01***	0.15	0.07	0.15	0.07
5. Clinical managers' support for patient safety	0.38	**0.000****	0.45	**0.000****	0.42	**0.000****	0.42	**0.000****	0.44	**0.000****
6. Communication and feedback about error	0.35	**0.000****	0.48	**0.000****	0.54	**0.000****	0.54	**0.000****	0.51	**0.000****
7. Communication openness	0.34	**0.000****	0.35	**0.000****	0.40	**0.000****	0.40	**0.000****	0.48	**0.000****
8. Handoffs and information exchange	0.36	**0.000****	0.40	**0.000****	0.39	**0.000****	0.39	**0.000****	0.29	**0.001****
9. Hospital management support for patient safety	-0.20	**0.02***	0.03	0.68	0.09	0.28	0.01	0.26	0.15	0.07

* P statistically significant at ≤ 0.05 / ** P highly statistically significant at ≤0.01

Table (8): Relationships between work environment, patient safety culture, and missed nursing care as perceived by the staff nurses (n=136).

The study variables	Work environment		Patient safety culture	
	r	p	r	P
Patient safety culture	0.52	**0.000****	1	
Missed nursing care	-0.17	**0.04***	-0.20	**0.02***

* P statistically significant at ≤ 0.05 / ** P highly statistically significant at ≤0.01

DISCUSSION

Over the past decade, missed nursing care is a significant threat to quality patient care. Promoting patient safety culture within nurses' work environments could decrease missed care. The work environment factors such as resource level, communication among staff, working system, and the leadership of head nurses has the greatest effect on the occurrence of missed nursing care (Kim, Yoo and Seo, 2018). To attain the aim of the current study and answer the research questions, the findings of the study will be discussed into two sections as follows;

Regarding nurses' perception toward their work environment, the current study revealed that more than half of the studied nurses perceived average work environment, the highest perception was for nursing foundations for quality of care dimension followed by nurses' participation in hospital affairs whereas, the lowest perception was for collegial nurse and physician relations followed by staffing and resource adequacy dimension. This may be due to a supportive management style, a balanced work schedule, professional autonomy, adequacy of resources, and training program related quality of care.

These results congruent by the study Al Moosa et al, (2020) indicated that the studied nurses had moderate level of perception related to their work environment, the highest perception among the studied nurses was related nursing foundation for quality of care, while the lowest perception was for staffing and resource adequacy, and nurse manager ability, leadership, and support of nurses. Also the study of Almuhsen et al, (2017) that was conducted at King Fahd Medical City in Saudi Arabia among nursing staff indicated that the perception of the studied nursing staff towards three dimension of work environment; (nurse participation in hospital affairs, nurse manager leadership, and support of nurses, staffing and resource adequacy) was at moderate level. Whereas the perception of the studied nursing staff towards work environment was at high level related nursing foundation for quality of care, and low collegial nurse-physician relations dimension.

These findings in contradicted with Moisoglou et al, (2020) revealed that the studied nurses perceived unfavorable work environment. The collegial nurse-physician relation was the most favorable element of nurses' work environment followed by nurse manager ability, leadership, and support of nurses dimension, whereas staffing and resource adequacy dimension had the lowest perception followed by nurse participation in hospital affairs. It also disagreed with the study of Aboshaiqah (2015) that reported there was a good work environment as perceived by the participant nurses across service units of a government-operated hospital with 1000 beds.

Regarding nurses' perception toward their work environment and its relationship with their personal characteristics, the current study showed that nurses' perception toward their work environment was not correlated with their personal characteristics. These findings in the same line with the study of Al Moosa et al, (2020) also reported that nurses' perception of their work environment was not correlated with age, gender, marital status, but correlated with educational levels, and experience years. These findings disagreed with the study of Almuhsen et al, (2017) which indicate that staff nurses' work environment had significant relation with their education, and experience.

Regarding nurses' patient safety culture, the current study highlighted that the majority of the studied nurses had good perception toward patient safety culture, while the highest perception was for communication openness domain followed by response to error, and lowest perception was for manager, or clinical managers' support for patient safety domain followed by feedback and communication about error. This good perception toward patient safety culture may be due to nurses had training program related aspect of patient safety culture or nursing mangers create nursing work environment that empowers staff nurses, enhance nurses' autonomy, and providing nurses with opportunities for professional development. Nursing managers also share their views on the importance of safety, fidelity and accountability, and agreed trust in the effectiveness of preventive measures. In the same context the study of Ricklin , Hess and Hautz (2019), and Ali et al (2018) reported that the overall perception of patient safety culture was rated as very good by the studied nurses. Also Putri et al (2018) addressed that communication openness has a positive and significant effect on the readiness to report patient safety incidents. These findings disagreed with the research of Abdi et al, (2015) indicated none of the patient safety culture domains achieved a positive culture and all the domains need improvements. It also disagree with El-Sherbiny, Ibrahim and Abdel-Wahed (2020) reported that the lowest score was for communication openness and concluded that overall, at Fayoum public hospitals, the degree of patient safety is poor. More over Ghobashi et al, (2014) reported that the studied nurses had poor culture less than 50% related the non – punitive response to errors, frequency of event reporting, staffing, communication openness, center handoffs and transitions

and needs improvement, whereas the dimensions of highest positivity were teamwork within the center's units and organizational learning.

Regarding nurses' perception toward patient safety culture and its relationship with their personal characteristics, there was statistically significant relationship between patient safety culture and nurses' educational level. These results agreed with Ege, Kilic and Yildiz (2019) who indicated determined that the patient safety culture of nurses was acceptable and correlated with their education levels. The current findings disagreed with Abu-El-Noor et al, (2019) found that there were no statistically significant differences in the overall culture of patient safety with age, education, and experience of nurses from four governmental hospitals in the Gaza Strip, Palestine. also it conversely with the study of Ammouri et al, (2015) reported that the nurses who had more years of experience had more perception of patient safety culture, and the other nurses' characteristics such as gender, age, educational degree had no significant relationship with the nurses' perception of patient safety culture.

Regarding missed nursing care among staff nurses, the study presented that the highest missed nursing care was ambulating patients three times daily or as ordered and the lowest missed nursing care was assessing vital signs as ordered. The most reason of missed care was inadequate number of staff, while the lowest reason of missed nursing care was inadequate handover from previous shift or sending unit. As well as the majority of the studied nurses reported a low level of missed nursing care This return to staffing shortages and functioning in resource-based facilities causes stress for nurses who know they are missing the necessary nursing services, which in turn generates more stress because they believe they cannot provide better quality care. The studies of Gabr and El-Shaer (2020), and Mandal, Seethalakshmi and Rajendrababu (2019) they agreed with current findings and discovered that the commonly identified missing care elements linked to the basic care intervention dimension were ambulating 3 times/day as requested. Also Recio-Saucedo et al, (2017) presented that the adequacy of resources and nurse staffing were described as crucial environmental factors influencing the incidence and prevalence rate of missing care. Saqer and AbuAlRub (2018) The most widely considered missed nursing care was described as ambulating patients, feeding patients on time, conducting oral care, accompanied by patient turning and discharge planning. Marven (2016) suggested that successful nursing handover between shifts, which involve the patient in the handover, to eliminate missed care. Song et al, (2020), and Griffiths et al, (2018) suggested that high rates of missing and delayed critical care, that lead to risk of adverse health effects and reduced quality of life.

Regarding relationship between missed nursing care among staff nurses and their personal characteristics, there was significant relationship between missing nursing care, and

nurses' age, gender, marital status, educational level, and experience years. These results agreed with Blackman et al, (2018) revealed that the clinical experience, and age of the nurses was a factor that negatively impacted missed care, also the professional qualification consisted of one of the factors in identifying the different elements of the missed care. Less experienced professionals performed greater incidents of missed care. These findings disagreed with disagreed with Dutra, Salles and Guirardello (2019) reported that there were no significant correlations between the missed care with the age and experience of nurses. Also it disagreed with Kim, Yoo and Seo (2018) reported that missing nursing care was not related to nurses' age, gender, marital status, education, and experience.

The current study showed that work environment correlated positively with patient safety culture. This may be due to staff nurses are working in the environment that characterized by team work, effective relationship between health care providers, receiving support from their managers, therefore it influences on their patient safety culture. These findings supported by the study of Clark and Lake (2020) who reported that the good work environment associated with high level of patient safety among nurses, this means nurses' perception of work environment correlated with patient safety culture among nurses in the United States. Also it in the same line with the study of Ball and Griffiths (2019), and Dirik, and Intepeler, (2017) indicated that the work environment was linked positively with the patient safety culture among nurses who were working in a university hospital located in Izmir.

The current study showed that work environment correlated negatively with missed nursing care. These findings in the same line with the study of Zeleníková, Jarošová and Janíková (2020) that included nurses from nine hospitals which located in the Moravian-Silesian Region of the Czech Republic, indicates nursing work environment linked negatively with missed nursing care. In the same context Kim, Yoo and Seo (2018) found that the nursing work environment had significant relation with missed nursing care. The study of Park, Hanchett, and Ma, (2018) also reported that good work environment had significantly lower missed nursing care activities than poor environment units. Also the study of Hessels et al, (2015) found that the nursing practice environment was statistically significantly related to missing nursing care in that a better environment was related to less missing nursing care.

The current study showed that patient safety culture correlated negatively with missed nursing care. These results agreed with Gurková et al, (2020) found that the relationship between mean frequency of unfinished nursing care activities (or failure to complete specific nursing tasks) and perception of safety culture from a nursing point of view was a negative. Also the study of Kim, Yoo and Seo (2018) indicate that patient safety culture had significant negative relationship with missed care among nurses.

CONCLUSION

Work environment and patient safety culture correlated negatively with missed nursing care among staff nurses. There was positive relationship between work environment, and patient safety culture among staff nurses.

RECOMMENDATIONS

1. Nurse managers should maintain work environment with adequate staffing, and resources, teamwork to avoid missing nursing care.
2. Clear communication and feedback system should be maintained about the error to avoid reoccurrence, and prevent negative outcomes for patients, nurse, and health care organizations
3. Handoffs and information exchange standard should be achieved to prevent lack of information that important for patient safety.
4. Hospital management should concern with continuous training programs for nurses that enhances their culture regarding patient safety in addition to improving their performance.
5. Nurse Managers should continuously monitor and evaluate patient safety culture aspects among nurses to attain a healthy, safe environment for patients

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الارتباط بين بيئة العمل وثقافة سلامة المريض والرعاية التمريضية المفقودة لدي الممرضين

د.إبراهيم عبد اللطيف إبراهيم[1] د. الطاهرة السيد أبوحبيب[2]

مدرس إدارة التمريض- كليه التمريض- جامعة المنصورة- مصر. [2,1]

تعتبر بيئة العمل وثقافة سلامة المرضى من العوامل الرئيسه التي كان لها تأثير كبير على الرعاية التمريضية المفقودة. الهدف: استكشاف العلاقة بين بيئة العمل وثقافة سلامة المرضى والرعاية التمريضية المفقودة. الطرق: تم استخدام التصميم الوصفي الارتباط. اشتملت الدراسة على عينة من 136 ممرضاً وممرضاً كانوا يعملون في مستشفى جامعة المنصورة الرئيسي. تم استخدام مقياس بيئة العمل ، مقياس ثقافة سلامة المرضى ، ومقياس الرعاية التمريضية المفقودة لجمع البيانات. النتائج: يدرك الممرضين بيئة عملهم علي انها متوسطة ، ولديهم ثقافة جيدة عن سلامة المرضى ، والرعاية التمريضية المفقودة تعتبر قليله. بيئة العمل ، و ثقافة سلامة المريض ترتبط بشكل سلبي مع فقدان الرعاية التمريضية. كانت هناك علاقة إيجابية بين بيئة العمل وثقافة سلامة المرضى. الخلاصة: ترتبط بيئة العمل وثقافة سلامة المرضى ارتباطًا سلبيًا بفقدان الرعاية التمريضية. كانت هناك علاقة إيجابية بين بيئة العمل وثقافة سلامة المرضى لدي الممرضين. التوصيات: يجب على مديري التمريض الحفاظ على بيئة عمل بها عدد كافٍ من الموظفين والموارد وتشجيع العمل الجماعي لتجنب فقدان الرعاية التمريضية. كما يجب على مديري التمريض مراقبة وتقييم جوانب ثقافة سلامة المرضى بين الممرضين لتحقيق مناخ صحي وآمن للمرضى. يجب الحفاظ على نظام اتصال وتعليقات واضح بشأن الخطأ لتجنب تكراره وتجنب النتائج السلبية للممرضات والمرضى ومؤسسات الرعاية الصحية.

الكلمات المرشدة: الرعاية التمريضية المفقودة ، الممرضين ، ثقافة سلامة المرضى ، بيئة العمل