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Perception of health care providers toward quality work environment and patients' safety culture at hemodialysis units.

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Abstract

Many changes have been made in the healthcare practice environment. Understanding of quality practice environment in hemodialysis units has certain implications for maximizing outcomes for clients, nurses, and systems. Developing quality practice environments takes time and commitment to promote and support patients' safety. Hence improving safety patient culture is vital in dialysis units because it requires for reducing risks for harm, errors of patients and delivering high quality of patients care. ***The Study aimed*** *to determine the perception of nursing staff' toward quality practice environment and patients' safety at Hemodialysis units.* ***Methodology,*** *data collection was utilized a descriptive correlational design for this study, all nursing staff amounted to (n= 90) They are classified into: all head nurses n = 7,, and all nurses who have either diploma (n = 40) or baccalaureate degree (n = 43) who are affiliated to all hemodialysis units (n =7) at Ministry of Health ,Egypt. A package composed of two instruments was used, namely: Environment Scale-Nursing Work Index (PES-NWI) and Hospital Survey on Patient Safety Culture (HSPSC).* ***Results,*** *the major findings indicated that there is a positive correlation significant among practice work environment and patient safety culture except for staffing and resource adequacy in all hemodialysis units of Ministry of Health Hospitals. Also, results point out that the organizational structure of the Ministry of Health Hospitals is characterized by unhealthy environment and unsafe climate that force the nursing staff to have low perception toward most of quality practice environment and patient safety culture factors.* ***The study recommended*** *that initiating a blame-free reporting system to prevent re-occurrence of problems and actions to eliminate them from the workplace by detecting, evaluating, preventing and treating safety work environment*

Keywords: Hemodialysis, Patient safety, Practice work environment, Ministry of health

Introduction

Over the last two decades, work environment is addressing to play an essential factor in guarantee of healthy workforce characteristics amount to health care professionals' recruitment and selection, motivation in which affect directly and indirectly ways for quality of patients care. [1,2]

The nursing discipline is confronted by many challenges occurred at all levels within the organization that mainly focus on the practice environment issues as the groups cohesiveness, organizational composition, redesigned to introduce an innovative pattern for providing patient care.[2]According to Ramona et.al (2017) the challenges facing practice work environment can be joined with scarcity of nursing personnel and quality of work life situations for them. [3]

The ability to provide quality care can be playing a great part in the work environment. The environment of a healthcare organization consists of buildings, equipment, and people. Therefore, quality practice environments is characterized by members who working in the unit perceiving themselves to be satisfied with themselves, their jobs, their co-workers and the way they are managed. [4] As a general rule, positive practice environments were identifying as help quality of work at different situation. Specifically, individuals and organizations struggle to confirm safety and health of wellbeing of them through developing productivity and performance. [4,5] According to Canadian Nurses Association (CAN), (2008), quality Practice environments was defined as “"The nurse and patient goals are getting together connect with framework of providing the patient care in the organization directly by the expenditure". [6]

The major well-planned instrument that has been used extensively across the organization and nursing research was the Practice Environment Scale-Nursing Work Index (PES -NWI), it was developed by Lake (2002). [7] Which involves five keys profile to measure work environment subscales? These keys are; **Nurse Participation in dialysis providers affairs** which reveal the nurses worth and participation responsibility. **Nursing foundations for quality of care** that point out an elevate quality of patient care. Also, **Nurse manager ability, Leadership, and support of nurses**, focuses on the different essential activities of the manager. **Staffing and resource adequacy** describe adequacy staff supply and support to give the high standard of patient care. **Collegial nurse-physician Relations** reflects optimistic interpersonal relationships among nursing staff and medical professionals. [5,8]

In addition, nursing personnel have an essential responsibility in enhancing clients care in hemodialysis units. However, they are a professional group at high risk for many reasons including the stressful nature of their job, dealing with new procedure and equipment. The nurses have increasing the complexity of their roles in nursing practice without adequate preparation. Also, hospital rules and regulation is an additional reason for create stressful work environments among individual nurse. [9,10]

The hemodialysis unit (HDU) is one area in the hospital where the risk of acquiring a nosocomial infection. Patients in hemodialysis units can easily acquire infection because they are in high-risk groups.

Safety in the hemodialysis unit begins with the prevention of harm for patients receive treatment as well as the health care professionals work is safe and free from harm.[5,9] The physical layout structural of hemodialysis units are linked to a healthful work environment through immediate observation of the patients, rapid increasing of technology level, reduce nurse-patient ratio, prolonged existence of relationship between nurses and physicians, and high specialized experience for nurses and medical staff. [10,11]

The process of health care quality begins with ensuring patient safety culture, and health care environment that patient is free from injury and damage. Patient safety was described as "Processes of health care delivery follow the anticipation of patient harmful actions. [11] According to the Institute of Medicine (IOM) (2001, 2004), Patient safety culture was recognized as"processes of care delivery may outcome from an incorporated arrangement of behaviors of personal and organization which based on continuous sharing of attitude and values and reducing patient injuries". [12, 13]

Safety patient culture has needed a long-term action plan and change images that properly sharing all over the hospitals and the healthcare professional. Therefore, many factors generate to understand safety patient culture among healthcare settings. These factors include supervisor/manager expectation of support safety, enhancement of team building in the work inside the units. In addition, communication feedback was focused on mistakes and non-disciplinary actions. [14]From reviewing of existing literature, Agency for Healthcare Research and Quality described the most using instrument for patient safety culture surveying as Hospital Survey on Patient Safety Culture (HSPSC), it developed was by Sorra and Nieva, (2004). The questionnaire highlights pertaining to different concerns of the patient-safety culture. It has 35 items grouped into seven unit-level and three hospital-level.[15]

Numerous studies have been conducted to investigate the relationships between nurses' awareness of the work environment and their turnover, satisfaction, and patient's hospitalizations in the hemodialysis unit**.** They concluded that, nurses' perceived of the work atmosphere are important for nurse and patient outcomes in dialysis settings. [16] Another study examined thatrelationship of safety climate with safe work environment by improvement approaches to reduce exposure occupational incidents such as blood and body fluids. [17]

Hopefully, this study was done to establish the relationship between perception of nursing staff of quality practice environment and patient safety at hemodialysis unit. Therefore it help front- line managers to identify strategies and focus on improving the areas of the practice environment that contributes to patient safety culture outcomes.[7,9] Also direct and incorporate the many characteristics of the environment that optimizes their staff's ability to provide safe quality of care. The evaluation of workenvironment and culture of patient safety was support nurses in find out the facilities for applying safety standards on a daily basis of their practices. [12,14]

The aim of the Study

To establish the perception of quality practice environment and patients' safety culture at among health care providers at hemodialysis units.

Research Question:

Is there a correlation relationship between quality practice environment and patient safety culture among health care providers at hemodialysis units?

MATERIALS ANS METHODS

Research design: for this study, a quantitative, descriptive correlational research design was used.

Settings:

This study was undertaken in 20- hemodialysis units that provide care for hemodialysis patients who affiliated to Ministry of Health Hospitals. Ministry of Health Hospitals are classified as follow: Three hemodialysis units in Borg El- Arab hospital, two hemodialysis units in Al – Agamy hospital,3 hemodialysis units in Rase–Elteen hospital**, 3** hemodialysis units in El – Gomhoria hospital, Also, 3 hemodialysis units in Abo – Keer hospital, two hemodialysis units in El – Amria hospital, and lastly four hemodialysis units in El –Homiate hospital. The total capacity of hemodialysis machines in these hospitals was ranged from 5 to 42 machines.

3. Subjects:

This study was based on data collected from Ninety (n=90) nursing personnel, who are assigned and available in the previously selected settings meeting the eligible inclusion criteria is at least for 6 months at the time of data collection. They are classified into: all head nurses n = 7, each of whom has the responsibilities of managing the administrative activity in hemodialysis units, and all nurses who have either diploma (n = 40) or baccalaureate degree (n = 43) and they give direct care and indirect care activities for hemodialysis patients.

4. Tools:

The questionnaires-based survey was used to collect data. The questionnaires were translated into Arabic and used to gain information about the perception of health care providers toward quality work environment and patients' safety at hemodialysis units.

Tool 1: a socio-demographic characteristics questionnaire was developed by the researcher. It including marital status, age, years of experience in hemodialysis unit, educational qualification…etc .

Tool 2:"Practice Environment Scale- Nursing Work Index (PES-NWI)"It was a self- report scale developed by Lake (2002) and used to assess the extent to which nurses staff rate the presence of quality practice environment in their current job [(7)].It is consisted of 58 items and classified into 4 categories

namely: ***Nurse Participation in dialysis providers' affairs***(n = 9), ***Nursing foundations for quality of care*** (n = 9), ***Manager Ability, leadership and support of nurses*** (n = 31), ***Staffing and resource adequacy*** (n = 9), and ***Collegial nurse- physician relations*** (n =3). Cronbach's alpha of the total scale (0.948).

Tool 3:"Hospital Survey on Patient Safety Culture (HSPSC)"The Agency for Health Research and Quality (AHRQ) was authorizing organization for this questionnaire. It was developed by Nieva and Sorra (2004), was used to get information data about the perception of nurses' staff about safety in their hemodialysis units. [(15)] It consists of 35 items, which measure two levels of safety culture: unit and hospital levels. Unit Level of Safety Culture namely: ***Supervisor/Manager expectation &action promoting safety*** (n = 4 items); ***Organizational learning and continuous improvement*** (n = 3 items); ***Teamwork within units*** (n = 4 items); ***Communication openness*** (n = 3 items); ***Feedback and communication about error*** (n = 3 items); ***Non- punitive response to error*** (n = 3 items); and ***Staffing*** (n = 4 items). As regard hospital levels, it classified into ***hospital management support for patient safety*** (3 items); ***Teamwork across hospital units*** (n = 4 items); and ***Hospital handoffs and transitions*** (n = 4 items)

The responses of each statement in the subscale of ***PES-NWI*** and ***HSPSC*** was assessed using a Likert scale of five point's from strongly agree (5) to strongly disagree (1). The calculation of PES-NWI and HSPSC scales were computed the mean scores of its subscales.

Method of Data Collection

The hospital directors given the authorized approval for data collection, the questionnaires were converted the English version to Arabic and essentials changes were testing the content validity by ten specialists in the nursing field. The reliability has an acceptable level for study questionnaires dimensions using Cronbach's alpha coefficient PES-NWI (0.98) and HSPSC (0.80) P≤ 0.05.A pilot study was conducted on 10% of the subjects (n = 9) to assess the simplicity of the questionnaires statements and needed time for finalized the questionnaires hence, the restatement was done. The informed consent was taken from all study participants to inform them about the aim of the study and to gain their cooperation, as well as their share, was voluntary and confidential. The study participants completed the questionnaires while they were in their work settings. The questionnaires consumed about 20-30 minutes to fill in and three months to complete the data collection.

After data collection, they were coded, verified, and using computerized format designed using SPSS program version (13) (Statistical Package for Social Science) to perform tabulation and statistical analysis. Quantitative variables were described by minimum, maximum, arithmetic mean, and standard deviation. Analysis of collected data was done through the use of several statistical tests as Students t-test was used to compare the significant difference of means, One-way variance test ANOVA (F test) for multiple group comparisons, and Correlation coefficient. The statistical significance level was adopted 5% at p- value <0.05.

RESULTS

Table (1): Frequency distribution of socio-demographic characteristics of the nursing personnel

Socio-demographic characteristics	Nursing personnel (n=92)	
	No	%
StudyHospital		
El – Gomhoria hospital	12	13.0
Abo – Kheer hospital	11	12.0
Borg El- Arab hospital	8	8.7
Al – Agamy hospital	9	9.8
Race – Elteen hospital	10	10.9
El –Homiate hospital	20	21.7
El – Amria hospital	22	23.9
Marital status		
Single	36	39.1
Married	55	59.8
Widow	1	1.1
Number of Children		
No children	46	50.0
One child	6	6.5
Two child	23	25.0
Three child	11	12.0
Four and more child	6	6.5
Age group		
20 > 29 y	35	38.0
30 > 39 y	51	55.4
40 > 49 y	6	6.5
Educational Qualification		
Bachelor Science of Nursing	45	48.9
Technical institute health	9	9.8
Secondary diploma nursing	38	41.3
Others	0	0.0
Position		
H.N	8	8.7
Staff nurse	38	41.3
Nurse	46	50.0
Years of experience in hospital		
> 1 y	42	45.7
1 > 10 y	39	42.4
11 > 20 y	11	12.0
Years of experience in hemodialysis unit		
> 1 y	11	12.0
1 > 10 y	65	70.7
11 > 20 y	16	17.4

Table (1) showsthe frequency distribution of socio-demographic characteristics of the nursing personnel. It revealed that more than half of the nursing personnel aged 30 years old to less than 39 years old (55.4%), currently married (59.8%), holding BScN. In addition, it can be noticed that the half of the nursing personnel were nurses (50%) working at Al-Amria hospital (23.9%)as well as two third of them had to experience from one year to less than 10 years' experience in hemodialysis units (70%).

Table (2): Nursing personnel perception of quality of practice environment dimensions according to their position

Quality of practice environment dimensions	**Position**				
	H.N (n = 8)	**Staff N (n=38)**	**Nurses (n =46)**	**F- value**	**p**
	X±SD	X±SD	X±SD		
Nurse participation in dialysis providers Affairs.	4.33± 0.35	4.17± 0.58	3.89± 0.59	3.600	0.031*
Nursing foundations for quality of care.	4.18± 0.66	4.01± 0.79	3.41± 0.81	7.425	0.001**
Nurse manager ability, leadership and support of nurses.	4.38± 0.62	4.12± 0.62	3.56± 0.71	10.096	0.000**
Staffing and resource adequacy.	3.09± 0.56	2.92± 0.15	2.84± 0.47	1.669	0.194
Collegial nurse - physician Relations.	4.75± 0.46	4.77± 0.41	4.46± 0.66	3.436	0.037*
Overall quality of practice environment dimensions	4.15± 0.42	4.00± 0.45	3.63± 0.54	7.499	0.001**

* $p \leq 0.05$ at 5% level denotes a significant difference.

** $p \leq 0.01$ at 1% level denotes a highly significant difference.

Table (2) presented nursing personnel perception of quality practice environment dimensions according to their position. The table points that a significant relationship was statistically recorded between overall quality practice environment dimensions and nursing personnel position (F= 7.499 P≤0.01), except for staffing and resource adequacy dimension. Moreover, it was indicated that collegial nurse-physician relations dimension recorded significantly higher mean scores among staff nurses (4.77±0.41) as compared to the head nurses and nurses (4.75±0.46, 4.46±0.66), (F= 3.436 P≤0.05) respectively. While staffing and resource adequacy dimension was considered as the least dimension has an effect on quality practice environment dimensions among nursing personnel position.

Table (3): Nursing personnel perception of safety culture dimensions according to their position

Safety culture dimensions	Position			F-value	p
	H.N (n = 8)	Staff N (n=38)	Nurses (n =46)		
	X±SD	X±SD	X±SD		
Unit level					
1. Supervisor/manager expectations and actions promoting safety	4.00±0.53	3.91± 0.42	3.90± 0.40	4.278	0.017*
2. Organizational learning – continuous improvement	3.04±0.84	2.81± 0.56	3.03± 0.57	1.613	0.205
3. Teamwork within hospital units	4.50± 0.48	4.57± 0.49	4.21± 0.44	6.750	0.002*
4. Communication openness	3.25± 0.30	3.10± 0.39	3.07± 0.56	0.500	0.608
5. Feedback and communication about error	3.79± 0.75	3.86± 0.75	3.47± 0.74	2.971	0.056
6. Non-punitive response to error	4.25± 1.26	4.44± 1.17	4.67± 0.52	1.134	0.326
7. Staffing	3.53± 0.16	3.45± 0.33	3.14± 0.43	8.758	0.00**
8. Hospital management support for patient safety	3.46± 0.56	3.41± 0.70	3.60± 0.28	1.325	0.271
Hospital level					
1. Teamwork across hospital units	3.47± 0.41	3.38± 0.63	3.60± 0.24	2.468	0.091
2. Hospital handoffs and transitions	2.66± 0.33	2.74± 0.59	2.97± 0.30	3.584	0.032*
Overall safety culture dimensions	3.59± 0.18	3.57± 0.24	3.54± 0.17	0.307	0.736

* $p \leq 0.05$ at 5% level denotes a significant difference.

** $p \leq 0.01$ at 1% level denotes a highly significant difference.

Regarding nursing personnel perception of safety culture dimensions according to their position in table 3, it was documented that there is no significant variance statistically among nursing personnel perceptions of safety culture dimensions according to their position. At the unit level, teamwork within hospital units dimension for staff nurses was significantly higher mean scores among staff nurses (4.57± 0.49) as compared to head nurses and nurses (4.50±0.48, and 4.21±0.44) respectively (F= 6.750 P≤0.05). In contrast, Hospital handoffs and transitions dimension were perceived significantly as lowest means score among nurses 2.97± 0.30 followed by staff nurses and head nurses respectively (2.74± 0.59 2.66± 0.33) (F= 3.584 P≤0.05).

Table (4): Nursing personnel perception for the quality of practice environment dimensions as distributed by their socio-demographic characteristics

Socio-demographic characteristics	Quality of practice environment dimensions					
	Nurse participation in dialysis providers' affairs.	Nursing foundations for quality of care.	Nurse manager ability, leadership and support of nurses.	Staffing and resource adequacy.	Collegial nurse - physician relations.	Overall quality of practice environment dimensions
	X±SD	X±SD	X±SD	X±SD	X±SD	X±SD
Hospital study						
El – Gomhoria	3.77±0.40	3.73±0.18	3.72±0.46	3.08±0.69	4.58±0.51	3.78±0.24
Abo – Kheer	3.86±0.84	3.79±1.01	3.85±0.88	2.78±0.23	4.58±0.47	3.77±0.54
Borg El- Arab	3.57±1.03	2.89±0.88	3.26±0.72	2.54±0.81	3.75±1.17	3.20±0.89
Al – Agamy	4.10±0.13	4.11±0.31	4.20±0.23	2.85±1.95	5.00±0.00	4.05±9.50
Race – Elteen	4.60±5.74	4.64±4.69	4.54±0.10	2.95±2.77	5.00±0.00	4.35±2.86
Al-Fever	4.53±0.24	4.44±2.49	4.54±8.28	2.95±0.20	5.00±0.00	4.29±6.58
El – Amria	3.74±0.21	2.77±0.33	3.08±0.34	2.91±0.17	4.29±0.21	3.36±0.19
F – test	10.07	34.11	26.49	2.02	12.83	22.00
P Value	**0.00****	**0.00****	**0.00****	0.071	**0.00****	**0.00****
Marital status						
Married	3.92±0.55	3.50±0.90	3.65±0.75	2.87±0.16	4.62±0.39	3.72±0.49
Single	4.12±0.60	3.86±0.79	3.98±0.69	2.92±0.48	4.61±0.67	3.89±0.55
t – test (2-tailed)	0.11	0.04	0.03	0.58	0.91	0.14
P- Value	0.28	0.05	0.34	**.002****	0.07	0.81
Age group						
20 > 29 y	3.83±0.53	3.25±0.81	3.44±0.68	2.92±0.30	4.46±0.39	3.58±0.43
30 > 39 y	4.21±0.43	4.06±0.59	4.14±0.59	2.89±0.33	4.79±0.41	4.02±0.38
40 > 49 y	3.83±1.37	3.63±1.49	3.91±1.17	2.71±0.94	4.06±1.56	3.63±1.23
F – test	5.18	12.11	12.05	0.78	7.57	9.01
P- Value	**0.007****	**0.00****	**0.00****	0.46	**0.001****	**0.00****
Educational Qualification						
Bachelor of Nursing	4.22±0.54	4.08±0.75	4.21±0.59	2.96±0.26	4.79±0.40	4.05±0.42
Technical institute health	4.19±0.48	3.80±0.72	3.89±0.72	2.81±0.23	4.70±0.39	3.88±0.45
Secondary diploma ng	3.80±0.59	3.28±0.79	3.44±0.67	2.83±0.51	4.39±0.70	3.55±0.54
F – test	6.07	11.55	15.16	1.55	5. 90	11.71
P –Value	**0.003****	**0.00****	**0.00****	0.217	**0.004****	**0.00****
Years of experience in hospital						
> 1 y	4.15±0.41	3.86±0.76	3.97±0.68	2.86±0.38	4.68±0.42	3.92±0.43
1 > 10 y	3.97±0.58	3.58±0.86	3.75±0.75	2.96±0.26	4.63±0.44	3.76±0.49

11 > 20 y	3. 91±1.03	3. 71±1.08	3.81±0.82	2.74±0.68	4.30±1.19	3.69±0.90
F – test	1.20	1.08	0.97	1.62	1.99	1.37
P- Value	0.31	0.34	0.38	0.20	0.14	0.26
Years of experience hemo-dialysis unit						
> 1 y	3.72±o.81	3.22±0.97	3.40±0.82	2.88±0.18	4.61±0.39	3.56±0.54
1 > 10 y	4.06±0.56	3.72±0.84	3.86±0.71	2.87±0.40	4.56 ±0.63	3.82±0.55
11 > 20 y	4.22±0.42	4.08±0.57	4.16±0.63	2.99±0.43	4.83±0.37	4.06±0.37
F – test	2.49	3.59	3.82	0.65	1.44	3.01
P- Value	0.09	**0.032***	**0.026***	0.52	0.24	0.05

* $p \leq 0.05$ at 5% level denotes a significant difference

** $p \leq 0.01$ at 1% level denotes a highly significant difference

Table (4) shows nursing personnel perception for the quality of practice environment dimensions as distributed by their socio-demographic characteristics. It was achieved that collegial nurse-physician relations dimension had the highest mean score as perceived by nursing personnel who were married with age group 30 years old to less than 39 years old, had 11 years to less than 20 years' experience at hemodialysis units. Also, they hold a BSc nursing and working at Al–Agamy, Race– Elteen, and Al-Fever hospital (4.62±0.39, 4.79±0.41, 4.83±0.37, 4.79±0.40, 5.00±0.00, 5.00±0.00, and 5.00±0.00, correspondingly). Conversely, they perceived the lowest mean score was refer to the perception of staffing and resource adequacy dimension be relevant to single, age group from 20 years old to less than 29 years old and holding a BSc Ng. In addition, they had 11 years to less than 20 years' experience at hemodialysis units and they working at Race – Elteen, and Al-Fever hospital (2.92±0.48, 2.92±0.30, 2.96±0.26, 2.99±0.43, 2.95±2.77, and 2.95±0.20 respectively). Moreover, there was a statistically significant difference among nursing personnel as regards means scores for all quality of practice environment dimensions and their socio-demographic characteristics in term of hospital study, age group, and educational qualification. ($F= 22.00, 9.01$, and 11.71 $P \leq 0.01$).

Table (5): Nursing personnel perception for safety culture dimensions as distributed by their socio-demographic characteristics

Socio-demographic characteristics	Safety culture dimensions					
	Unit level					
	Supervisor/manager expectations & actions promoting safety	Organizational learning – continuous improvement	Teamwork within hospital units	Communication openness	Feedback and communication about error	Non-punitive response to error
	X±SD	**X±SD**	**X±SD**	**X±SD**	**X±SD**	**X±SD**
Hospital study						
El – Gomhoria	3.92±0.12	3.39±0.71	4.17±0.29	3.44±0.16	3.44±0.16	4.33±0.98
Abo – Kheer	3. 73±0.38	3.58±0.72	4.14±0.32	3.15±0.27	2. 91±0.42	5.00±0.00
Borg El- Arab	4.06±0.44	2.63±0.33	4.09±0.40	3.17±0.25	3.17±0.25	5.00±0.00
Al – Agamy	3.89±0.63	2.33±9.59	3.86±0.13	2.48±0.65	3.52±0.18	4.52±0.38
Race – Elteen	4.00±0.00	2.67±1.01	5.00±0.00	3.33±2.52	5.00±0.00	2.70±1.53
Al-Fever	4.11±0.26	2.43±0.16	4.98±0.11	3.20±0.17	4.23±0.16	5.00±0.00
El – Amria	3.26±5.33	3.32±7.11	4.13±0.31	2. 90±0.65	3.26±0.77	4.68±7.11
F – test	18.22	23.64	43.44	6.52	33.41	18.55
P Value	**0.00****	**0.00****	**0.00****	**0.00****	**0.00****	**0.00****
Marital status						
Married	3.69±0.48	2.94±0.52	4.34±0.48	2.98±0.61	3.56±0.88	4.64±0.58
Single	3.86±0.39	2.95±0.64	4.40±0.50	3.16±0.37	3.71±0.68	4.45±1.08
t – test (2-tailed)	0.08	0.99	0.57	0.08	0.38	0.38
P- Value	**0.003****	0.71	0.35	0.79	0.76	**0.004****
Age group						
20 > 29 y	3.54±0.37	3.17±0.53	4.16±0.39	2.95±0.61	3.33±0.82	4.59±0.64
30 > 39 y	3.98±0.36	3.39 ±0.53	4.53±0.51	3.18±0.37	3.87±0.61	4.58±1.00
40 > 49 y	3.83±0.56	2.73±0.77	4.42±0.47	3.22±0.27	3.78±1.00	3.89±1.33
F – test	13.76	9.10	6.40	2.58	5.78	1.65

P- Value	**0.00****	**0.00****	**0.003****	0.082	**0.004****	0.20
Educational Qualification						
Bachelor of Nursing	3.93±0.44	2.82±0.62	4.59±0.48	3.133±0.39	3.90±0.72	4.39±1.18
Technical institute health	3.86±0.38	2.78±0.50	4.44±0.54	3.22±0.17	3.74±0.72	4.81±0.34
Secondary diploma ng	3.63±0.38	3.11±0.55	4.13±0.37	3.02±0.61	3.35±0.72	4.65±0.55
F – test	5.91	2.99	11.31	0.95	6.12	1.28
P –Value	**0.004****	0.06	**0.00****	0.39	**0.003****	0.29
Years of experience in hospital						
> 1 y	3.86±0.42	2.91±0.63	4.48±0.50	3.21±0.22	3.73±0.63	4.63±0.87
1 > 10 y	3.71±0.44	2.99±0.56	4.29±0.47	2.95±0.62	3.50±0.85	4.58±0.79
11 > 20 y	3.91±0.41	2.85±0.60	4.36±0.53	3.15±0.52	3.94±0.85	4.03±1.32
F – test	1.68	0.32	1.50	3.35	1.77	2.02
P- Value	0.19	0.73	0.23	**0.040***	0.18	0.14
Years of experience hemo-dialysis unit						
> 1 y	3.45±0.35	3.06±0.59	4.11±0.45	2.67±1.02	3.33±1.33	4.61±0.36
1 > 10 y	3.79±0.41	2.92±0.58	4.40±0.49	3.13±0.33	3.69±0.64	4.56±0.88
11 > 20 y	4.08±0.43	2.92±0.67	4.50±0.49	3.25±0.26	3.75±0.69	4. 40±1.30
F – test	7.87	0.26	2.19	5.96	1.19	0.25
P- Value	**0.001****	0.77	0.12	**0.004****	0.31	078

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Continued table 5:

Socio-demographic characteristics	Safety culture dimensions				
	Unit level		Hospital level		
	Staffing.	Hospital management support for patient safety.	Teamwork across hospital units.	Hospital handoffs and transitions	Overall safety culture dimensions.
	X±SD	X±SD	X±SD	X±SD	X±SD
Hospital study					
El – Gomhoria	3.17±0.44	3.67±1.92	3.75±0.00	2.83±0.12	3.61±5.94
Abo – Kheer	3.36±0.21	3.09±0.16	3.14±0.23	2.52±7.54	3.46±0.12
Borg El- Arab	3.38±0.23	3.50±0.50	3.41±**0**.40	2.63±0.27	3.50±0.17
Al – Agamy	3.47±8.33	3.44±0.17	3.33±0.13	3.06±0.66	3.39±5.15
Race – Elteen	3.48±7.91	2.70±0.95	2.9**3**±1.03	2.48±0.87	3.43±0.28
Al-Fever	3.75±0.00	3.90±0.31	3.70±0.15	2.78±7.70	3.81±5.00
El – Amria	2.75±0.15	3.67±4.43	3.72±7.36	3.26±0.20	3.49±0.15
F – test	45.91	14.48	9.28	8.56	16.38
P Value	**0.00****	**0.00****	**0.00****	**0.00****	**0.00****
Marital status					
Married	3.23±0.43	3.59±0.32	3.57±0.24	2.97±0.36	3.55±0.20
Single	3.34±0.39	3.44±0.61	3.45±**0**.56	2.78±0.51	3.56±0.20
t – test (2-tailed)	0.22	0.18	0.23	0.06	0.95
P- Value	**0.030***	0.07	0.07	0.33	0.78
Age group					
20 > 29 y	3.10±0.38	3.48±0.29	3.51±0.28	3.01±0.36	3.48±0.15
30 > 39 y	3.42±0.39	3.56±0.64	3.50±0.57	2.75±0.51	3.61±0.22
40 > 49 y	3.42±0.34	3.28±0.33	3.38±0.31	2.83±0.26	3.54±0.11
F – test	7.70	0.87	0.23	3.59	4.37
P- Value	**0.001****	0.42	0.80	**0.032***	**0.016***
Educational Qualification					
Bachelor of Nursing	3.47±0.31	3.44±0.68	3.41±0.60	2.73±0.56	3.58±0.23
Technical institute health	3.22±0.55	3.59±0.40	3.56±0.27	2.83±0.25	3.61±0.19
Secondary diploma ng	3.12± 0.40	3.57±0.24	3.60 ±0.24	2.99±0.31	3.52±0.15
F – test	9.03	0.81	1.89	3.50	1.44
P –Value	**0.00****	0.45	0.16	**0.034***	0.24
Years of experience in hospital					
> 1 y	3.35±0.41	3.58±0.68	3.52±0.62	2.73±0.52	3.60±0.22
1 > 10 y	3.25±0.42	3.48±0.32	3.49±0.28	2.96±0.40	3.52±0.18
11 > 20 y	3.27±0.34	3.33±0.33	3.43±0.28	2.91±0.32	3.52±0.13
F – test	0.64	1.08	0.17	2.44	2.01
P- Value	0.53	0.34	0.84	0.09	0.14
Years of experience hemo-dialysis unit					

> 1 y	3.11±0.38	3.48±0.31	3.52±0.26	3.11±0.44	3.45±0.22
1 > 10 y	3.31±0.42	3.53±0.56	3.50±0.52	2.84±0.49	3.57±0.20
11 > 20 y	3.38±0.37	3.44±0.47	3.48±0.35	2.70±0.29	3.59±0.17
F – test	1.46	0.20	0.02	2.75	2.04
P- Value	0.24	0.82	0.98	0.07	0.14

* $p \leq 0.05$ at 5% level denotes a significant difference

** $p \leq 0.01$ at 1% level denotes a highly significant difference

Table (5): illustrates nursing personnel perception for safety culture dimensions as distributed by their socio-demographic characteristics. Moreover, there was a statistically significant positive difference among nursing personnel as regards mean score of safety culture dimensions and their socio-demographic characteristics in term of hospital study, and age group (F= 16.38 P≤0.01, and 4.37 P≤0.05 respectively). It is apparent from this table that non-punitive response to error dimension was the high mean scores perceived by nursing personnel of selected socio-demographic characteristics who were married with age group 40 years old to less than 49 years old, holding a technical degree. Also, they have less than one-year experience in hemodialysis units and working at Abo – Kheer Borg El- Arab, and Al-Fever hospitals 4.64±0.58 ,3.89±1.33, 4.81±0.34, 4.61±0.36, 5.00±0.00, 5.00±0.00, and 5.00±0.00 respectively. While they got less perceived safety culture dimensions is organizational learning – continuous improvement for nursing personnel who are single with age group 30 years old to less than 39 years old, holding a diploma degree and working in hemodialysis for less than one year at Abo – Kheer and El – Gomhoria 2.95±0.64 , 3.39 ±0.53, 3.11±0.55, 3.06±0.59, 3.58±0.72, and 3.39±0.71 respectively.

Table (6): Correlation coefficient values for the relationship between mean scores of quality of practice environment dimensions and safety culture dimensions pertaining to the nursing personnel

Safety culture dimensions	r	Quality of practice environment dimensions					
		Nurse participation in dialysis providers affairs.	Nursing foundations for quality of care.	Nurse manager ability, leadership and support of nurses.	Staffing and resource adequacy.	Collegial nurse - physician relations.	Overall quality of practice environment dimensions
Unit level							
1. Supervisor/manager expectations & actions promoting safety	r	**0.363****	**0.521****	**0.541****	**0.209***	**0.404****	**0.518****
	p	0.000	0.000	0.000	0.045	0.000	0.000
2. Organizational learning – continuous improvement	r	**-0.499****	**-0.472****	**-0.495****	-0.087	**-0.516****	**-0.458****
	p	0.000	0.000	0.000	0.411	0.000	0.000
3. Teamwork within hospital units	r	**0.653****	**0.603****	**0.618****	**0.411****	**0.434****	**0.641****
	p	0.000	0.000	0.000	0.000	0.000	0.000
4. Communication openness	r	**0.245***	**0.370****	**0.343****	**0.410****	0.172	**0.388****
	p	0.019	0.000	0.001	0.000	0.102	0.000
5. Feedback and communication about error	r	**0.706****	**0.673****	**0.632****	**0.511****	**0.565****	**0.689****
	p	0.000	0.000	0.000	0.000	0.000	0.000
6. Non-punitive response to error	r	-0.018	-0.025	0.091	**-0.243***	0.135	0.006
	p	0.863	0.815	0.387	0.020	0.201	0.956
7. Staffing	r	**0.704****	**0.678****	**0.741****	**0.291****	**0.415****	**0.678****
	p	0.000	0.000	0.000	0.005	0.000	0.000
8. Hospital management support for patient safety	r	0.060	-0.111	0.019	**0.284****	0.112	-0.008
	p	0.572	0.291	0.856	0.006	0.289	0.940
Hospital level							
1. Teamwork across hospital units	r	-0.138	**-0.287****	-.0166	**0.304****	-0.043	-0.167
	p	0.189	0.006	0.114	0.003	0.681	0.111
2. Hospital handoffs and transitions	r	**-0.237***	**-0.506****	**-0.455****	0.190	**-0.341****	**-0.425****
	p	0.023	0.000	0.000	0.069	0.001	0.000
Overall safety culture dimensions	r	**0.290****	**0.227***	**0.348****	**0.444****	**0.258***	**0.316****
	p	0.005	0.030	0.001	0.000	0.013	0.002

* $p \leq 0.05$ at 5% level denotes a significant difference.

** $p \leq 0.01$ at 1% level denotes a highly significant difference.

Table (6) represented Correlation coefficient values for the quality of practice environment dimensions and safety culture dimensions pertaining to the nursing personnel. Overall, this table describes that a positively statistically difference was documented between means scores of overall quality of practice environment dimensions and safety culture dimensions ranged between moderate and strong correlation ($r = 0.316^{**}$ $P \leq 0.01$)

DISCUSSION

Because of a complexity of the health care practices that can be affect patient safety, many healthcare organizations are focused on the development and supporting of quality practice environment to enhance patient safety strategy with great emphasis on patient safety culture, standards, practice and goals. [12,18]

This study revealed that a significant association was recognized between overall quality practice environment dimensions and nursing personnel position ($F= 7.499$ $P \leq 0.01$), except for staffing and resource adequacy dimension. This finding might be attributed to that the nurses in the hemodialysis units have more stressful, excessive work and also, they dealing with chronic condition, complex procedure was done, and high rate of death. Therefore, nurses in hemodialysis units become more stressful, which in turn reflect the level of trust, and intention to leave. Also, poor workplace maintenance, inadequate equipment, and supply shortages increase nurses' risk of injury and that equipment such as patient lifts could prevent injuries. [16,18] These finding goes incongruence with O'Brien-Pallas et.al (2010) they identified that nursing is stressful profession regardless of the unit in which nurses' work. [19]. In the same line organizational deficiencies in material and human resources, in supplies and suitable maintenance of equipment lead to progressive deterioration of health services and create work dissatisfaction. [15, 19]

With some specification for dimensions of safety culture analysis, the data of present study revealed that staff nurse's perception was significant more than head nurses and nurses for overall dimensions of safety culture mean in term of teamwork within hospital units. In particular, the current finding can be justified that staff nurses are a part of risk management so they are continually observing and evaluating the safety of their environment. Also, they are responsible for reporting and investigating any patients' safety errors. [11, 15] This finding is consistent with the view of Richard (2008) who stated that applicability of team performance for safety and quality of patient care was associated with the nurses' perception of team work and way of thinking. [20]

Moreover, it is importance to notice that a statistically association variation was identified among nursing personnel as regards means scores for all quality of practice environment and safety culture dimensions and their socio-demographic characteristics in term of hospital study and age group. As regards the hospital study, the findings show that the nursing staff working in hemodialysis units of Race – Elteen hospital, El–Homiate hospital, and Al – Agamy hospital had the highest mean scores as compared to others hospitals. one explanation of this study could be attributed to the fact that nursing staff be able to participate in decision making and perceiving their job meaningful because they accept responsibility and were held

accountable with gain the support and respect from physicians. [16] The same results were reported by Laschinger and Leiter (2006), who suggested that if employees were encouraged to participate in department decision making and plans, so they would have a higher level of satisfaction due to an increase work status and autonomy. [21]

In addition, for age group, the finding of this study revealed those aging between 30 > 39 years old recorded the highest mean scores regarding their perception for quality of practice environment and safety culture dimensions. This might be related to the fact that the nurses in this age groups familiar with the unit activities because they have greater access to information due to learning about code of ethics, communication with others as well as teamwork within hospital units. [10,15] These findings were supported by Prezerakos et.al (2015), who identified that people demonstrating high level of professional background perceive that their job is worthwhile. [22]

Overall concerning the finding of the current study revealed that there was positively correlation of mean score ranged from moderate to strong between overall dimensions of quality practice environment and patient safety except for staffing and resource adequacy in all hemodialysis units of Ministry of Health Hospitals. Also, it can be attributed to the fact that development of quality practice environment was support through shared nursing personnel of the liability to promote safety and manner in the practice situations. [20,21] The finding is consistent with the view of Friesen M., Farquhar et.al (2008) who stated that a healthy work environment of nursing personnel is maximizes the health and wellbeing, quality patient outcomes and organizational performance. [23]

CONCLUSION

Regarding the conclusion of the results of the current study, it may be found that nursing personnel working in different hemodialysis units were found to have a positively statistically perception toward their quality of practice environment dimensions and safety culture dimensions. From the viewpoint of the nursing personnel position, they perceived significant difference for several dimensions that are essential in relation to overall quality practice environment dimensions except for staffing and resource adequacy dimension. Moreover, hospital study, age group and educational qualification can be directly contributing socio-demographic characteristics to the different dimensions of quality of practice environment dimensions and safety culture as perceived by nursing personnel

RCOMMENDATIONS

Therefore the results of the present study recommended the following:

1. Head nurses are the key for translating positive work environment into the organizational vision through sharing the organizational goals, patient safety action plans as well as interventions to improve safety. Also, guide nurses the right things to do, and support their doing.

2. Hospital administrators should develop a "code of safe health settings and practices" to achieve a satisfactory safety practice standard that all professional healthcare members can utilize the optimistic process of safety culture among the organizational development.
3. Administrators of Ministry of Health Hospitals should encourage safety education all nursing personnel that includes conduct team training, conferences, seminars, and discussions about how to initiate and maintain safety culture while providing patient care.

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