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Assessment Of Critical Care Nurses Knowledge and Practice Regarding Patient Safety in Intensive Care Units

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Abstract

Back ground: Patient safety is an essential and vital element in good nursing care which goals are patient identification, Communication between caregivers, safety of use of medication, prevention of infection, prevention of falls, prevention of pressure ulcers, prevention of wrong site, incorrect procedure, wrong person surgery, reduction of damage associated with clinical alarm systems **Aim:** this study was carried out to identify nursing knowledge and practice regarding patient safety in intensive care units .**Methods:** descriptive research design was used. **Setting:** Assiut University Hospital and Elmabara Hospital and convenient sample of 100 nurse working in the above mentioned setting, data was collected by utilizing **Tool I:** Nurses' knowledge questionnaire, **Tool II:** Observation checklist to assess nurses' practice. **Results:** Most of nurses were aware of infection prevention and patient identification ($0.98 \pm 0.14, 1.51 \pm 0.61$) respectively, 64.0% of nurses had inadequate practice about all items of patient safety . **Conclusion:** The study sample showed about (38.0%) of nurses had good level of knowledge and nearly one-fourth (26.0%) of nurses had poor level of knowledge and about two -thirds of them had inadequate practice about patient safety **Recommendation :** Providing critical care nurses training courses regarding patient safety

Keywords: Patient Safety, Critical Care Nurses Intensive Care Units, Patient Safety Goals & Nurses Practice.

Introduction

Patient safety is a serious issue. While health care events continue, the end result is that no one wants to get sick, (Rizzo, 2013) Every year, thousands of patients lose their lives as a direct result of preventable medical events, such as hospital-related infections (HAIs) surgical errors, and sentinel events, while patient alarms are silenced. (Davis, 2014).

The Joint Commission on Accreditation of Healthcare Organizations initiated in (2002) and developed a program of national patient safety goals for accreditation and certification to patient identification goals, Communication between caregivers, safety use of medication, prevention of infection, prevention of falls, prevention of pressure ulcers, prevention of wrong site, incorrect procedure, wrong person surgery, reduction of damage associated with clinical alarm systems .

Improve patient identification; use at least two methods to identify patients. For example, use the patient's name and date of birth. This is done to make sure that every patient gets medication and treatment means for them. (Fugatte, 2013).

Improve communication between health team; the quality of these interactions is an essential element in the prevention of errors, patient understanding, compliance and monitoring results. (Jones, 2010).

Improve the safety of medication use; mark all medicines, drug containers and other solutions inside and outside the sterile area of the surrounding settings and other procedural procedures to correct information about the patient's medicines and to identify the medications being taken by the patient. (Klingner, 2013).

Reduce the risk of infection associated with health care; use manual hygiene guidelines from the Centers for Disease Control and Prevention and apply evidence-based practices to prevent central-line blood infection, health-related infections, surgical site injuries, and catheter-associated urinary tract infections. (Tillman et al., (2013).

Preventing the patient from falling reducing the risk of falls by giving red stockings to patients at risk of falling, the hospital puts a bracelet on patients at high risk and uses a visual hint outside the doors of patients alerting the risk of falling. The hospital has increased the number of safety caregivers for people with disruptions and inability to follow the trend. Safety caregivers provide constant monitoring and assistance to patients to prevent falls, keep the patient busy, set bed alarms and do safety rounds. (Janice & Kerry, 2014).

Prevention of pressure ulcers; pressure ulcers are a topical area of tissue damage caused by excessive pressure, shear or friction forces that occur in people

who can not change their position to relieve pressure on the boney emergence. Evaluate the risk of all residents periodically for the development of pressure ulcers and take action to address any specific risks.. (Moore & Cowman, 2007).

Prevention of wrong site, incorrect procedure ,and wrong person surgery ; a pre-check operation, marking the procedure location, the timeout is executed before the procedure. (Abecassis et al., 2015).

Reduction of damage associated with clinical alarm systems; monitor clinical alerts is important because of the high risk of injury to the patient if they are silenced, stopped or ignored. All employees should receive routine instruction on how to safely use clinical alarms within their area of work. Time to ensure that they remain functional and the volume is set at a level high enough to be heard by health care team members. (Pelletier, 2013).

Patient safety is an essential element in good nursing care. It is responsible for ensuring that patients are treated safely and that no harm is done to patients and critical care nurses who play a vital role in improving the safety and quality of hospital care. Nurses need to know proven techniques and interventions that can use to improve patient outcomes (Reinikka, 2016).

Significance of the study

About 570 of patients had hospital acquired infection each year and 360 of patients had infection of the surgical site at El-mabara Hospital at Assiut.(2016).

Patient safety is consider very important because about 400,00 preventable deaths per year, 3rd leading cause of death in the U.S and Costs up to \$1 trillion/year(Joint commission , (2015) .

In recent years, countries have increasingly recognized the importance of patient safety as The World Health Organization (WHO)(2011) estimates that one out of every10 patients worldwide is impacted by medical errors.

patient safety was first brought to light in the 1990s, studies have shown a staggering number of patients harmed by preventable errors. These errors include systems failures, human factors, complicated technologies, powerful drugs, prolonged hospital stays, and cost-cutting measures, to name a few. Medical errors can cause serious injury or death and result in billions of dollars in excess health care costs nation wide each year.

Critical care nurses who play a vital role in improving the safety and quality of hospital care. Nurses need to know proven techniques and interventions that can use to improve patient outcomes (Reinikka, 2016).

Thus ,the current study could be helpful in improving nurses' knowledge and practice regarding patient safety in intensive care units.

Aim of the study

The aim of this study is to assessment of critical care nurses' knowledge and practice regarding patient safety in intensive care units.

Research question

What are the nursing knowledge and practice regarding patient safety in ICU?

Material & Method

The main concern of this study was to identify nursing knowledge and practice regarding patient safety in intensive care units

Design: Descriptive research design was used in this study

Setting

The study was conducted in General ICU at Elmabara Hospital (Post-operative care unit, Trauma unit and General Intensive care unit) at Assiut university Hospital .

The bed capacity of General ICU at Elmabara Hospital is (19) beds, and the bed capacity of Post-operative care unit is (6) beds, Trauma ICU is(18) beds and General ICU is (10)beds.

Study subjects

The sample consisted of all available nurses currently working in the above mentioned setting. They were(100) nurses who divided to (40)nurses at General ICU at Elmabara Hospital,(20)nurses at Post-operative care unit,(20)nurses at Trauma unit and (20) nurses atGeneral Intensive care unit) at Assiut university Hospital.

Tools of the study

Tool 1: Nurses' knowledge questionnaire

A structured questionnaire was developed by the researcher and translated in Arabic language after reviewing the related literature.(Safer Healthcare, 2015, Burns, 2011, Abecassis, 2015, Moore&Cowman, 2012 & Chassin & Loeb, 2013)

This tool used to identify nurses' knowledge about patient safety such as patient identification, caregiver communication, drug management, health care-related infections, fall prevention, pressure ulcers, surgical location, and alarm systems.

The first part: consisted of personal nurses' characteristics such as :age, material status, professional job, qualification, years of experience and previous courses.

The second part : safety questions assessment tool to identify nurses knowledge regarding Hospital National Patient Safety Goals which includes; improve the accuracy of patient identification which had(2questions) , improve the effectiveness of communication among caregivers which had (1 question) , improve the safety of using medications

which had (1 question), reduce the risk of health care-associated infections which had (1 question), prevent patient from falling which had (2 questions), prevent health care associated pressure ulcers which had (2 questions), introduction to the universal protocol for preventing wrong site, wrong procedure, and wrong person surgery which had (2 questions), reduce the harm associated with clinical alarm systems which had (2 questions). The questionnaire consisted of multiple choice questions developed by the researcher. Total number of questions was 13 questions.

Tool II: Nurses' practice assessment tool

The observation checklist was designed and tested by the researcher, based on reviewing relevant literature (Safer Healthcare, 2015, Burns, 2011 Abecassis, 2015, Moore & Cowman, 2012 & Chassin & Loeb, 2013).

This tool is used to assess nurse practices related to patient safety procedures such as patient identification, caregiver communication, drug management, health care-related infections, fall prevention, pressure ulcers, surgical location, and alarm systems.

Method

- Permission to conduct the study was obtained from the authority responsible for the hospitals after explaining the objective of the study.
- The official approvals were obtained from hospital directors and heads of selected Intensive Care Units prior to data collection.
- The tools used in this study were developed by the researcher based on reviewing relevant literature.
- The tool was tested to validate its content by 3 specialists who are (2) assistant professors in the field of critical care nursing and (1) professor in critical care medicine and necessary adjustments were made.
- A pilot study was conducted on 10 nurses to test the feasibility of the tool and apply it and necessary modification was made.
- Reliability test was done using alpha Cronbach test. The result was 0.911 tool I, and 0.907 tool II.

Ethical considerations

Research proposal approved from Ethical committee in the faculty of Nursing.

There is no risk for study subject during application of research.

The study followed common ethical principles in clinical research.

Written consent was obtained from patient's or guidance that are willing to participate in the study, after explaining the nature and purpose of the study.

Confidentiality and anonymity was assured.

Study subjects have the right to refuse to participate and withdraw from the study without any rational any time.

Study subjects' privacy was considered during collection of data.

Field work

- An interview was held from all the nursing study sample using the developed structured questionnaire form in tool I. The questionnaire consists of 13 questions. Questions were scored with total score of 65 that total score of nurse below 60 % is poor level of knowledge, from 60%-75% is satisfactory level of knowledge and above 75 % is good level of knowledge.
- Nurses answered the developed structure questionnaire individually during their break time in the three shifts.
- Each nurse working in the intensive care unit was observed every day using observational checklist, once every shift (morning, afternoon and night) regarding patient safety using tool II.
- The observational checklist was applied by the researcher to assess the practice of nurses in relation to the national safety objectives of patients. Each item has been noted, categorized and scored into either done correctly=2, done incorrectly=1, or not done=0. The total score for all items was 118.
- The study data collection took approximately three- months period (February 2017 till May 2017).

Statistical analysis

Data entry and data analysis were done using SPSS version 19 (Statistical Package for Social Science). Data were presented as number, percentage, mean, standard deviation. Chi-square test was used to compare between qualitative variables P-value considered statistically significant when $P < 0.05$.

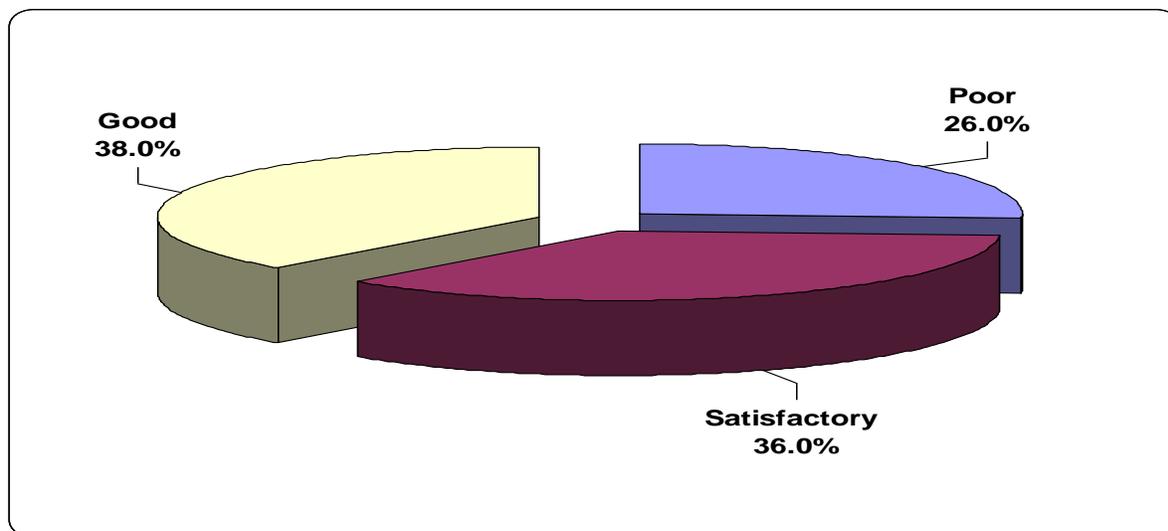
Results

Table (1): Distribution of percentage of personal characteristics of studied nurses (n=100).

	N. (n= 100)	%
Age: (years)		
< 25	30	30.0
25 - < 30	37	37.0
≥ 30	33	33.0
Mean ± SD (Range)	28.35 ± 5.99 (21 – 50)	
Occupation:		
Bed side nurse	70	70.0
Head nurse	30	30.0
Qualifications:		
Bachelor of Nursing	30	30.0
Nursing Diploma	41	41.0
Technical Institute of Nursing	29	29.0
Years of experience:		
< 5	42	42.0
5 – 10	24	24.0
> 10	34	34.0
Mean ± SD (Range)	8.15 ± 6.39 (3 months – 30 years)	
Marital status:		
Single	30	30.0
Married	70	70.0
Attended training courses about patient safety:		
Yes	76	76.0
No	24	24.0
Duration from last training:		
< 1 year	46	60.5
≥ 1 year	30	39.5
Number of training courses:		
One	29	38.2
Two	38	50.0
Three or more	9	11.8
Trainers:		
Physicians	10	13.2
Nursing	47	61.8
Both	19	25.0

Table (2): Means distribution of nurses' knowledge regarding the national safety goals of the hospital Nurses (n=100).

patient safety goals	Max. score	Mean ± SD	Range
Patient identification	2	1.51 ± 0.61	0.0 - 2.0
Communication with caregivers	1	0.63 ± 0.49	0.0 - 1.0
Medication administration	1	0.73 ± 0.45	0.0 - 1.0
Surgical site	2	0.86 ± 0.71	0.0 - 2.0
Falling prevention	2	0.90 ± 0.69	0.0 - 2.0
Pressure ulcers	2	1.50 ± 0.52	0.0 - 2.0
Alarm system	2	1.18 ± 0.77	0.0 - 2.0
Health care acquired infection rates	1	0.98 ± 0.14	0.0 - 1.0
Total score	13	8.29 ± 2.82	1.0-13

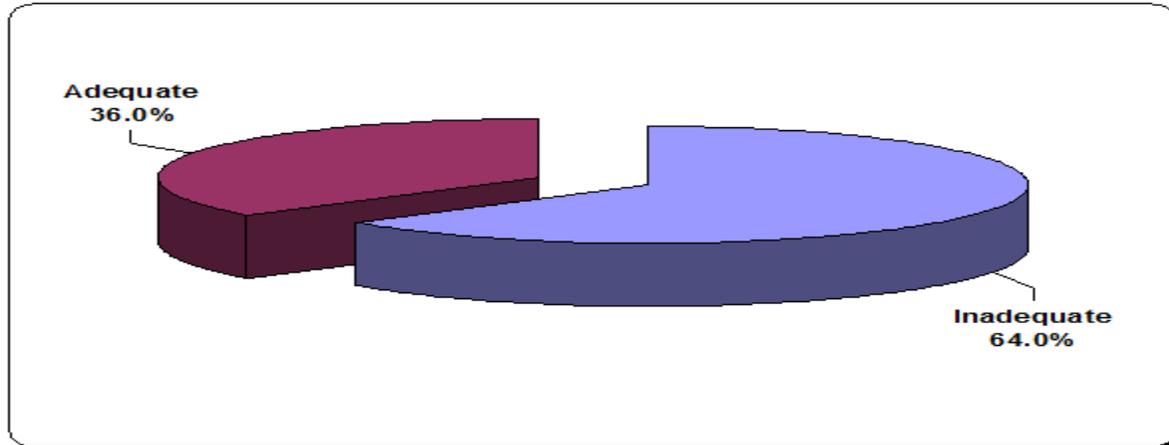


Figure(1): Distribution of the study sample according to Level of knowledge

Table (3): relation between Level of knowledge according to personal characteristics of the studied nurses (n= 100).

	N.	Level of knowledge						P-value
		Poor(n= 26)		Satisfactory(n= 36)		Good (n= 38)		
		No.	%	No.	%	No.	%	
Age: (years)								
< 25	30	1	3.3	13	43.3	16	53.3	0.010*
25 - < 30	37	11	29.7	13	35.1	13	35.1	
≥ 30	33	14	42.4	10	30.3	9	27.3	
Occupation:								
Nurse	70	25	35.7	20	28.6	25	35.7	0.002*
Head nurse	30	1	3.3	16	53.3	13	43.3	
Qualifications:								
Bachelor of Nursing	30	1	3.3	16	53.3	13	43.3	0.002*
Nursing Diploma	41	18	43.9	12	29.3	11	26.8	
Technical Institute of Nursing	29	7	24.1	8	27.6	14	48.3	
Years of experience:								
< 5	42	3	7.1	19	45.2	20	47.6	0.009*
5 - 10	24	9	37.5	7	29.2	8	33.3	
> 10	34	14	41.2	10	29.4	10	29.4	
Marital status:								
Single	30	6	20.0	12	40.0	12	40.0	0.661
Married	70	20	28.6	24	34.3	26	37.1	
Attending training courses about patient safety:								
Yes	76	23	30.3	22	28.9	31	40.8	0.027*
No	24	3	12.5	14	58.3	7	29.2	

P-value at (0.05).



Figure(2):Percentage distribution of level of practice of critical care nurses about patient safety

Table (4): relation between level of practice and personal characteristics of the studied nurses (n=100)

Nurse characteristics	No.	Level of practice				P-value
		Inadequate (n= 64)		Adequate (n= 36)		
		No.	%	No.	%	
Age: (years)						
< 25	30	15	50.0	15	50.0	0.146
25 - < 30	37	25	67.6	12	32.4	
≥ 30	33	24	72.7	9	27.3	
Occupation:						
Nurse	70	51	72.9	19	27.1	0.005*
Head nurse	30	13	43.3	17	56.7	
Qualifications:						
Bachelor of Nursing	30	13	43.3	17	56.7	0.019*
Nursing Diploma	41	30	73.2	11	26.8	
Technical Institute of Nursing	29	21	72.4	8	27.6	
Years of experience:						
< 5	42	20	47.6	22	52.4	0.009*
5 - 10	24	20	83.3	4	16.7	
> 10	34	24	70.6	10	29.4	
Marital status:						
Single	30	14	46.7	16	53.3	0.018*
Married	70	50	71.4	20	28.6	
Attending training courses about patient safety:						
Yes	76	48	63.2	28	36.8	0.755
No	24	16	66.7	8	33.3	

P-value at (0.05).

Table(1): Describes the personal characteristics of nurses in the study sample. As evident in the table, The mean age was 28.35 ± 5.99 years. About three-fourths (70.0%) of nurses were married, As regards occupation 70.0% were bed side nurses and 30.0% were head nurses, about qualification, 30.0% had bachelor of nursing, 41.0% had nursing diploma and 29.0% had Technical Institute of Nursing As regards experience, (42.0%) of them had less than 5

years of experience. About (76.0%) had training courses in patient safety.

Table (2): Describes nurses knowledge regarding Hospital national patient safety goals which shows that nurses has knowledge about health care acquired infection with mean \pm SD (0.98 ± 0.14). nurses has knowledge about patient identification with mean \pm SD (1.51 ± 0.61).

Figure (1): Displays the distribution of the study sample according to level of knowledge . about two-

fifths of nurses had good level of knowledge ,and nearly one-fourth (26.0%) of nurses had poor level of knowledge.

Table (3): Illustrates relation between nurse' level of knowledge and their personal characteristics .Statistical significant differences were found between nurses' level of knowledge and age ,occupation ,qualification, years of experience ,material status and training courses .P-value is (0.010, 0.002, 0.002, 0.009, 0.661, & 0.027) respectively.

Figure (2): Displays the distribution of the study sample according to level of practice.It was found that about 64.0% of nurses had inadequate practice about all items of patient safety.

Table (4): This table shows that there are statistical significant differences between nurses' level of practice and occupation ,qualification, years of experience ,and material status .P-value is (0.005, 0.019, 0.009, and 0.018) respectively.

Discussion

Patient safety, as defined by the World Health Organization (WHO), is to prevent errors and adverse effects of patients associated with health care. Safety is what patients, families, employees and the public expect from organizations approved by the Joint Commission. While patient safety events can not be completely eliminated, the damage to patients can be reduced, and the goal is always not harm. The purpose of the accreditation process is to improve the quality of care and patient safety (WHO, 2012).

What goals are to improve the accuracy of patient identification, improve the effectiveness of communication between caregivers, improve the safety of drug use, reduce the risk of infection associated with health care, prevent the patient from falling, prevent health care associated with pressure ulcer, submitted to the Global Protocol to prevent the wrong site, Wrong, wrong person surgery, minimize the damage associated with clinical warning systems (Joint Commission , (2016).

The aim of the present study was to assessment of critical care nursing knowledge and practice regarding patient safety in ICU.

The present study showed that mostly of the nurses had nursing diploma. The highest percentage of the nurses had less than five years of experience in nursing, and the majority had previously attended training courses about patient safety. On the same line the study of **Abo-Elmaged, (2006)** whose nurses mostly were secondary nursing diploma holders, the highest percentage of the sample had more than ten years of experience in nursing and the majority had previously attended training courses. The present study shows that about slightly more than

one -third of nurses had good level of knowledge ,and nearly one-fourth of nurses had poor level of knowledge.on the other hand **Ahmed, (2014)** showed that the majority of nurses had satisfactory level of knowledge. One of the reasons could be due to most of nurses had training courses about patient safety.

The distribution of the study sample according to level of practice . It was found that more than half of nurses had inadequate practice about all items of patient safety .on the other hand **Ahmed, (2014)** showed that the majority of nurses has satisfactory level of practice regard items.This might be due to increase number of patients for each nurse and work over load.

The present study revealed that there was statically significant difference between personal' characteristics and knowledge , practice on the other hand **Abdulatif, (2016)** showed that no statically significant difference between personal' characteristics and knowledge , practice. This might be due to lack of experience as more of nurses have less than five years of experience.

Conclusion

Based on the findings of the present study. The researcher found that more than two-thirds of nurses had satisfactory and good levels of knowledge and slightly less than two- thirds of nurses had inadequate practice about all items of patient safety. The current study revealed statically significant difference between age and score of knowledge. There was statically significant difference between practice and years of experience .

Recommendations

- Critical care nurses need training courses regarding patient safety .
- Continuous in-service training program should be held for CCNs about patient safety.
- Apply this study on large geographical area

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