

## Relation between Nurses' Accountability and Their Patients Safety Awareness at Intensive Care units

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### Abstract

**Background:** Intensive care unit nurses are personally responsible and accountable for their nursing practice and conduct which may be linked to patient safety awareness. **Aim:** To assess the relation between nurses' accountability and their patient's safety awareness at intensive care units. **Subjects and method:** **Design:** A descriptive correlational research study design. **Setting:** It conducted at Tanta University Hospitals in all ICU nurses (n=350). **Subjects:** All ICU nurses (n=350) who working in the setting mentioned above. **Tools:** data were collected by using nurses' accountability structured questionnaire and nurses awareness' of patient's safety structured questionnaire at intensive care units. **Results:** More than half (53.4 %) of ICU nurses had moderate level of overall accountability, more than half (50.9 %) of there had high level of patient safety knowledge, majority (85.1%) of them had positive attitude of patient safety and nearly half (49, 9%) of nurse were expert in patient safety skills. **Conclusion:** There was a statistically significant positive correlation between ICU nurses' accountability and their patient's safety awareness at  $p \leq 0.05$ . **Recommendations:** Top management of Tanta University Hospitals pays more attention to educational training program for ICU nurses about accountability and patient safety.

**Keyword:** Intensive care unit, Nurses' accountability, Patient safety awareness

### Introduction

Accountability and patient safety awareness has a strong groundwork in nursing practice as nurses are personally responsible and accountable for patient outcome in intensive care units (ICU). Nurses' personal accountability is concerned about consideration the interests of patients with varied health issues making decisions based on professional judgment, expertise, knowledge, and evidence-based procedures encourage favorable patient outcomes. It helps ICU nurses handle the emotional, bodily, and informational tension resulting from their workplace during routine times as well as during emergencies (Abu Dawass et

al., 2023; Connor et al., 2023; Romero-García et al., 2022).

Nurses who are accountable they are aware of patient safety knowledge, attitude, and skills. Nurses' awareness of patient safety has many advantages such as decrease the treatment error, lowering the damages due to incorrect care, reducing nosocomial infection, building patient satisfaction, improving patient safety, and enhancing the quality of healthcare services. the mitigation and prevention of adverse events or patient injuries brought on by healthcare worker (HCW) delivery techniques. Intensive care unit patient safety is a more delicate matter than patient safety in other hospital units.

For example, the potential for endangering the safety of the patients in ICUs is maximized due to the difficulty associated with their condition and treatment process, unconsciousness, and the presence of numerous electronic devices. In addition, the patients in intensive care units are fully dependent on care Providers so that; nurses' awareness of knowledge, attitude, and skills towards patient safety has a significant effect on the delivery of secure patient care. (Suliman et al., 2019; Hussein et al., 2022; Al-Mugheed et al., 2022; Homauni et al., and 2020; Hasballah et al., 2019).

Nurses' attitudes of patient safety encompass their beliefs and behaviors that can effect decisions and shape behavior regarding safety in intensive care units. Nurses' patient safety knowledge and skills are to find errors and take suitable action to invert them and prevent them in time, as well as advising changes in the safety culture of hospital (Suliman et al., 2019; Hussein et al., 2022; Al-Mugheed et al., 2022; Homauni et al., and 2020; Hasballah et al., 2019).

#### **Significance of study:**

The growing intricacy of providing health care calls for more accountability and transparency. Accountability is critical elements in preserving patient outcomes and healthcare standards. Nurses working in intensive care units bear accountability and responsibility for their actions, attitudes, and practices, including those of inaction and omission. Patient safety is widely regarded as a field with many knowledge gaps, and there is a need for further research to enhance patient safety and minimize harm. University hospital intensive care units are known for their high process normal density and extreme time constraints in scenarios where patients' lives are in risk; emergencies or unforeseen events happen regularly. Furthermore, due to the uncertainty and incompleteness that plague the diagnosis and treatment procedures, medical

operations are inherently prone to error. The dynamic and uncertain nature in the intensive care units needs nurses to be aware of knowledge, and skills of patient safety (Pellinen et al., 2018; Hayajneh et al., 2020; Dimitriadou et al., 2021; and Valle and Lohne, 2021; Wears and Sutcliffe, 2019).

#### **Aim of the study**

**The present study aims to:** Assess the relation between ICU nurses' accountability and their -patient's safety awareness at intensive care units.

#### **Research Questions**

What are the levels of ICU nurses' accountability and patient's safety knowledge, attitudes and skills?

What is the relation between nurses' accountability and their patient's safety awareness at intensive care units?

#### **Subjects and Method**

**Study design:** A descriptive correlational study design was used in the present research.

**Setting:** The study was conducted at Tanta University Hospitals in intensive care units (ICUs) including, (Emergency Anesthesia, Emergency Medical, Neonatal, Pediatric, Neurological, Cardiac, Ophthalmology Anesthesia, Chest, and General Medical ICUs).

**Subjects:** All (n=390) ICU nurses who were working in Intensive care units at Tanta hospitals. The subject was distributed according the following units: emergency Anesthesia (55), Emergency Medical (49), Neonatal Intensive care unit (81), Pediatric ICUs (36), Neurological (47), Cardiac (21), Ophthalmology Anesthesia (17), Chest (15), and General Medical ICUs (29).

**Tools of data collection:** To fulfill the purpose of this study two tools were used to collect the needed data:

**Tool 1: ICU Nurses' Accountability Structured Questionnaire:** It was developed by the investigator based on

(*Drach-Zahavy et al.* (2018), *Han and Perry* (2020) It was used to assess nurses' personal accountability. It consisted of two parts:

**Part (1): Personal characteristics of ICU nurses** include age, sex, marital status, educational level, working unit, years of experience and attended training courses.

**Part (2): ICU Nurses' Accountability Structured Questionnaire:** It was comprised 24 items covered the following three dimensions: **Responsibility** included 10 items, **Transparency** included 8 items and **Answerability** included 6 items.

**Scoring system:** ICU nurses' responses were measured on five Points Likert Scale ranged from 1-5 where 1 completely disagree "2 disagree" 3 little agree "4 Agree" 5 completely agree. The total scores were categorized based on cut-off value the following levels; High accountability level  $\geq 80\%$ , Moderate accountability level  $65\% < 80\%$  and Low accountability level  $< 65\%$ .

**Tool II: Nurses Awareness' of Patient's Safety Structured Questionnaire.** Include three parts:

**Part one: Patient safety knowledge.** This tool was developed by the investigator guided by (*Schnall et al.* (2008); *Rodziewicz et al.* (2018); *Oyediran et al.* (2021); *Biresaw et al.* (2020); *Eldeeb, El-Nagar* (2013); and *Jamal et al.* (2022)). It contained 26 questions in the form of true false and multiple choices. It was classified as follows: **General knowledge** contained 5 questions, **Errors** contained 4 questions, **adverse event** contained 3 questions, **Near misses and hazards** contained 3 questions, **Patient safety culture** contained 2 questions, **Patient safety skills** contained 5 questions and **Causation** contained 2 questions. **Patient safety challenge** contained 2 questions,

**Scoring system:** Each question was allotted score of one for correct answer and zero for wrong answer. The cut-off point was 60%,

and this means the total score represented varying levels of ICU nurses' knowledge of patient safety as follows: High level of knowledge  $> 80\%$ , Moderate level of knowledge  $60 - 80\%$  and Low level of knowledge  $< 60\%$ .

**Part two: Patient safety attitudes.** This tool was developed by the investigator based on *Schnall et al.* (2008) *Suliman et al.* (2019); *Safarpour et al.* (2017). It was used to measure nurses' attitudes regarding patient safety. It included 12 items divided into three dimensions as follows: **Error detection** included 5 items, **Time investment** included 3 items and **Creating a culture of safety** included 4 items.

**Scoring system:** ICU nurses' responses were measured on a 5-points Likert Scale ranging from 1 = strongly disagree, 2= disagree, 3= slightly disagree, 4 = agree, 5= strongly agree. The scale scores were ranged between 9 and 45 points, this means that: 9-27 negative attitude and 28-45 positive attitude.

**Part three: Patient safety skills Questionnaire:** This tool was developed by the investigator based on (*Schnall et al.* (2008) *Suliman et al.* (2019)). It was used to measure nurses' skills regarding patient safety. This part was contained 13 items covered three skills as follow; **Error analysis** contained 6 items, **Using decision support technology** contained 3 items and **Avoidance the threats to patient safety** contained 4 items.

**Scoring system:** ICU nurses' responses were (1-5) measured on a 5-points Likert Scale ranging from 1=not competent, 2=somewhat competent, 3 = competent, 4= proficient, 5= expert. The scale scores will be ranged between 13 and 65 points as the following levels: 13-39 Not competent and 39- 65 expert skills.

### Method

Official permission to conduct the study was obtained from administrator of Tanta

University Main Hospital and was submitted to the responsible authorities of the selected setting.

### **Ethical consideration**

Approval of ethical committee at Faculty of Nursing Tanta University was obtained (17-3-2021) The researcher introduced herself to the participants and written informed consent of staff nurses were obtained to participate in the study after a full explanation of the purpose of the study was done. The right terminate participation at any time was accepted. Staff nurses were informed about privacy of information, confidentiality of data and their right to withdrawal. The nature of the study was not cause any harm for the entire sample.

Tool I and II were translated into Arabic and presented to a jury of five experts in the area of specialty to check their content validity. The experts were: three Professors and two assistant professors of Nursing Services Administration from Faculty of Nursing, Tanta University.

The experts' responses were represented in four points Rating Scale ranging from (1-4); 4= strongly relevant, 3= relevant, 2= little relevant, and 1= not relevant. Necessary modifications were done including; clarification, omission of certain items and adding others and simplifying work related word

The face validity value of **tool (I) part (I): 87.5%, tool (I) tool (II): 89.1%**.

Reliability of tools was tested using Cronbach's Alpha. Reliability of tools (I) Nurses' Accountability and their subscales were reliable was 0.880 and Reliability of tool (3): Nurses Awareness' of Patient's Safety Scale were reliable was 0.741.

A pilot study was carried out on sample (10%) of nurses (N=39) were Excluded from the study. A pilot study was carried out after the experts' opinion and before starting the actual data collection. The pilot study was done to test clarity, sequence of items,

applicability, and relevance of the questions and to determine the needed time to complete the questionnaire. According to feedback. The estimated time needed to complete the questionnaire items from staff nurses was (20-30) minutes.

Data collection phase: the data collected from nurses by the researcher. The researcher met the ICU nurses in different units under study during working hours to distribute the questioner. The subjects recorded the answer in the presence of the researcher to ascertain that all questions were answered and others were asked to fill it and return it back.

This data was collected within six months From August to November.

### **Statistical analysis**

The collected data were organized, tabulated and statistically analyzed using IBM SPSS software package version 20.0. (Armonk, NY: IBM Corp) Qualitative data were described using number and percent. The Kolmogorov-Smirnov test was used to verify the normality of distribution Quantitative data were described using range (minimum and maximum), mean, standard deviation and median. Significance of the obtained results was judged at the 5% level.

For abnormally distributed quantitative variables, to compare between two studied categories by Mann Whitney test. For abnormally distributed quantitative variables, to compare between more than two studied categories using Kruskal Wallis test. To correlate between two distributed abnormally quantitative variables by Spearman coefficient.

Significance was adopted at  $p < 0.05$  for interpretation of results of tests of significance.

### **Results**

**Table (1):** Illustrates nursing personal characteristics including sex, age, marital status, educational qualification, and years

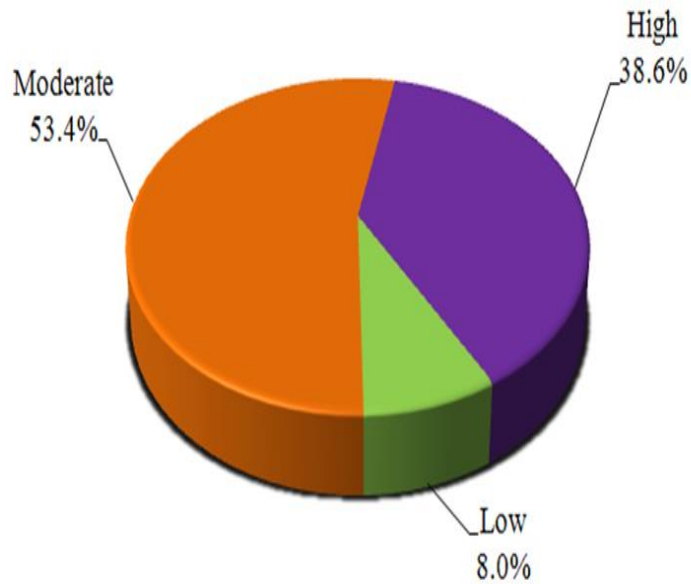
of experience, position, unit, and training courses. Majority (88.9%) of ICU nurses were female, and 47.7% aged <30 with mean  $\pm$  SD  $30.80 \pm 6.73$ . Majority (88.6%) of them married. Regarding educational qualification more than half (57.1) graduated technical nursing institute and over half (55.4%) of ICU nurses had <10 Years of experience with mean  $\pm$  SD  $10.11 \pm 7.16$ . 13.4%, 14.0%, 15.7%, 23.1% of ICU nurses worked in neurological, medical, anesthesia, neonatal intensive care unit respectively and 4.3%, 4.9%, 6.0%, 8.3%, 10.3% of ICU nurses worked in chest, ophthalmology anesthesia, cardiac, medical and pediatric ICUs respectively. High percent (73.4%) of ICU nurses not attended training courses. The minority (26.6%) of than attend training course as well as more than half of tending training courses for 3times. **Part two: ICU nurses 'accountability** **Figure (1)** this figure shows that more than half (53.4%) of ICU nurses 'had moderate level of overall ICU nurses 'accountability. More than a third of (38.6%) ICU nurses had 'high level of accountability, while minority (8.0%) of them had low level of overall 'accountability. **Figure (2):** This figure demonstrates that more than half (50.9%) of the ICU nurses had high level of overall patient safety knowledge and less than half (41.1%) had moderate levels while low percent (8.0%) of them had low level of overall Patient safety knowledge. **Figure (3):** this figure demonstrates that majority (85.1%) of ICU nurses had positive attitude of patient safety while minority (14.1%) of them had negative attitudes. **Figure (4):** This figure revealed that nearly half (49.9%) of the ICU nurses were expert in patient safety skills, While, 41.1% of them were not competent. **Table (2):** this figure show that more than half (59.4%) of ICU nurses were not competent related to error analysis dimension, high percent (72.6%) of ICU nurses not competent related to using

decision support technology dimension. however high percent (78.9%) of ICU nurses were expert skills related to avoidance the threats to patient safety. **Table (3):** Shows correlation between ICU Nurses' accountability and their awareness' of patient's safety, from the table it was observed that ICU nurses' total had statistically significant positive correlation with their awareness' of patient's safety total knowledge, attitudes, skills at  $p \leq 0.05$ .

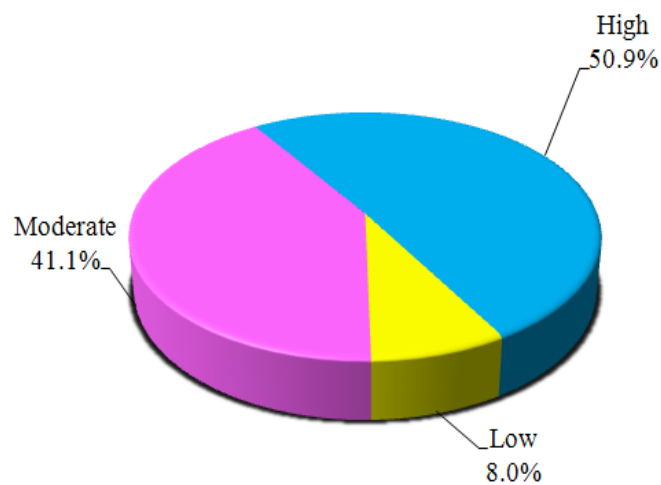
**Table (1):** Distribution of ICU nurses according their personal characteristic (n = 350)

<b>Personal characteristics</b>	<b>No.</b>	<b>%</b>
<b>Sex</b>		
Male	39	11.1
Female	311	88.9
<b>Age</b>		
<30	167	47.7
30-40	141	40.3
40-50	35	10.0
≥50	7	2.0
Min. – Max.	20.0 – 58.0	
Mean ± SD.	30.80 ± 6.73	
Median	30.0	
<b>Marital status</b>		
Married	310	88.6
Single	40	11.4
<b>Educational qualification</b>		
Nursing Diploma	35	10.0
Nursing Institute	200	57.1
Bachelor of Nursing	115	32.9
<b>Years of experience</b>		
<10	194	55.4
10-20	116	33.1
20-30	32	9.1
≥30	8	2.3
Min. – Max.	1.0 – 40.0	
Mean ± SD.	10.11 ± 7.16	
Median	9.0	
<b>Unit</b>		
Emergency Anesthesia ICUs	55	15.7
Emergency Medical ICUs	49	14.0
Neonatal Intensive care unit	81	23.1
Pediatric ICUs	36	10.3
Neurological ICUs	47	13.4
Cardiac ICUs	21	6.0
Ophthalmology Anesthesia	17	4.9
Chest ICUs	15	4.3
General Medical ICUs	29	8.3
<b>Training courses</b>		
<b>Yes</b>	<b>93</b>	<b>26.6</b>
No	257	73.4
<b>If yes</b>	<b>(n = 93)</b>	
1	21	22.6
2	13	14.0
3	59	63.4

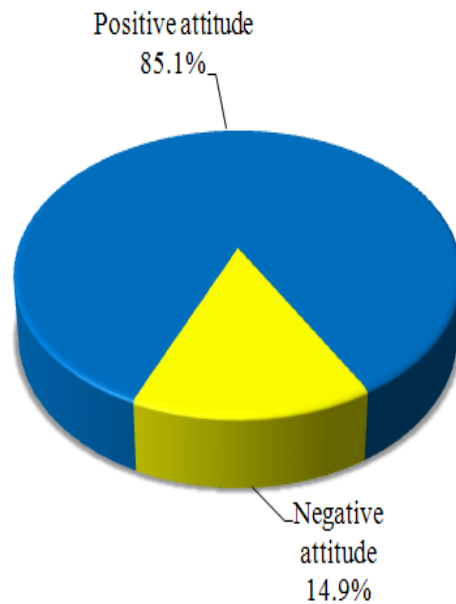
SD: Standard deviation

**Part two: ICU nurses 'accountability**

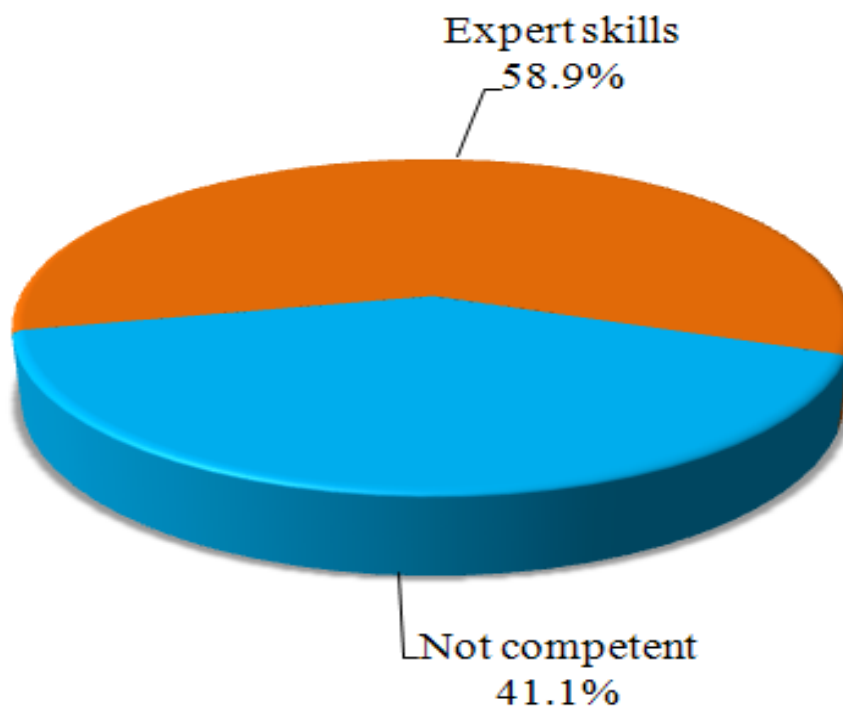
**Figure (1): Distribution of ICU nurses according to level of overall Nurses' Accountability (n = 350)**



**Figure (2): Distribution of ICU nurses according to level of overall Patient safety knowledge (n = 350)**



**Figure (3):** Distribution of ICU nurses according to their overall levels of patient safety attitudes. (n = 350)



**Figure (4):** Distribution of ICU nurses according to their overall levels of patient safety skills (n = 350)



**Table (2): Distribution of ICU nurses according to their levels of patient safety skills dimension (n = 350)**

Patient safety skills dimensions	Not competent		Expert skills	
	No.	%	No.	%
Error analysis	208	59.4	142	40.6
Using decision support technology	254	72.6	96	27.4
Avoidance the threats to patient safety	74	21.1	276	78.9

**Table (3): Correlation between ICU nurses' accountability and nurses awareness' of patient's safety (n = 350)**

ICU nurses Awareness' of Patient's Safety	Overall' 'nurses' Accountability	
	rs	P
General knowledge	-0.140*	0.009*
Patient safety skills	0.094	0.078
Overall Knowledge	<b>0.016</b>	<b>0.765</b>
Overall Attitudes	<b>0.386*</b>	<b>&lt;0.001*</b>
Overall Skills	<b>0.149*</b>	<b>0.005*</b>

## Discussion

### Concerning ICU nurses' accountability:

The present study results revealed more than half of ICU nurses 'had moderate level of overall 'accountability and its transparency and answerability dimensions. These results highlight ICU The importance of accountability for patient safety, harm reduction, and high-quality service delivery is acknowledged by nurses especially in ICU with high mean percent. They have the power to establish circumstances that safeguard their patients from harm and advance their general health and well-being.

These results means that those of ICU nurses need more motivation and empowerment about personal accountability . Especially, high percent of nurses not attended training courses.

These findings are in the same line with *Almalki et al. (2022)* who revealed that healthcare providers including nurses had moderate perception of organizational transparency and accountability. In this respect, *Hussein and Abou Hashish (2023)* mentioned that most it was the nurses' belief that they were responsible for recording mistakes, finishing incident reports, and contacting doctors to discuss or handle matters.

*Farouk Mohammad et al. (2021)* revealed that nurses reported high levels of self-accountability and patient accountability.

*Hiscox (2019)* found that nurses understood accountability and possessed the necessary knowledge. Two discourses of accountability, task responsibility, and answerability were articulated by them. On contrary *Abu Dawass et al. (2023)*; *Abdulmawjood et al. (2022)*; *Drach-Zahavy et al. (2018)*; *Srulovici and Drach-*

*Zahavy (2017)* reported that nurses had high levels of accountability.

### Nurses' awareness of patient's safety

#### ICU nurses' patient safety knowledge

According *Kim and Seomun (2022)* the majority of research concentrated on the specific responsibilities of nurses in patient care, like minimizing prescription mistakes and averting patient falls. Due to their intimate interaction with patients, nurses bear the primary responsibility for patient safety among healthcare professionals. So, they must use knowledge to choose behavioral processes in patient care situations.

The current study showed that more than half and less than half of the nurses had high and moderate level of overall patient safety knowledge. These results may be explained to presence of patient safety and infection control committees, as well as of continually efforts of hospital management strive to improve patient safety. Besides, since ICU is more significant, there may be more patient safety updates for nurses and overall, this would improve the knowledge of nurses towards patient safety. Also, these results may be due to half of ICU nurses between the ages of thirty and fifty. Older nurses typically have more opportunity to gain safety knowledge and greater real-world experience connected to patient safety. (*Cho et al., 2022*).

Along with the present study findings *Mohammed et al. (2023)* found that Patient safety knowledge was poorly understood by less than half of health science students. *Biresaw et al. (2020)*; *Kandula and Wake (2021)*, who found that less and more than half of the respondents were found to have good knowledge. *Dimitriadou et al. (2021)* revealed that nearly all of the nursing

students demonstrated good knowledge about patient safety. *Oliveira et al. (2017)* showed that the majority of nurses had good knowledge about patient safety.

On contrary, *Yusuf et al. (2023)* identified that newly graduated registered nurses had low to moderate category about knowledge patient safety. *Mohammed et al. (2023)* found that less than half of the students had good knowledge safety. *Abu Hussein et al. (2022)* found that all of staff nurses had poor level of knowledge regarding patient safety in assessment phase. *Ortega et al. (2020)* said that the majority of nurses in his survey knew very little about patient safety. It is common for older nurses to have more real-world experience with patient safety. *(Elsous et al., 2017)* moreover, more chances to gain knowledge about safety *(Biresaw et al., 2020)*. Furthermore, within a year, nurses who routinely attended fire safety or patient safety training demonstrated a better level of patient safety awareness compared to those who did not. The current study showed that high percent of ICU nurses had high level of patient safety knowledge regarding to errors and patient safety culture dimension. More than half of ICU nurses had high level regarding near misses and hazards, causation and patient safety challenges dimensions, respectively. More than forty of ICU nurses had high level of patient safety knowledge regarding adverse event and general knowledge dimensions, respectively. While, high percent of ICU nurses had moderate level of patient safety skills dimension.

#### **Patient safety attitude**

The current study findings demonstrates that majority of ICU nurses had positive attitude of patient safety attitudes Also,

these results may be related to high percent of ICU The unit management provides nurses with sufficient, timely information about hospital occurrences that may impact their work, learning how to improve In nursing education programs, patient safety is a suitable use of time, and nurses often dedicate a portion of their professional time to enhancing patient care. They were feeling confident when they report a mistake, and they made without feeling that of blamed.

Also, they agree that what they consider to be "best care" and what they actually offer differ, and the reporting methods in place today do little to prevent future errors and my colleagues encourage them to report any Patient safety concerns, and the health education of nurses makes it easier to deal systematically with errors. *Mohammed et al. (2023)* result consistent with the study findings and found that less than half of the students had favorable attitudes toward patient safety *Wake et al. (2021)* showed that more than half of nurses had positive level of attitude towards patient safety *Oyediran et al. (2022)* result inconsistent with the study's conclusions, which revealed that 35.9% of participants had a positive attitude toward patient safety and more than sixty had a negative opinion. *Al-Mugheed and Bayraktar (2020)* revealed that nurses' overall scores regarding patient safety attitudes were found to be negative. Moreover, *El-Azzab and Abd El-Aziz (2018)* clarified that high percent of nurses had negative attitudes towards patient's safety.

#### **Patient safety skills:**

The current study showed that that more than half of the nurses were expert skills, While, less than half of them were not

competent in-patient safety skills .This result may be related to those ICU nurses possess the necessary skills, attitudes, and behaviors to ensure the protection of their patients. Regardless of their position, all ICU nurses have an obligation to act professionally, and any doubts regarding competence must be acknowledged and reported.

These results agreed with *Wake et al. (2021)* revealed that nurses had good level of practice towards patient safety. *El-Azzab and Abd El-Aziz (2018)* findings which showed that over 50% of the nurses possessed adequate skills for the safety of the psychiatric patients. Regarding this **Finnish Centre for Occupational Safety (2012)** explained that professional experience and skills are the foundation of good and safe work practices. But, *Mohammed et al. (2023)* found that practice of patient safety among health science students was low. *Abu Hussein et al. (2022)* found Consequently, throughout the assessment process, the majority of staff nurses possessed inadequate patient safety knowledge.

#### **Concerning correlation**

The current study findings showed that ICU nurses' total accountability responsibility, transparency, answerability had statistically significant positive correlation with their awareness' of patient's safety total knowledge elements, attitudes elements, skills elements. This means that ICU According to nurses who take personal accountability for both the safety of their patients and each patient as an individual, issues arise when the practice environment fails to support relationship-oriented nurses and assistant nurses in their interpersonal nursing practice.

#### **Conclusion**

Based on the findings of this study, more than half of ICU nurses 'had moderate level of overall accountability, its transparency and answerability dimensions, but they had high level of responsibility dimension of accountability. More than half of the ICU nurses had high level of overall patient safety knowledge, majority of them had positive attitude of patient safety and nearly half of nurse were expert in patient safety skills. The findings of this study show that correlation between ICU Nurses' accountability and their awareness' of patient's safety dimension.

#### **Recommendations**

The following suggestions are made in light of the current study's findings:

##### **For hospital administration**

Pays more attention to educational training program for ICU nurses about accountability and patient safety. Developing nursing awareness of patient safety in hospital policy. Establish ongoing training programs for ICU nurses in knowledge-sharing and innovative behavior. Create a committee for patient health education to maintain continuity of care. Encourage nurses to come up with original ideas, promote their implementation, and identify any obstacles to their application. Introduce incentive schemes that encourage nurses to communicate information regularly to raise the caliber of patient care. Providing sources and resources that qualify nurses and help them in completing nursing work using technological methods. Develop an incentive and punishment policy that supports mastering nursing accountability. Attention to teaching ICU nurse training

program about accountability and patient safety.

#### **For ICU nurses:**

Create yearly training programs for all nursing personnel to keep ICU nurses' knowledge and skills current, Training and developing nurses on how to using computer-based fall risk assessment, Using computer-based provider order entry regarding nursing care and Using a barcode system in medication administration.

#### **Further research**

Further examine to connection between nursing accountability and patient safety awareness, Investigate nurse's intension to share knowledge and Assess organizational strategies to improve knowledge and skills and attitude sharing regarding patient safety.

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