

Assessment of Nurse Interns' performance Related to Patient Safety

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Abstract

Background: Safety is defined as the state of being free from accidental injury. In the context of healthcare, patient safety refers to the efforts aimed at minimizing patients' exposure to hazards, near-misses, and unnecessary harm associated with healthcare. Nurse interns constitute a significant portion of the healthcare workforce and play a vital role in improving patient safety. **Aim:** This study aims at assessing nurse interns' performance related to patient safety. **Research design:** A descriptive design was used to carry out this study. **Study setting:** The study was conducted at Ain-Shams University Hospitals. **Study subjects:** 139 nurse interns' whom are path from fourth year at faculty of nursing Ain-Shams University. **Tools:** Data were collected by using observational checklist for nurse interns' safety performance. **Result:** Demonstrates that 88.5% of nurse interns performed task concerning prevention healthcare acquired infections unlike the other patient safety tasks. **Conclusion:** Nurse interns in the study settings need to upgrade performance related to patient safety. **Recommendations:** It is strongly recommended using training programs as a method of teaching to improve nurse interns' performance in various clinical areas of training during internship year.

Keywords: Nurse Interns', Performance, Patient Safety.

Introduction:

Patient safety is defined as a patient's freedom from accidental injury or the reduction of risk of unnecessary harm or potential harm associated with healthcare to an acceptable minimum. In other words patient safety comprises minimizing a patient's risk for near misses or hazards while being hospitalized or efforts to reduce risk, to address and reduce incidents and accidents that may negatively impact healthcare consumers (Huang et al., 2020).

Nurses represent the front line of care and the largest group of healthcare providers; consequently, they play a vital role in improving the safety and quality of patient care. Nursing students serve as the important reserve force of healthcare providers. Emphasis that efforts to help nursing students reflect on their patient safety knowledge and competence may prepare them to offer appropriate and safe care in a variety of clinical settings (Suliman, 2019).

There are many factors that affect patient safety, and these include human factors such as variations in healthcare providers' training and experience, fatigue, depression, burnout, diverse

patients, unfamiliar settings, time pressures, failure to acknowledge the prevalence and seriousness of medical errors, increased working hours of nurses, and other factors related to medical complexity, such as complicated technologies, powerful drugs, intensive care, and prolonged hospital stays (Zurman et al., 2019).

The following recommendations for enhancing patient safety standards in healthcare are as follows (a) developing a focus on increasing knowledge, skills, and attitudes related to patient safety, (b) developing a non-punitive system for reporting errors and learning from mistakes, (c) developing standards for delivering safe healthcare, and (d) implementing safe practices at the bedside (Lee et al., 2020).

Different studies revealed that considerable percent of newly graduated nurses lack knowledge and skills regarding patient care standards and patient safety. In many parts of the world, nursing colleges organize the final year of their programs as internship practices, where educators provide guidance and students work alongside clinic nurses. This structure allows nursing students to gain practical experience in various clinical settings during their last year of education. Additionally, the

internship program provides students with the opportunity to observe their role models in a clinical environment, take on responsibilities, make decisions, and collaborate effectively as team members (Alquwez et al., 2019).

A nurse intern is a nurse who has completed her/his nursing degree and is registered to practice in supervised training posts; the intern year is the first level of postgraduate training and is an essential step in every nurse's career. The intern year should provide a balance between education, training and clinical responsibility, enabling nurse interns to develop the professional and personal competencies that result in safe patient care and provide a foundation for lifelong learning (Song & Guo, 2019).

Internship programs offer several benefits for nurse interns, as they provide opportunities to engage in real clinical situations and work alongside experienced staff members who assign them various clinical tasks. These programs foster creativity and adaptability, offer a greater opportunity to learn new skills, enhance analytical abilities, and ultimately provide valuable job experience. Additionally, internship programs contribute to improving the readiness of nurse interns in accepting professional roles, enhancing their individual and professional abilities, promoting self-development, and fostering a stronger commitment to their work (Darling-Hammond et al., 2020).

Significance of the study:

During the clinical supervision of nurse interns training the researcher observed that they lacked skills related to patient safety which reflected on their dealing with patients. Also, Many studies confirmed the researcher point of view they have found that students experience varying levels of apprehension about their future roles as nurse. Senior students expected lacked overall confidence in their performance and worried about assuming full responsibility for patients and their safety. Moreover recommended for further attention to academic preparation of nursing interns to promote their performance about their roles on patients care and patient safety (Aldeeb, Abdelaziz & Elnagar, 2016).

Aim of the study:

The aim of this study is assessing nurse interns' performance related to patient safety.

Research questions

What is adequacy of nurse interns' performance related to patient safety?

Subjects & Methods

Research design:

A descriptive design was used to carry out this study.

Setting

The study was conducted at Ain-Shams University Hospitals where nurse interns' are having their training, namely; Ain-Shams University hospital, El-Demerdash hospital, Pediatrics hospital, and Cardiovascular hospital.

Study subjects

Nurse interns whose age ranged between 21 and 27 years, with median 23.0 years, with a slightly more than half of them were females (57.6%). The majority had Egypt nationality (89.9%) and general secondary pre-university education (82.0%). Two thirds of study sample had their training was in ICUs (64.0%), and their duration of training in the hospital was 2 months (74.8%). Also, all study sample trained 36 hours weekly, and none of them at all receive any training regarding patient safety.

The subjects of the study were selected by simple random sampling technique and was include nurse interns' whom are path from fourth year at faculty of nursing Ain-Shams University and having their training in the aforementioned settings through the academic year 2020-2021 their number was (139).

Tool for data collection:

Data for this study was collected by using **Observational Checklist for Nurse Interns' Safety Performance:**

It consists of two parts:

- **Part (1):** This was included code number, observation number, hospital name, and unit name.

- **Part (2):** This was developed by the researcher based on pertinent literature review Souza

et al., (2019); Vasconcelos et al., (2019) to assess performance of nurse interns' regarding patient safety. It was covering certain tasks such as accuracy of patient identification, communication among caregivers, safety medication administration, prevention of healthcare - acquired infections, and fall protection.

❖ Scoring system:

The items observed "not done" and "done" were scored "0" and "1", respectively. The items "not applicable" were not scored and were discounted from the totals. For each task, the scores of the items were summed-up and the total divided by the number of the corresponding items, giving a mean score for the part. These scores were converted into percent scores. The performance was considered adequate if the percent score was 85% or more and inadequate if less than 85% given that patient safety is a critical issue in quality.

Validity and Reliability of the data collection tool:

Validity the preliminary form of the questionnaire were presented to a panel of experts for face and content validation, the jury panel consisted of five experts two professors from nursing administration, one professor from medical surgical nursing, one professor from critical care nursing and emergency, and one professor from psychiatric mental health nursing from the faculties-Ain Shams and Banha Universities. The process involved their general or overall opinions about the form. Then, they assessed each item for clarity, comprehensiveness, simplicity, understanding, and applicability. Observational Checklist for Nurse Interns' Safety Performance reliability was 0.779, which means acceptable reliability.

Pilot study

A pilot study was done on fourteen nurse interns' representing approximately 10% of the main study sample. The pilot served to assess the clarity and feasibility of the observation checklist. Since no changes were done in the tools; the pilot sample was included in the main study sample.

Administrative design

Before any attempt to collect data, official permissions to conduct the study were obtained from hospital directors through letters from the Dean of the Faculty of Nursing, Ain

Shams University. The researcher met with the Directors of the four hospitals, and explained to them the purpose of the study to obtain their help and cooperation during the study.

Ethical considerations

Prior to the actual work of research study, the study protocol was approved by the ethics committee of the Faculty of Nursing, Ain Shams University. The aim of the study and its procedures were explained to all study participants and their verbal informed consent was obtained. They were reassured that any obtained information would be confidential, and used only for the purpose of research. The study maneuvers had no actual or potential harms on participants. The study beneficence was clear in the improvement of performance of nurse interns', which would be reflected positively on their settings.

Statistical design

Data entry and statistical analysis were done using SPSS 20.0 statistical software package. Data were presented using descriptive statistics in the form of frequencies and percentages for qualitative variables. Cronbach alpha coefficient was calculated to assess the reliability of the scale used through its internal consistency.

Results:

Table (1): As indicated in, nurse interns performed patient safety task concerning about accuracy of patient identification when giving medication varied widely, thus the lowest performance was about the asking patient for his/her complete name (4.1%), whereas the highest was about check for medication name and check for medication dose(100%).

Table (2): demonstrates, nurse interns performed patient safety task concerning about accuracy of patient identification when giving blood / blood products varied widely, thus the lowest performance was about the check for patient medical number (8.7%), whereas the highest was about check blood product attaches tag & compare with patient name (100%).

Table(3): shows demonstrates, nurse interns performed patient safety task concerning about accuracy of patient identification when taking blood / other specimens varied widely, thus the lowest performance was about check for patient medical number and check for patient sex

and age (1.4%), whereas the highest was about put the blood taken in a sample container and label containers used for blood sample in the presence of the patient (100%).

Table (4): As indicated in , nurse interns performed patient safety task concerning about communication among caregivers varied widely, thus the lowest performance was about communicate clearly to ensure patient safety using such as repeat back, SBAR...etc (7.5%), whereas the highest was about use a list of abbreviations and symbols that used in ICU/ word(98.6%).

Table (5): shows all or almost all nurse interns performed four of the eight steps of patient safety task concerning about safety when using of high alert medication. The remaining four steps of keep the high alert medication and concentrated solutions out from patient care unless clinically necessary, put label on each medication or concentrated solutions as soon as it is prepared unless it is immediately administrated, put sign for medication that used to be diluted, and check the high alert and concentrated solutions during preparation they were performed by less than 10% of them.

Table (6): as regard the patient safety task concerning about reducing the like hood of patient harm associated with the use of anticoagulant thoroughly. indicates all three steps; they demonstrate less than third of nurse interns performed this task.

Table (7): as regards the patient safety task concerning about maintaining and communicating accurate patient medication information (medication reconciliation). indicates all five steps; they demonstrate less than half of nurse interns performed this task.

Table (8): demonstrates that all nurse interns performed all six steps of the patient safety task concerning about prevention of healthcare acquired infections regarding comply with hand hygiene guidelines.

Table (9): shows that all or almost all nurse interns performed nine of its ten steps of the patient safety task concerning about prevention of healthcare acquired infections regarding implement evidence based practice to prevent central line – associates blood stream infections. Meanwhile, only steps is examine insertion site for any signs or symptoms of problems in catheter site.

Table (10): as regards that all or almost all nurse interns performed nine of its ten steps of the patient safety task concerning about prevention of healthcare acquired infections regarding implement evidence based practice to prevent urinary tract infections. Meanwhile, only step is check for signs of infection in the area around the catheter as pus, swelling, or redness.

Table (11): displays nurse interns performed patient safety task concerning about prevention of patient falls. Thus the lowest performance was about assess the patient daily for any risk or signs of fall during hospital stay (0.0%), whereas the highest was about raise the side rails for patient bed (93.0%).

Table (12): demonstrates generally inadequate nurse interns' performance of the majority patient safety tasks. Except task concerning prevention healthcare acquired infections which demonstrates that all or almost all nurse interns performed this task.

Table (1): Nurse interns' performance of accurate patient identification when giving medications (n=139).

Steps	Done	
	No.	%
1- Check physician's order for medication	112	80.6
2- Check for patient complete name (fourth)	101	72.7
3- Check for medication name	139	100.0
4- Check for medication dose	139	100.0
5- Check for medication route	128	92.1
6- Check for medication time	74	53.2
7- Identify patients with wristband or bar code	33	23.7
8- Ask patient for his/her complete name(fourth)	4	4.1

Table (2): Nurse interns' performance of accurate patient identification when giving blood / blood products (n=139).

Steps	Done	
	No.	%
1- Check for patient complete name (fourth)	111	79.9
2- Check for patient medical number	12	8.7
3- Identify patients with wristband or bar code	86	62.3
4- Match the blood or blood component to the physician's order	138	99.3
5- Check blood product attaches tag& compare with patient name	139	100.0
6- Check blood group/Rh on blood product label and compare it with patient's blood group	125	90.6
7- Ask patient for his/her complete name(fourth)	67	62.0
8- Use two person verification process who verify and applying signature	59	42.8

Table (3): Nurse interns' performance of accurate patient identification when taking blood / other specimens (n=139)

Steps	Done	
	No.	%
1- Check for patient complete name (fourth)	138	99.3
2- Check for patient medical number	2	1.4
3- Check for patient sex and age	2	1.4
4- Check for patient diagnosis	14	10.1
5- Put the blood taken in a sample container	139	100.0
6- Label containers used for blood sample in the presence of the patient	139	100.0

Table (4): Nurse interns' performance of communication among caregivers (n=139).

Steps	Done	
	No.	%
1- Identify the critical results of tests	128	92.1
2- Write by whom and to whom the critical results of tests are reported	61	43.9
3- Report the critical results of tests on a timely basis within (30 minutes)	126	90.6
4- Read back the critical results of test when received by telephone	98	70.5
5- Write down the critical results of test in the patient file	64	46.0
6- Read back the doctor orders when received by telephone	102	73.4
7- Write telephone order or verbal order with doctor's name	46	33.1
8- Use a list of abbreviations and symbols that used in ICU/ word	137	98.6
9- Report patient condition changes to the unit charge nurse	108	77.7
10-Providing observation documentation on patient(s) if applicable	37	26.6
11- Interact with members of interdisciplinary teams	39	28.1
12- Identify the role of effective teamwork to ensure patient safety	25	18.0
13- Communicate clearly to ensure patient safety using such as repeat back, SBAR...etc	8	7.5

Table (5): Nurse interns' performance of safe use of high alert medications (n=139).

Steps	Done	
	No.	%
1- Verify the high alert medication as sound alike / lookalike, and concentrated solutions labels both verbally and visually	112	80.6
2- Keep the high alert medication and concentrated solutions out from patient care unit unless clinically necessary	13	9.4
3- Put the high alert medication and concentrated solutions in suitable place	106	76.3
4- Put label on each medication or concentrated solutions as soon as it is prepared, unless it is immediately administered	12	8.6
5- Put sign for medication that needs to be diluted	10	7.2
6- Check the high alert medication & concentrated solutions during preparation	10	7.2
7- Check the high alert medication & concentrated solutions before administration	135	97.1
8- Discard immediately any medication or concentrated solutions found unlabeled	137	98.6

Table (6): Nurse interns' performance of safe use of anticoagulant therapy (n=139).

Steps	Done	
	No.	%
1- Use hospital approved protocols for the initiation and maintenance of anticoagulant therapy	24	17.3
2- Assess the patient's baseline coagulation status; by reviewing result test	39	28.1
3- Provide education regarding anticoagulant therapy to patients, and families, this includes the following:		
▪ Compliance	11	9.4
▪ Drug-food interactions		
▪ The potential for adverse drug reactions and interactions		

Table (7): Nurse interns' performance of medication reconciliation (n=139).

Steps	Done	
	No.	%
1- Obtain medication information that patient is currently taking	49	35.3
2- Compare the medications of patient actually using to the new medications ordered and resolve any discrepancies	16	11.5
3- Explain the importance of maintaining updated medication information to the patient or his family	4	3.3
4- Give patient or his/her family the new medications list that will be taken at home	5	4.5
5- Clarify any questions about drug / dose / frequency	13	10.2

Table (8): Nurse interns' performance of prevention of healthcare acquired infections regarding hand hygiene (n=139).

Steps	Done	
	No.	%
1- Wet hands with clean and running water (warm or cold)	139	100.0
2- Turn off the tap and apply soap on hand	139	100.0
3- Lather the hands (back, fingers, and under nails) by rubbing them together with the soap	139	100.0
4- Scrub the hands for at least 20 seconds	139	100.0
5- Rinse the hands well under clean and running water	139	100.0
6- Dry the hands by using a clean towel or air dry	139	100.0

Table (9): Nurse interns' performance of prevention of healthcare acquired infections regarding prevention of central-line bloodstream infections (n=139).

Steps	Done	
	No.	%
1- Obtain all needed equipment as standard	139	100.0
2- Hand washing" rub" with sterillum	139	100.0
3- Wear sterile gloves	139	100.0
4- Wear mask	114	82.0
5- Examine insertion site for any signs or symptoms of problems in catheter site	24	17.3
6- Clean catheter insertion with betadiene swab	134	96.4
7- Remove betadiene with alcohol, starting from insertion site	120	86.3
8- Cover site with dressing and keep it dry	137	98.6
9- Label dressing with date and time	138	99.3
10- Wash hand	139	100.0

Table (10):Nurse interns' performance of prevention of healthcare acquired infections regarding prevention of urinary tract infections (n=139).

Steps	Done	
	No.	%
1- Obtain all needed equipment as standard	139	100.0
2- Hand washing rub with sterillum	139	100.0
3- Wear sterile gloves	139	100.0
4- Use antiseptic solution for urethral cleaning	139	100.0
5- Put the tube collection bag below the level of bladder	138	99.3
6- Check for signs of infection in the area around the catheter as pus, swelling, or redness	32	23.0
7- Clean the area around the catheter with antiseptic solution	124	89.2
8- Dry with a clean towel afterward	120	86.3
9- Clean the distal end of catheter with disinfectant solution before specimen if required	137	98.6
10- Wash hand	139	100.0

Table (11): Nurse interns' performance of prevention of patient falls (n=139).

Steps	Done	
	No.	%
1- Assess patient during admission for potential risk of falling	43	44.8
2- Assess the patient daily for any risk or signs of fall during hospital stay	0	0.0
3- Raise the side rails for patient bed	120	93.0
4- Observe the patient for side effects of new medication that may lead to falls	2	1.7
5- Keep bed in low position or level	67	55.8
6- Offer adequate lighting in patient room or environment	61	50.8
7- Place fall/injury sign at entry on patient bed	77	59.7
8- Keep bed side commode near to offer assistance to patient	119	92.2
9- Tell the patient not to wear slip socks/shoes	12	18.2
10- Use bed alarm and offer assistance to patient as needed	18	15.3
11- Document all interventions in patient record if patient falling occur during the hospital stay	4	3.4

(*) Statistically significant at $p < 0.05$

Table (12): Nurse interns total performance of patient safety throughout intervention phases(n=139)

Steps	Done	
	No.	%
Accuracy of patient identification		
Adequate	1	0.7
Inadequate	138	99.3
Communication among caregivers		
Adequate	2	1.4
Inadequate	137	98.6
Safety medication administration		
Adequate	0	0.0
Inadequate	139	100.0
Prevention of healthcare-acquired infections		
Adequate	123	88.5
Inadequate	16	11.5
Fall prevention		
Adequate	1	0.7
Inadequate	128	92.1
Total performance		
Adequate	0	0.0
Inadequate	139	100.0

Discussion:

The results of the present study demonstrated that most nurse interns performed most steps in the patient safety task concerning about accuracy of patient identification during medication administration. However, it is important to note that inadequate performance in accurately identifying patients when administering medications, drawing blood, or collecting specimens may be attributed to the fact that nurse interns may already know the patient personally and by name.

This finding is in line with a study conducted by **Mohamed (2010)** in Egypt, where it was mentioned that staff nurses sometimes bypassed patient identification due to their existing familiarity with the patient. Similarly, **Hassan and Ahmed (2012)** reported inadequate performance in accurately identifying patients among nurses in an Egyptian study. This was attributed to nurses being assigned to a small number of patients and having a deep familiarity with their patients due to their prolonged stay in the ICU or ward.

Accurate patient identification becomes even more critical when administering blood or blood products due to the potentially fatal risks associated with errors. The finding that more than three-fifths of nurse interns had inadequate performance in this area, as reported by **Mohamed**

(2018), is indeed alarming. This inadequacy was mainly attributed to the failure to check the wristband or patient medical number, often due to neglect or forgetfulness.

Furthermore, a study conducted by **Stephen and Peter (2008)** in the USA emphasized the importance of correct wristband identification in preventing wrong blood transfusions and blood sampling errors. Additionally, the **National Blood Authority Australia (2009)** requires the use of at least three approved patient identifiers during registration or admission for blood transfusions.

Incorporating these patient safety principles is crucial to ensuring that the correct patients receive the appropriate treatment. Healthcare organizations should facilitate the implementation of these practices to enhance healthcare quality and safety, as highlighted by **Sexton et al. (2011b)**. Moreover, errors in patient identification can lead to delays in blood transfusions and their associated consequences, as reported by **Bolton-Maggs (2016)** in the United Kingdom.

According to the results of the current study, the majority of nurse interns performed many steps of the patient safety task concerning about communication among caregivers. This can be attributed to the understanding that communication is a crucial aspect in professions, especially those involved in providing healthcare to patients, such as

nursing. Effective communication is essential for ensuring patient safety and delivering comprehensive care.

Regarding the practice of documenting critical test results in patient files, it was found that the availability of the patient file may not always be guaranteed due to various reasons related to providing healthcare services in the hospital, such as undergoing X-rays, ultrasounds, and other diagnostic procedures. However, the Joint Commission on Accreditation of Health Care Organizations (JCAHO, 2016) emphasizes the importance of effective communication among caregivers.

Furthermore, the findings of the present study indicated that all or almost all nurse interns performed half of the steps of the patient safety task concerning about safe use of high alert medications. This may be attributed to the perception that the responsibility for this task lies with the head nurse or staff nurses in the unit, and they may feel restricted from intervening. However, patient safety should be considered the responsibility of everyone, given its paramount importance. It is worth noting that medication errors, particularly those related to the use of high alert medications, are among the leading causes of death worldwide, as highlighted by **Patient Safety Research (2016)**.

Regarding the patient safety task concerning about safe use of anticoagulant therapy, the study results indicated inadequate nurse interns performed this task, particularly in the step of providing education to patients and their families about anticoagulant therapy. This can be attributed to the fact that most nurse interns are trained in the ICU, where patients may not be conscious enough to actively participate in their care, and there may be limited interaction with patient families due to hospital policies on visitation.

Furthermore, the current study findings demonstrated that all nurse interns performed most steps of the patient safety tasks concerning about prevention of healthcare-associated infections. This includes compliance with hand hygiene guidelines, implementation of evidence-based practices to prevent central line-associated bloodstream infections, and urinary tract infections.

It is important to note that during the assessment of nurse interns' performance related to patient safety, the world was facing the Covid-19 pandemic. Consequently, nurse interns demonstrated high compliance with the steps related to the prevention of healthcare-associated infections mentioned earlier, as this became a critical focus in healthcare settings worldwide. However, it is worth mentioning that a study conducted in Qatar by **Arias et al. (2016)** reported low compliance among nurses regarding hand hygiene techniques based on the WHO steps.

The current study results revealed that the majority of nurse interns only performed a few steps of the patient safety task concerning about prevention of patient falls. This deficiency may be attributed to a lack of daily patient assessment for fall risk during hospital stays and a failure to document all interventions in the patient records if a patient fall occurs. The lack of daily assessment could be due to factors such as time constraints or a lack of awareness about the importance of this task.

Regarding the lack of documentation, it may be driven by the fear of punishment or blame from head nurses in their training area for any deficiencies in patient documentation. These findings align with a study conducted in Slovenia by **Vrbnjak et al. (2016)**, which investigated barriers to reporting medication errors and near misses among nurses. The study found that fear and accountability were the main barriers to reporting and documenting incidents, including patient falls.

Regarding nurse interns', total performance of patient safety tasks, the current study findings revealed that there was generally inadequate nurse interns' performance of the majority patient safety skills, except skill concerning about prevention healthcare acquired infections which demonstrates that all or almost all nurse interns' performed this task.

These findings are in line with **Mohamed (2018)** study conducted at the same current study setting demonstrated generally inadequate nurse interns' total performance of patient safety tasks. The lowest percentages of adequate performance were related to task concerning improving accuracy of patient identification using at least two patient identifiers when giving blood or blood products,

and taking blood/other specimens, in addition to task concerning medication reconciliation, and task concerning implementing evidence-based performance to prevent central line blood stream infections.

Conclusion:

The study findings lead to the conclusion that the nurse interns' in the study settings need to upgrade the performance related to patient safety.

Recommendations:

- The study recommended using training programs as a method of teaching to improve nurse interns' performance in various clinical areas of training during internship year.
- In addition, patient safety issues need to be an integral part of the orientation and ongoing on-job educational activities to all nursing staff in hospitals to improve safety performance.
- Also, continuing supervision and monitoring of the application of patient safety goals as well as standard recommended in all health care settings, to enhance the development of patient safety culture among nurses.

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