

Assessment of Nurses' Performance regarding Medication Administration at Main Mansoura University Hospital



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ABSTRACT

Background: Safe medication is one of the most important nursing practices that play an important role in preventing medication errors. **Aim of the study:** The aim of this study was to assess the knowledge and practice of nurses regarding medication administration. **Method:** The present study was conducted by a descriptive correlational cross-sectional study design. with the 44 nurses who work in the neurology department at Main Mansoura University Hospital. Data were collected using three tools: **Tool I:** Nurses' Knowledge Assessment Questionnaire included 2 parts, **part I:** was used to collect demographic characteristics, **part II:** nurses' knowledge regarding medication administration questionnaire, **Tool II:** Nurses' practices regarding medication administration checklist. **Results:** The majority of (84.9%) of nurses have a fair knowledge level regarding medication administration and more than half of nurses have an unsatisfactory practice level regarding medication administration. **Recommendation:** It was recommended that training and educational sessions about medication administration should be applied periodically.

Keywords: Medication Administration, Nurses' Performance

Introduction:

Quality nursing care is essential for the successful delivery of medication administration in hospitals. Nurses should adhere to established guidelines and protocols to ensure safe and accurate medication administration (Ahmed, Elshimy, & Fakery, 2021).

Medication administration is a multidisciplinary process, and the nurse is ultimately responsible for ensuring patient safety. Furthermore, the practice of pharmaceutical administration includes numerous phases, including planning, admin, and assessment of the efficacy of given prescription. (Janes, Mills, Budworth, Johnson, & Lawton, 2021).

Several of the plans offered to decrease medicine mistakes contain increasing the amount of nursing personnel and regulating their assignment, actual organization, growing nurses' information and training concerning medication management over training programs or workshops and encouraging nurses to report medication errors to stop them

and enhance patient safety (Ghenadenik, Rochais, Atkinson, & Bussi res, 2021).

Significance of the study

Patient safety is a common goal for every healthcare provider. One of the major issues for safety is medication errors. The complexity of modern healthcare increases the risk of adverse events and harms to patients. World Health Organization (WHO, 2020) declared that medication errors cause at least one death every day and injury approximately 1.3 million people annually in the United States of America alone. According to Duggan (2017) the unsafe medication practices and medication errors are a leading cause of injury and avoidable harm in health care system across the world. Globally, the cost associated with medication errors has been estimated at \$42 billion USD annually.

Study Aim

The aim of the present study is to:

1. Assess the knowledge of nurses regarding medication administration

2. Assess the practice of nurses regarding medication administration.

Method

Design

A descriptive cross-sectional research design was used in this study

Setting

This study was conducted at the Neurology department affiliated with a main university hospital

Subjects

A convenience sample consisting of all nurses at the previously mentioned setting who have different levels of education, engaged with giving direct care to patients, and willing to take part voluntarily was included in the study.

Tools

Two tools were used for data collection during the study period:

Tool I: Nurses' Knowledge Questionnaire

It was developed by researchers, dependent on scientific literature, to assess nurses' knowledge about medication administration, it was translated to the Arabic language, and it comprised two main parts, which are:

Part I. Nurses' Demographic Data. It incorporated data such as nurses' name, educational level, age by years, years of experience and Attending training programs.

Part II. Nurses' Knowledge Regarding Medication Administration Questionnaire

This tool was established by the investigator following to reviewing the recent related literature. To assess nurses' knowledge about the medication administration process, which contains 49 multiple choice questions that will cover through five main domains) basic knowledge of medication administration, verification of physicians' orders, medication preparation, medication administration, and charting or documentation of medication)

Scoring system of knowledge questionnaire: Each right answer scored one grade and each false answer scored zero score.

Classified into two categories as follows: good knowledge when they have equal to 75% and more, fair Nurse's knowledge 50% - 75% and poor knowledge is less than 50%

Tool II: Nurses' Practices Observational Checklist Regarding Medication Administration

The observational checklist will develop by the researchers based on literature review to evaluate nurses' practice regarding the medication administration process, the checklist includes 76 steps. Through four main categories: verification of physician order, nurse practices during medication preparation, nurse practices during medication administration for (oral, intravenous, intramuscular, and subcutaneous injection), and nurse practices after medication administration or documentation.

Scoring system: Each completely done step will be scored 2 grades, each incompletely done will be scored one grade, and every not done step will be scored zero grades. The total scores will be classified into two categories as follows: The satisfactory practice level was $\geq 80\%$ and more. And the unsatisfactory practice level was $< 80\%$.

Administrative process

- An official permission to conduct the study was obtained from the Vice Dean of the Faculty of Nursing, Mansoura University, as submitted to the general director of Mansoura Main University Hospital and the Neurology Department to carry out the study after providing an explanation of the nature and purpose of the study.

Ethical Considerations

Ethical approval was obtained from the Research Ethical Committee of Faculty of Nursing, Mansoura University. An informed verbal consent was obtained from nurses who agreed to participate in the study after providing the explanation of the nature and aim of the study.

Tools Development

All study tools were developed based on reviewing the relevant literature.

Content Validity

They was revised by a panel of five experts in the field of the study to test the study tools for completeness, feasibility and clarity of the items.

Reliability

Reliability was tested by using Cronbach's Coefficient Alpha test.

Pilot study: was carried out on five nurses, approximately 10% of the total sample, to test the feasibility, applicability of the tools and estimate time needed to fill out the data collection tools.

Field Work

Data Collection

When permission was granted to proceed with the proposed study from the hospital director, the heads and nursing supervisors of the Hospital. Nurses were interviewed during the morning and afternoon, and the study tools were used to collect the required data each tool takes about 40 minutes. to fill in the data. An observation checklist was used to observe the nurses during the medication administration procedure. Data was collected during the period from April 2022 to December 2022

Results

Table 1 presents the distribution of the studied nurses according to demographic characteristics. It was noticed that, more than half of the studied nurses (52.3%) were females, about the most of the studied nurses (81.8%) aged 20- 30 years with a mean age of

mean \pm SD 28.30 \pm 3.99 years. Only one third (30%) were highly educated (bachelor degree), and near half of them (45%) graduated from a technical institute of nursing, with more than half (52.9%) having less than five years' experience, with a mean experience of mean \pm SD= 5.18 \pm 4.03 years. The same table denotes that the majority (98.6%) of the nurses reported that they didn't attend any training programs or workshops regarding medication administration and patient safety

Table 2 and Figure 1 portrayed that the majority of (84.9%) of nurses have a fair knowledge level regarding medication administration

In relation to the nurses' total practice score regarding medication administration, it is noticed from Table 3 that the mean and standard deviation are 50.85 \pm 4.28, also portrayed that more than half of the nurses have an unsatisfactory practice level regarding medication administration

According to regression analysis, Table 4 shows that there is a statistically significant correlation between nurses' knowledge and their practice regarding medication administration, where $P=0.021$, 0.022 , respectively

Table 5 shows there is no relation between nurses' knowledge and their demographic characteristics.

Table 6 shows there is no relation between nurses' knowledge and their demographic characteristics.

Table 1. Distribution of the Studied Nurses According to Their Demographic**Characteristics n= (44)**

Characteristics	n	%
Gender		
- Males	21	47.7
- Females	23	52.3
Marital status		
- Single	19	43.2
- Married	25	56.8
Educational Level		
- Bachelor	15	34.1
- Technical	20	45.5
- Secondary school nurses	9	20.5
Age (years)		
- 20-	36	81.8
- 30-	6	13.6
- 40+	2	4.5
Min – Max=24-43, , Mean \pm SD= 28.30 \pm3.99 years		
Experience years		
- < 5 years	31	70.5
- 5-	8	18.2
- 10-	3	6.8
- 15+	2	4.5
Min – Max=1-19 years , Mean \pm SD= 5.18 \pm4.03 years		
Training programs		
- Yes	3	0.0
- No	41	98.0

Table 2. Total Knowledge Average Score and Levels Among Studied Group n= (44)

Knowledge levels	n	%
Bad (<50.0%)	0	0.0
Fair (50 - <75%)	37	84.1
Good (\geq 75%)	7	15.9
Total score	26 – 39,	Mean \pm SD= 33.09 \pm 3.23

Figure 1. Total Knowledge Average Score and Levels Among Studied Group n= (44)

Table 3. Distribution of the Nurses According to Mean and Standard Deviation of Their Practice Score Regarding Medication Administration

Items	Mean \pm SD	Significance test
Total Practice score	77.30 \pm 6.51	
Significance test		t=9.307, P ₃ <0.001
Total Practice score %	50.85 \pm 4.28	
Significance test		t=9.307, P ₃ <0.001

Table 4. Average Total Practice Score Level of practice Regarding Medication Administration Among Studied Group n= (44)

Practice level	n	%
Unsatisfactory	30	68.18%
Satisfactory	14	31.8%

Table 6. Relationship Between Average Scores of Knowledge of Studied Nurses and Their Socio-Demographic Characteristics (n=44)

Characteristics	n	Knowledge score Mean \pm SD
Gender		
- Males	21	32.43 \pm 3.43
- Females	23	33.70 \pm 2.98
Significance test		t=1.312, P0.197
Marital status		
- Single	19	32.84 \pm 3.78
- Married	25	33.30 \pm 2.98
Significance test		t=0.448, P0.657
Educational Level		
- Bachelor	15	33.60 \pm 3.62
- Technical	20	33.20 \pm 2.88
- Secondary school nurses	9	32.00 \pm 3.39
Significance test		F=0.703, P0.501
Age (years)		
- 20-	36	33.53 \pm 3.04
- 30-	6	31.67 \pm 3.98
- 40+	2	29.50 \pm 0.71
Significance test		F=2.282, P0.115
Experience years		
- < 5 years	31	33.94 \pm 3.11
- 5-	8	33.00 \pm 2.67
- 10-	3	29.00 \pm 3.00
- 15+	2	29.50 \pm 0.71
Significance test		F=3.318, P0.029

Table 7. Relationship Between Average Scores of Practice of Studied Nurses and Their Demographic Characteristics (n=44)

Characteristics	n	Practice score
		Mean \pm SD
Gender		
- Males	21	77.24 \pm 6.30
- Females	23	77.35 \pm 6.84
Significance test		t=0.055, P0.956
Marital status		
- Single	19	77.90 \pm 7.62
- Married	25	76.92 \pm 5.62
Significance test		t=0.435, P0.666
Educational Level		
- Bachelor	15	77.80 \pm 7.67
- Technical	20	78.20 \pm 6.26
- Secondary school nurses	9	74.44 \pm 4.48
Significance test		F=1.106, P0.301
Age (years)		
- 20-	36	77.61 \pm 6.99
- 30-	6	75.00 \pm 3.69
- 40+	2	78.50 \pm 2.12
Significance test		F=0.438, P0.649
Experience years		
- < 5 years	31	78.13 \pm 7.15
- 5-	8	75.13 \pm 4.97
- 10-	3	73.67 \pm 2.09
- 15+	2	78.50 \pm 2.12
Significance test		F=0.787, P0.508

7. Discussion

Regarding demographic characteristics

The majority of studied nurses aged 20- 30 years with a mean age of Mean \pm SD= 28.30 \pm 3.99 years. That might be due to the most of the nurses were newly graduated. These results near to the result of **El-Gahsh (2021)** who reported the age group was 20- 50 years. Also These study findings are supported by **Zanaty (2019)**, Also supported by **Fathy, Khalil, Taha, and Abd-elbaky (2020)** who revealed that, the most of the critical care nurses aged was between (20-29) years who done study on Nurse's knowledge and practice regarding medication errors in critical care units: descriptive study. *Minia Scientific Nursing Journal*, 8(1), 111-120

According to gender: It was noticed that, more than half of studied nurses were females, that might be due to the profession of nursing in Egypt was for the most part feminine, these study findings are supported by **Shahin (2020)** who carried out a designed instructional program about nurses' knowledge and practices regarding enteral nutrition and commented that the mostly studied sample were females.

In relation to marital status of the current study, it was noticed that more than half of the studied nurses were married. This study was in line with **Abdurrahman, Mohammed, and Mohammed Attia (2020)** Who mentioned that (96.6%) of them were married. assessment of nurses' knowledge and practices about medications administration via nasogastric tube at the

emergency hospital. Mansoura nursing journal, 7(1), 1-18.

According to educational level: only one third were highly educated (bachelor degree), and nearly half of them graduated from a technical institute of nursing. These results are inconsistent with **Al-Hawaly (2016)** who carried out research about assessment of nurses' knowledge and performance regarding feeding patients with nasogastric tube, revealed that two-thirds of studied nurses' had nursing institute of education, Also the study finding with the line **Fathy, Khalil, Taha, and Abd-elbaky (2020)** who found that more than half of them (61.6%) had graduated from technical institute degree in nursing. Also contraindicated with **Abdurrahman, Mohammed, and Mohammed Attia (2020)**. Who founded more than half of the studied group carrying a secondary school diploma, a nursing degree

In relation to years of experience of current study: as regard the current study the results showed slightly more than half had less than five years' experience with mean experience Mean \pm SD= 5.18 \pm 4.03 years, that might due to they were newly graduated, These findings agreed with **Abdurrahman, Mohammed, and Mohammed Attia (2020)**. Who founded the highest percentage of them constituted had from (1-3) years of experience working at critical units. **but** not matching with **Abdurrahman, Mohammed, & Mohammed Attia, (2020)**. who mentioned that more than one third of them having more than 15 to less than 20 years of working experience in the ICU

Concerning attendance training programs regarding medication administration: most of the nurses reported that they didn't attend any training programs or workshops regarding medication administration and patient safety. **that might due to** Lack of in-services training programs This result is in harmony with **Abdurrahman, Mohammed, & Mohammed Attia, (2020)** who clarified that the majority of the studied subjects didn't attend any training programs or workshops regarding medication administration, While this study finding disagreed with **Al-Hawaly (2016)** who clarified that, almost one third of studied subjects had training session regarding medication administration.

Part II: Nurses' Knowledge Regarding Medication Administration

The results of the current study also reveal that the majority of the nurses have a fair knowledge level regarding medication

administration., Also the current study aims to assess nurses' knowledge regarding medication administration. Where nurses' medication administration and verification of physician orders. Represent reflects a higher mean score while the lower mean score regarding basic knowledge regarding medication administration. Nurses' knowledge regarding medication preparation and documentation reflects the lower mean score. This finding is supported by **Abolwafa, Hasan, and Shehata (2023)**. Who revealed that most nurses obtained unsatisfactory knowledge regarding general knowledge. This may be due to inadequate training in the area, the absence of regular group discussion to refresh their knowledge regarding medication errors, increased nursing workload, which made to delay their abilities and motives to acquire and update their knowledge

Also, the study findings are consistent with **Elsayed (2019)** whose study in intensive care units at Ain Shams University hospitals reported that the majority of study nurses had unsatisfactory knowledge regarding medication order, preparation, administration, storage, and documentation

Part IV: Nurses' practice regarding medication administration.

The current study presented the nurses' total practice score regarding medication administration, portrayed that more than half of nurses have unsatisfactory practice levels regarding medication administration matched with **Ahmed, Elshimy, and Fakhry (2021)**. who, in a study in British found that more than two thirds of the studied nurses had insufficient level of practice regarding medication administration. On the same line, **Gaafar (2015)** highlighted that nurse interns' deficient practice of medication administration might be due to a lack of standardized nursing care records, procedure books, and medication guidelines.

Part V: Relationship Between Nurses' Knowledge and Practice Regarding Medication Administration

According to regression analysis the finding shows that there is no statistically significant relation between nurses' knowledge and their practice regarding medication administration. Study finding is consistent with **Al-Sarawan (2022)** who reported that there is a gap between knowledge and practice.

Conclusion

This study concluded that

The majority of nurses have a fair knowledge level regarding medication administration. Also, the majority of the study participants had an unsatisfactory level of practice

Recommendations

Based on the findings of this study, the following were recommended:

- Training and educational sessions should be applied periodically
- Integration of medication safety in the different nursing curriculums
- Designing an efficient medication sheet includes all points that should be checked before, during, and after administration.
- Creating job orientation for recently graduated nurses

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