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The Main Reasons of Medication Errors and Barriers of Reporting in the North West Bank Governmental Hospitals: Nursing Perspective

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Declaration

I declare that the work in this study titled “The Main Reasons of Medication Errors and Barriers of Reporting in the North West Bank Governmental Hospitals: Nursing Perspective” carried out by me under the supervision of Dr. Ahmad Batran, in the department of Nursing.

In addition, I understand the nature of plagiarism, and I am aware of the University's policy on this .

The work provided in this thesis, unless otherwise referenced, is the researcher's own work and has not been submitted by others elsewhere for any other degree or qualification.

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Date: 21/Dec /2023

Dedication

My study is dedicated to my loving parents, who have always been a source of motivation and inspiration for me, and who have given me the strength and commitment to work with enthusiasm and determination on every task.

I dedicate my study to my supervisor and all of my family members as a mark of their support.

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“Also, we would like to thank all the people who contributed directly or indirectly to the development of this work”. Through they be assured of our faithful friendship, love, and sincere appreciation.

Abstract

Background: Medication administration errors happen at different stages in the medication use process, including prescribing, provision, and administration. Such errors may be associated with healthcare professionals' practices or techniques, products or drugs, and systems, including prescriptions, labeling, miscommunication, packaging, and nomenclature, assembling, distributing, and administration.

Objective: This study aims to assess nurses' perceptions towards the reasons for medication administration errors and barriers to reporting in the North West Bank governmental hospitals.

Methods: A cross- sectional descriptive study composed of two hundred and eighty-five nurses from governmental hospitals in Palestine's North West Bank participated in the study. The study was conducted through a questionnaire developed by the researchers

Results: The response rate was 95%, and 15.4% of participants had MAEs in general and 27.3% of them reported MAEs in Palestine. The main reasons for medication administration errors were high workload (4.79±0.56), high patient to nurse ratio on wards/units (4.7263± 0.64), and inadequate knowledge about the drug (4.69± 0.65). Also, the main barriers to reporting MAEs among nurses in Palestine in this study were personal factors (3.97±0.6), reporting system process (3.95±0.62), and administrative factors (3.74±0.6).

Conclusion: The main reasons for medication administration errors were high workload, high patient-to-nurse ratio on wards/units, and inadequate knowledge about

the drug. However, the factors that were considered as the main barriers to reporting medication administration errors among nurses in Palestine in this study were personal factors, reporting system process, and administrative factors.

Keywords: reporting, barriers, medication administration errors, nurse, safety.

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List of Abbreviations

Abbreviation	Explanation
AAUP	“Arab American University Palestine”
ANOVA	“Analysis of Variance”
MAEs	Medication administration errors
MAE	Medication administration error
IR	Incidence report
KFMC	King Fahad Medical City
SPSS	“Statistical Package of Social Science”
M	“Mean”
SD	“Standard deviation”

CHAPTER ONE

INTRODUCTION

1.1 Background

Medication administration errors (MAEs) are defined as avoidable medication-related events that result in a failure in the treatment process and subsequent patient harm (Lavan, Gallagher, & O'Mahony, 2016). MAEs happen at different stages in the medication use process, including prescribing, provision and administration (Berdot,et al., 2012). Such errors may be associated with healthcare professionals' practices or techniques, products or drugs and systems, including prescription, miscommunication, labeling, packaging and nomenclature, assembling, distributing and administration (Lavan, et al., 2016).

Global healthcare systems are facing many challenges, with medication administration errors being one of the most serious (Rutledge, Retrosi & Ostrowski, 2018). MAEs are associated with an increased risk of patient mortality and morbidity (Almutary & Lewis, 2012; Hammoudi, Ismaile & Abu Yahya, 2018). In recent years, MAEs have become a significant burden on healthcare systems, particularly in terms of patient re-hospitalization and the associated impact on quality of care, as well as adverse complications for patients as a result of longer hospitalizations (Lee, 2017).

There are several reasons that lead to MAEs in the health care system, incorporating personal factors like lack of knowledge, administrative factors, and environmental factors. It is commonly known that hospitals have two drug dispensing systems. The first is a stock-based system in which stock is preserved in the wards and the nurse administer drugs for each patient based on orders of the physicians,

preparing and administering them. This system is linked to an increased rate of MEs. The unit-dose dispensing system is the second system; drugs are administered in quantities that meet the requirements of each individual patient for only 24 hours. This system is accompanying with a lower incidence of ME. For most drugs, the first system of dispensing medication was adopted in the Palestinian governmental hospital, which makes nurses responsible for dispensing, preparing, and administering medication to patients (Al Adham & Abu Hamad, 2011). Combination of factors, including a heavy workload and a lack of training and knowledge, contribute to MAEs.

Non-supportive administrators may have a negative impact on nurses' performance, resulting in a lack of reporting errors in the unit (Alduais et al., 2014; Soydemir et al., 2017). Another significant impediment to nurses reporting MAEs is the fear of disciplinary action (Bahadori et al., 2013). Fear of legal action, which could result in nurses being fired, is linked to this aversion to disciplinary action (Bayazidi, Zarezadeh, Zamanzadeh & Parvan, 2012; Tabatabaee, Kalhor, Nejatzadegan, Kohpeima Jahromi & Sharifi, 2014). According to Hammoudi et al. (2018), understanding these barriers can help to improve health care quality and patient safety. The analysis of MAE reports enables management to develop strategic plans to prevent future errors and to improve communication lines among nursing managers and nurses (Mostafaei et al., 2014).

According to Rutledge et al. (2018), between 11 and 48% of nurses in the United States alone fail to report medication errors due to barriers such as individual apprehension, culture, and a lack of knowledge. Furthermore, 48% of nurses in the

United Kingdom would account for a medication error made by a colleague, and 40% would report it themselves (Haw et al., 2014). MAEs are the second most commonly reported incident type in hospitals in Australia, accounting for approximately 20% of all reported incidents (Almutary & Lewis, 2012). On a global scale, Lee (2017) states that 19% of Korean nurses would never report medication errors, while another 20% would report incidents only to the physician and not to the nurse manager. Besides that, Lee (2017) contends that, in general, reporting rates in Korea were inadequate, with a scale of less than 29%. Furthermore, there is no clear definition of errors, which reduces the likelihood of reporting. According to Hammoudi et al. (2018), in the case of Saudi Arabia, more than 58% of nurses confirmed that less than 20% of medication errors were reported. Alduais et al. (2014) investigated the barriers to medication error reporting and discovered that 58% of nurses reported having a comprehensive system in place for reporting medication errors, while 28% reported a lack of a favorable system. Yung et al. (2016), on the other hand, investigated the perceived barriers to medical error reporting and discovered that 65% of nurses had no prior experience reporting medication errors. Aside from that, their study emphasizes that 83.3% of all nurses who report medical errors do not make any effort to report near-miss errors.

As a result, in health care settings, reporting MAEs is regarded as a critical aspect of improving patient care. Reporting errors in a timely and efficient manner enables healthcare providers to develop strategies to prevent the errors from occurring again (Haw, Stubbs & Dickens, 2014). Nurses have an essential role in patient safety during and after administering the medication. In fact, nurses are frequently regarded as the first line of defense against MAEs (Svitlica, Simin, & Milutinovi, 2017). Healthcare institutions in Palestine currently lack adequate MAE reporting strategies and protocols.

1.2 Problem Statement

MAEs can harshly deal patients' safety. For example, Haw et al. (2014) estimate that MAEs are responsible for approximately 7000 deaths in the United States annually. Furthermore, recent studies present evidence that not reporting MAEs leads to a decrease in the overall quality of care provided in clinical settings (Soydemir, Seren Intepeler & Mert 2017). Reporting of MAEs is thus central to the providing of quality health care. Unreported MAEs can have significant impacts on quality care, as a report can help determine the cause of MAEs and minimize the chance of similar errors occurring in future (Sajjad, Gowani, Kazmi & Mansoor, 2017). Given that nurses play a critical role in the medication administration process in health care, with daily duties invariably involving the administration of medication to patients, their potential role in addressing the problem of MAEs is of considerable interest (Alduais, Mogali, Al Shabrain, Al Enazi & Al-awad, 2014).

To report any medical error in Palestine, an incidence report (IR) form is available. It is rarely used, and nurses usually attempt to escape filling it out unless a serious case of medical error has occurred. When it comes to report an error many factors prevent nurses from reporting ME, they could be due to lack of knowledge about the MAE in general, like when the nurse doesn't know the exact definition of the MAE, or when it should reported, or due to fear from managers or peers, and could be to the personal judgment of the nurse for the ME he committed to be minor and doesn't deserve to be reported (Gladstone, 1995; Unver Tastan & Akbayrak, 2012). There is a lack of studies on the reporting of MAEs by nurses in Palestinian hospitals. As a result, there is an obvious need to explore the causes and barriers associated with this issue.

1.3 Significance of the Study

In recent years, several studies have focused on exploring and understanding the barriers to reporting MAEs (Hammoudi et al., 2018). Nevertheless, there is a lack of studies which pinpoint the barriers to reporting MAEs among nurses in Palestine. It should be noted that reporting prescription errors and near misses helps to achieve a continuum of quality healthcare. Patient safety is a primary criterion for assessing the quality of care in the healthcare system, and due to the close association between MAEs and patient safety, a better understanding of MAEs and their reporting in Palestine is critical. Adverse events will be reduced and the overall quality of health care will improve by ensuring patient safety during hospitalization (Ahmed et al., 2019). This study is to evaluate the impact and role of MAE reporting systems in Palestinian hospitals, as well as how these systems may restrict the understanding of the incidence and extent of MAEs. Mostafaei et al. (2014) suggest that under-reporting of MAEs among nurses may, in part, be due to the lack of adequate reporting systems in hospitals. As nurses face a "disciplinary culture," the necessity for supportive systems that aid nurses in reporting any prescription errors is critical in the healthcare system. Unsupportive administrators could leak to a negative impact on nurses' performance, which can lead to a lack of reporting errors in the unit (Alduais et al., 2014; Soydemir et al., 2017).

The study will offer significant information for stakeholders to take suitable measures concerning the quality and safety of the practices. The findings of this study will be important as a reference for the researcher and a source of information for policymakers as well as nurses' providers for appropriate interventions to prevent medication errors in practice.

1.4 Purpose of the Study

This study aims to assess nurses' perceptions towards the reasons for medication administration errors and barriers to reporting in the North West Bank governmental hospitals.

1.5 Research Questions

The research questions for this study will be:

1. What are nurses' perceptions of the reasons of the medication errors in the North West Bank governmental hospitals?
2. What are nurses' perceptions of the barriers of reporting the medication errors in the North West Bank governmental hospitals?
3. Are there significant differences between the reasons of medication errors and selected demographic characteristics of the nurses?
4. Are there significant differences between perceived barriers of nurses' reporting of medication errors in hospital settings and selected demographic characteristics of the nurses?

1.6 Variables of the Study

Dependent variables: reasons for MAEs and the barriers of MAEs reporting.

Independent variables: demographic characteristics such as gender, age, job position**,** educational level, marital status.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter presented the studies about the main reasons of medication errors and barriers of reporting in the hospitals: Nursing Perspective.

2.2 Previous studies

2.2.1 Reasons for Medication Administration Errors

The literature indicates that the medication administration process is complex. It also implies that minimizing interruptions to the administration process between the nurse and the patient is an effective way to reduce certain types of errors. It has been shown that interruptions to the medication administration activity could affect the number of errors made by nurses (Murphy, 2012). Changing administrative processes to avoid interruptions completely has also reduced errors (Nguyen et al., 2010; Relihan et al., 2010).

There is evidence of nurses' by-passing processes which interfere with the efficient flow of work (Halbesleben et al., 2010). This was due to a lack of information exchange and the time required to repeat tasks to avoid errors. As a result of these actions, new risks to patient safety have been identified. In a study that used a critical incident technique, 2344 medication administration events were observed in a children‘s hospital and errors were reported in 36.5 percent of them (Ozkan, Kocaman et al., 2011). The types of errors were mainly late administration of medication, caused by workload and interruptions (Ozkan, Kocaman et al., 2011). Workload and

interruption as a cause of medication administration errors is also found in other studies (Getnet & Bifftu, 2017). A study which looked at the accuracy of auditory perception when discussing medications (Williams & Bell, 2015), found different factors affected accuracy, including background noise and familiarity with medication.

In a cross-sectional study conducted by Lee (2017) to identify differences in what nurses consider medication administration errors. The study included 467 nurses from tertiary and general hospitals in South Korea. Regardless of hospital type, the rate of incident reporting was very low, ranging from 6.3 percent to 29.9 percent. Korean nurses were more likely than American nurses to report an error to a physician instead of filing an incident report. Fear of the negative outcomes of reporting the error and following legal action was the primary reason for not reporting medication errors.

Also, a quantitative descriptive study was conducted by Ayorinde & Alabi (2019) to assess the nurses' perception of the causes of medication admiration errors in Nigerian hospitals on three hundred nurses. A self-administered questionnaire was used to obtain the information. According to the findings, nurses have a good understanding and perception of medication administration errors. Medication administration errors are caused by the confusion of drugs with different names, as well as an increased patient-to-nurse staffing ratio.

Furthermore, a recent descriptive study was conducted on 206 nurses working in hospitals in Ahvaz to assess the barriers to error reporting from the nurses' perspectives in Ahvaz educational hospitals. Results revealed that failure to error

reporting included educational, attitudinal, process, structural, and managerial factors (Rahsepar et al., 2021).

2.2.2 Barriers to Medication Administration Errors Reporting

Nurses must have clinical skills, medical knowledge about the patient, knowledge about medication mechanisms and adverse reactions, and basic treatment protocols to handle medication complications in order to implement successful medication therapy (Pazokian & Zagheri, 2014). Prescribers, who include nurses, are discouraged by the complexity and frequency of order changes and the number of policies and procedures that they must learn continuously, also discouraged by their inability to know everything about the variety of dosages of medication they administer and technologies (Garret & Grag, 2005).

Medical errors and adverse events are identified primarily through incident reports. Reporting incidents assumes that a person is aware of a medical error when it occurs. Taylor et al. (2004) contend that most staff who take time to report events rarely receive feedback; thus, they may not see their efforts resulting in noticeable improvement, which is a disincentive for reporting subsequent events.

Mostafaei et al. (2014) conducted a cross-sectional study in Iran to identify challenges in the MAE reporting process; the findings showed that such reporting consumes a significant portion of nurses' time during their daily duty, which affects their other nursing care tasks. The researchers also acknowledge that administrative factors represent a significant reason for nurses in Iran to hesitate in reporting MAEs.

Similarly, Hammoudi et al. (2018) found that error reporting systems in Saudi Arabia were insufficiently developed and largely ignored by nursing administrators, and that this was a possible cause of under-reporting by nurses. The researchers also found that one of the primary causes of MAEs, as well as subsequent under-reporting, is failure of communication between doctors and nurses. The study suggests that poor communication channels frequently lead to MAEs and that this is largely due to over one third of medication orders being issued verbally rather than in writing.

Also, a cross-sectional study was conducted by Aboshaiqah (2013) among 307 nurses assigned to various service units aimed to assess why medication administration errors are not reported as perceived by nurses in a large government-owned tertiary hospital in Saudi Arabia. Individual and system issues were identified as the top two apparent reasons why medication delivery errors were not reported.

In addition, Samsiah et al. (2016) conducted a qualitative study using in-depth interviews of 31 healthcare practitioners from nine publicly funded primary care clinics in three states in peninsular Malaysia. According to the findings, the procedure of documenting MAEs is time-consuming and complex, which might lead to errors. The study also discovered that inadequate communication channels about MAEs between nurses and administrators have contributed to a decline in reporting such errors, as nurses have not received feedback on previously reported MAEs and, as a result, are not encouraged to submit additional MAEs. The overall work culture represents a serious contributing factor in the under-reporting of MAEs in a Malaysian healthcare setting. In this study, 69% of nurses feared being punished if they submitted a MAE report to the nursing administration.

Another cross-sectional study was conducted in Saudi Arabia to assess the chief barriers to reporting medication administration errors (MAEs) among nurses. The study included 300 nurses from King Fahad Medical City (KFMC) in the Riyadh Region of Saudi Arabia. The results revealed that the chief perceived barrier to MAE reporting was administrative response, followed by barriers of fear. It has been discovered that nurses with bachelor's degrees and non-Saudis perceive more barriers to reporting MAE. Other demographic factors, such as age, gender, experience, and participation in training and orientation programs are not significantly related to the overall barriers to reporting MAE (Aljasser & Sasidhar, 2016).

A cross study to assess the nurses' failure to report medication errors in private hospitals. The study included 97 nurses from a 180-bed private hospital in Mashhad City, Iran. According to the findings, the three key causes contributing to medication error under reporting were highlighted as fear of legal participation, fear of losing a job, and fear of the repercussions of error. Age, marital status, department, work experience, and shift work were discovered to have a substantial impact in reporting prescription errors (Tabatabaee et al., 2014).

Haw et al. (2014) investigated the barriers to reporting near-misses and medication errors encountered by mental health nurses in a UK setting. The findings demonstrated that variables such as lack of knowledge, fear of punishment, and workload burden were important contributors to MAE under-reporting. The study also found an association between a lack of reporting of MAEs and nurses' attitudes toward reporting them, with some nurses preferring to explain errors rather than disclose them.

Besides that, a cross-sectional study was conducted on 253 nurses working in hospitals in Turkey. Results revealed that 23.5% reported their medication administration errors. The most common perceived barriers among nurses are "heavy work-load" (81.4%), "fear of being accused by a supervisor" (80.6%), and "management believes that medication administration errors are caused by individual factors rather than system factors" (80.2%). (Güneş, Baran, & Ceylan, 2020).

Fear of punishment and negative work cultures emerged as key factors across the literature in relation to the under-reporting of MAEs. A Taiwanese study conducted by Yung et al. (2016) found that 67% of nurses agreed on the importance of reporting MAEs. However, the nurses' attitudes towards reporting errors were related to the severity of the errors. It was also found to be influenced by the fear of being blamed by other nurses and administrators. In addition, the study shows that keeping medical staff updated on MAE reporting procedures and policies can have a positive effect on rates of reporting.

The acknowledgment of MAEs involves the understanding of nurses' perceptions and attitudes towards those errors. According to the findings of the study, Serbian nurses are unaware of drug administration policy. The findings revealed that because of a shortage of educational resources, Serbian nurses had poor knowledge of the MAEs policy. The importance of training and education in relation to MAEs is further highlighted in various other studies. Holmström et al. (2015) found that failure to identify the category of medication error was usually due to insufficient training and education of nurses.

Summary

This review discussed the main issues relevant to MAE reporting among nurses, including the reasons and general barriers to reporting, professional and training issues, and personal and administrative factors. The primary challenges to reporting MAEs were a lack of knowledge regarding errors, a complex process of reporting MAEs across several regions, a fear of punishment, and inadequate training in reporting MAEs. Administrative activities geared toward nurses, such as focusing on nurses' errors rather than system problems, were also linked to nurses failing to report MAEs. Furthermore, personal characteristics of nurses, such as communication abilities between nurses and other health care providers, were found. The study's findings emphasize the critical difficulties surrounding MAE reporting among nurses.

There is a clear need to conduct research into this issue in the Palestinian context, as this represents a significant gap in the current literature. Given the above-mentioned importance and clinical significance of MAEs, coupled with the lack of previous research into MAE reporting in Palestine, there is clear justification for further study in this area. It is expected that such research will contribute to a clearer understanding of MAEs in Palestine, and eventually assist practitioners and policymakers to develop a comprehensive approach to reducing such errors and mitigating their negative effects on patients

CHAPTER THREE

METHODOLOGY

Introduction

The methodology was presented in the following sections; study design, setting, population and sample, study instruments, data collection methods, data analysis, and ethical considerations.

3.1 Study Design

This study is a cross-sectional, descriptive to assess nurses' perceptions towards the reasons for medication administration errors and barriers to reporting in the North West Bank governmental hospitals. This was selected because it allowed for comparisons between various populations groupings at the same time. Data can be gathered without interfering with the study environment. The cross-sectional research design makes it easier to collect reliable and accurate data that clearly describes the barriers to medication errors reporting in government hospitals..

3.2 Study Setting

The study was conducted on nurses who work in the governmental hospitals in the North West Bank districts (Jenin, Tubas, Talkarm, Qalqeliah, Nablus, and Salfeet). The study was conducted from December 2021 to July 2022.

3.3 Study population and Sample

The targeted participants of the study were all nurses working in the North West Bank governmental hospitals (Khaleel Sulaiman, Thabet Thabet, Rafedia, Al-Watani,

Tubas/ Turkey, Darweesh Nazzal, and Yaser Arafat hospitals). Non-probability convenient sampling was used to obtain the desired number of participants.

According to the nursing department in the Palestinian Ministry of Health, the total number of nurses who work in governmental hospitals in the northern region is approximately 900.

The sample size was calculated using the Raosoft program with a confidence level of 95%, margin of error of 5%, and a response rate of 50%. A total sample of 270 participants was needed to conduct this study. An additional thirty participants were added to overcome participants' incomplete questionnaires and dropouts. So, the final sample size was 300 participants.

3.4 Inclusion Criteria

- Nurses who have been at least one year of experience in nursing practice in the study setting.
- Nurses who approved to participate in the study.
- Nurses who provide direct care to patient and who routinely administer medications to patients.

3.5 Exclusion Criteria

- Nurses who work in the outpatient department, operation room, and kidney dialysis unit were excluded because those areas use different drug administration systems and seldom commit medication errors.
- Nurse Managers, clinical nurse specialists, and nurse educators were excluded from this study.

3.6 Study Instrument

For the goal of the study, a self-administered instrument composed of three parts was constructed by researcher based on critical reviewing for the literature.

1. The first part of the study's questionnaire contained 9 demographic and background questions developed by the researcher that asked the participants to circle the appropriate answer regarding their gender, age, marital status, level of education, years of experience, working department, job position, frequency of making medication administration error, and the way of reporting the errors
2. The second part of the questionnaire was about nurses' perceptions of reasons to MAEs (10 items) using a five-point Likert-type scale, where responses range from 5 = strongly agree to 1 = strongly disagree.
3. The third part focused on potential barriers to reporting medication administration errors using a five-point Likert-type scale, where responses range from 5 = strongly agree to 1 = strongly disagree. This part divided to three sections: personal factors (6 items), administration factors (4 items), and reporting processes factors (4 items).

The instruments have been translated into Arabic by an English-skilled nursing lecturer, who was Arabic as his first language. To determine conceptual equivalency, this copy was translated back into English by a bilingual academic lecturer who was unfamiliar with the original scale. The translated version was compared to the original.

3.7 Validity and Reliability

The instrument's validity was proven by delivering the questionnaire to three professionals with experience in clinical and academic nursing. These experts assessed

the full questionnaire and provided feedback and ideas on its content. On the basis of the feedback of the experts, certain changes were made to the questionnaire. These three specialists assisted with word selection and assessed each section. They all stated that the questionnaire's content was clear and unambiguous.

Reliability of the instrument also was established via piloting the tool to examine whether the three parts which were: the demographics characteristics, nurses' perceptions of reasons to report medication administration errors and the barriers to report medication administration error items in the questionnaire had internal consistency. The researcher recruited 30 nurses who completed the questionnaire. The Cronbach's alpha coefficient of reasons of medication administration errors was 0.76 and berries of medication administration errors was 0.80, indicating that the internal consistency reliability of the scales was acceptable.

3.8 Pilot Study

A pilot study was conducted on 30 participants. They were provided with a clear explanation of the study and its objectives. The pilot study was done to ask them about the difficulties, the average time to fill out the questionnaire, and their opinion of the questionnaire. The participants consider it clear, without comments, and the time ranges between 10-15 minutes to complete the questionnaire. The participants were excluded from the actual study.

3.9 Data Collection

After obtaining permission to conduct the study from Arab American University and the Ministry of Health, the researcher visited the hospitals and met the head of nurses and department head nurses. The researcher explained to them the objectives of

the study and asked them to prepare a list of names of nurses and the schedule duty to meet them. Also, the researcher explained the objectives of the study to the nurses. The nurse who agreed to participate assigned the informed consent and then completed the questionnaire.

3.10 Ethical Considerations

Ethical approval was obtained from Arab American University and the Palestinian Ministry of Health. A consent form was provided for every participant prior to the study. Voluntary participation was explained. No names were mentioned or any personal information about the participants. All data was kept confidential and was used for study purposes only. No harm or consequences due to participation refusal, such as care quality or privileges. A clear explanation was given to each participant about the study objectives and tool. Enough time was given for questions.

3.11 Data Analysis

Data were analyzed using the Statistical Package of Social Science (SPSS, Version 23; SPSS Inc., Chicago, Illinois). Descriptive statistics for all parameters included in this analysis were performed. These analyzes included distributions of frequencies, means, and standard deviations. Analysis of t or ANOVA test also were performed to verify if there is a significant difference between reasons and berries with demographic characteristics.

CHAPTER FOUR

RESULTS

Introduction

This chapter deals with the data collected for analysis. The statistical method allowed the investigator to deduce, analyze, coordinate, measure, evaluate, and convey the numerical information. The aim of data analysis is to provide answers to questions about the study. The data analysis strategy comes directly from the question, the design of the data collection process, and the level of measurement of the data. This chapter edits, tabulates, analyzes, and interprets the data collected.

This chapter expresses the findings concerning assessing nurses' perceptions towards the reasons for medication administration errors and barriers to reporting in the North West Bank governmental hospitals. Statistical analyses were directed to explore three research questions.

1. What are nurses' perceptions of the reasons of the medication errors in the North West Bank governmental hospitals?
2. What are nurses' perceptions of the barriers to reporting medication errors in the North West Bank governmental hospitals?
3. Are there significant differences between the reasons for medication errors and selected demographic characteristics of the nurses?
4. Are there significant differences between perceived barriers to nurses' reporting of medication errors in hospital settings and selected demographic characteristics of the nurses?

4.1 Reliability

The Cronbach's alpha coefficient of reasons for medication administration errors was 0.78 and the berries of medication administration errors was 082, indicating that the internal consistency reliability of the scales was relatively high.

4.2 Response Rate

The nurses in the current study are composed of all nurses working in the governmental hospitals in the West Bank / Palestine. Two hundred and eighty-five out of 300 questionnaires (95% response rate) were completed and returned by the nurses.

From an organizational point of view, the response rate obtained for this research was very good; as such, the findings should include more reflective details about the nursing population.

4.3 Participants' Characteristics

The findings revealed that 135 (47.4%) of the participants' ages were between 20 and 29 years old. With regard to gender, the majority of 198(69.5%) were males, and 183(64.2%) were married. Also, the majority of the participants 201 (70.5%) have bachelor's degrees, and 204 (71.6%) are staff nurses. Approximately 41% of them have 5–9 years' experience. Only 15.4% of the participants reported that they had made a medication administration error and 27.3% reported the medication errors, as seen in table (4-1).

Table 4-1: Demographic Characteristics of the Participants (N=285)

Characteristics			N (%)
Age	"20-29 years"	135	47.4
	30-39 years	87	30.5
	40-49 years	54	18.9
	50 years and above	9	3.2
Gender	Male	198	69.5
	Female	87	30.5
Marital status	single	99	34.7
	married	183	64.2
	other	3	1.1
Educational level	Diploma	63	22.1
	Bachelor	201	70.5
	More bachelor	21	7.4
Job position	practical nurse	69	24.2
	staff nurse	204	71.6
	head nurse	12	4.2
Experience	"1-4 years"	81	28.4
	":5-9 years"	117	41.1
	"10-14 years"	63	22.1
	"15-19 years"	18	6.3
	"20 years and above"	6	2.1
"Have you ever made a medication administration error?"	Yes	44	15.4
	No	241	84.6
Have you ever reported any medications errors?	Yes	12	27.3
	No	32	72.7

M = Mean, SD = standard deviation

The analysis revealed that the main factors of MAEs found in this study were Heavy workload (4.8±0.6); High patient to nurse ratio on wards/units (4.7±0.6); and Inadequate knowledge about the drug (4.7±0.7) as seen in (table 4-2).

Table 4-2: Perception of Reasons of Medication Administration Errors among Nurses (N=285)

		M	(SD)
1	High workload	4.7895	.56096
2	Inadequate knowledge about the drug	4.6947	.65122
3	"High patient to nurse ratio on wards/units"	4.7263	.64090
4	"Drugs which look alike or have similar sounding names"	4.1895	.99959

5	Lack of supervision for inexperienced staff	4.3053	1.17252
6	Lack of medication skills competence by nurses	4.4632	1.06623
7	Lack of training	4.4316	1.10364
8	lack of instructions and policies in preparation and administering medication	4.4632	1.06623
9	Distract	4.0316	1.08237
10	Poor handwriting by doctor	3.7053	1.12469
	Total	4.4	0.46

The analysis identified several personal factors that might influence the reporting of MAEs. The main barriers were identified as follows: I would be discriminated against by co-workers (4.3±0.8); I would face repercussions (4.2±1.0); I would be viewed as incompetent by colleagues (4.17±0.8), and both other employees in the hospital would become aware of my medication error and patient or family may develop a negative attitude towards me, with a loss of confidence in my abilities (3.9±1.0).

Also, the analysis identified several administrative factors that might influence the reporting of MAEs. The main barriers were identified as follows: Nursing administration believe that on medication errors are a measure of the quality of nursing care provided (4.1±0.9); I would receive negative feedback from nursing administration if I were to report a medication error/s (3.9±1.0); The response toward staff by nursing administration would not match the severity of the medication error (3.6±1.0), and Nursing administration would focus on the individual nurse as the primary cause of the medication error rather than examining the system as a potential cause or contributor to the medication error(3.3±1.2).

Further, the analysis identified Reporting Processes factors that might influence the reporting of MAEs. The main barriers were identified as follows: Incident reporting wastes too much time (e.g. filling out report, contacting the physician) (4.0±0.9); Incident report forms are too complicated (4.0±0.9); would not know how to report a

medication error if it occurred (3.9±0.9); and do you have any other reason that may influence your decision to report a medication error (3.9±.04) as seen in (Table 4-3)

Table 4-3: Perception of Barriers of Medication Administration Errors Reporting Among Nurses (N=285)

	Item	M	(SD)
1	**Personal Factors**	3.97(0.6)	
	"I would be viewed as incompetent by colleagues"	4.0947	.84845
2	"I would be discriminated against by co-workers"	4.2737	.84055
3	"Other employees in the hospital would become aware of my medication error".	3.9474	1.20183
4	"It is likely I would face repercussions"	4.2105	1.01636
5	"It is possible I may face lawsuit or legal action (patient or family's suing me)"	3.3474	1.22275
	Item	**M**	**(SD)**
6	"Patient or family's may develop a negative attitude toward me with a loss of confidence in my abilities"	3.9474	.97902
	Administration Factors	3.74(0.6)	
7	"I would receive negative feedback from nursing administration if I were to report a medication error/s"	3.8737	.95581
8	"Nursing administration believe that on medication errors are a measure of the quality of nursing care provided"	4.0842	.88010
9	"Nursing administration would focus on the individual nurse as the primary cause of the medication error rather than examining the system as a potential cause or contributor to the medication error"	3.3474	1.22275
10	"The response toward staff by nursing administration would not match the severity of the medication error"	3.6421	1.02692
	Reporting Processes Factors	3.95(0.62)	
11	"Incident report forms are too complicated"	3.9895	.94751
12	"Incident reporting wastes too much time (e.g. filling out report, contacting the physician)"	4.0211	.94174
13	"Would not know how to report a medication error if it occurred"	3.90526	.931533
14	"Do you have any other reason that may influence your decision to report a medication error?"	3.8842	1.03662
	Total	3.9401	.47924

One-way ANOVA test and independent t test were used to assess if there are differences between demographic characteristics of the nurses and perception of reasons to MAEs. Demographic characteristics of the nurses in this context involved: nurse's age, gender, level of education, marital status, job position, and experience. The results indicated that nurse's age, marital status, and experience had statistically significant differences with reasons to MAEs scores ($p < 0.05$), as seen in table (4-4).

Table 4-4: The Differences between Reasons of MAEs Score Mean and Demographic Nursing Characteristics (N=285)

Characteristics		N	M(SD)	Statistical test	P. value
Age	"20-29 years"	135	4.3(.55)	13.172	0.001
	"30-39 years"	87	4.6 (.24)		
	"40-49 years"	54	4.3(.33)		
	"50 years and above"	9	4.0(.18)		
Gender	Male	198	4.4(.49)	-1.170	.243
	Female	87	4.4(.37)		
Marital status	single	99	4.3212(.61)	F= 5.128	.006
	married	183	4.4230(.34)		
	other	3	3.7000(.00)		
Educational level	Diploma	63	4.4000(.39960	.166	.847
	Bachelor	201	4.3701(.48312		
	More bachelor	21	4.4143(.33509		
Job title	practical nurse	69	4.4391(.38)	1.338	.264
	staff nurse	204	4.3691(.48)		
	head nurse	12	4.2250(.34)		
Experience	"1-4 years"	81	4.1667(.63992	12.244	.001
	"5-9 years"	117	4.5538(.29023		
	"10-14 years"	63	4.4190(.30578		
	"15-19 years"	18	4.2000(.30293		
	"20 years and above"	6	4.0000(.21909		

One-way ANOVA test and independent t test were used to assess if there are differences between demographic characteristics of the nurses and perception of barriers to report of MAEs. Demographic characteristics of the nurses in this context involved:

nurse's age, gender, level of education, marital status, job position, and experience. The results indicated that nurse's age, level of education, job position, and experience had statistically significant differences with reasons to MAEs scores ($p < 0.05$), as seen in table (4-5).

Table 4-5: The Differences between Barriers to Reporting of MAE Score Mean and Demographic Nursing Characteristics (N=285)

Characteristics		N	M(SD)	Statistical test	P. value
Age	"20-29 years"	135	4.0(.47)	F=11.258	0.001
	"30-39 years"	87	4.0(.42)		
	"40-49 years"	54	3.8((.43)		
	"50 years and above"	9	3.2(.68)		
Gender	Male	198	4.0(.45)	t= 1.766	.078
	Female	87	3.9(.54)		
Marital status	single	99	3.8811(.47)	1.673	.189
	married	183	3.9760(.48)		
	other	3	3.6923(.00)		
Educational level	Diploma	63	4.0403(.35)	8.857	.001
	Bachelor	201	3.9495(.49)		
	More bachelor	21	3.5495(.52)		
Job title	practical nurse	69	4.0067(.34872	4.600	.011
	staff nurse	204	3.9400(.50874		
	head nurse	12	3.5577(.46285		
Experience	"1-4 years"	81	3.8376(.50923	11.985	.001
	"5-9 years"	117	4.1479(.32324		
	"10-14 years"	63	3.7985(.49360		
	"15-19 years"	18	3.7051(.56604		
	"20 years and above"	6	3.4615(.67412		

CHAPTER FIVE

DISCUSSION, RECOMMENDATIONS, AND CONCLUSION

Introduction

In this chapter, discussion, conclusions, and recommendations will be explained. The conclusion will be formulated according to the purpose of the study. The purpose of this study was to assess nurses' perceptions towards the reasons for medication administration errors and barriers to reporting in the North West Bank governmental hospitals.

5.1 Discussion

Medications administration is the final and most important phase in the medication process, and it can affect patients if not done correctly. Recognizing administrative errors is critical for determining early interventions.

5.1.1 Nurses' Perceptions of Reporting MAEs

The current study found that 15.4% of participants have made MAEs in general, and that 27.3% of them reported MAEs in Palestine. These findings are broadly supported in the literature. A study in Saudi Arabia (Almutary & Lewis, 2012) revealed that nurses had no concerns about reporting MAEs. Another study in Taiwan (Yung et al., 2016) identified nurses' positive attitude towards reporting MAEs as long as reporting the errors would enhance further reporting among nurses.

5.1.2 Reasons for MAEs among Nurses

The main factors of MAEs found in this study were heavy workload and being overworked, which was the most prevalent. The studies revealed that it is impossible to

expect nurses to avoid MAEs when they themselves are stressed out and fatigued (Berdot et al., 2012; Rahimi et al., 2015; Tshiamo et al., 2015; Zakharov et al., 2012). Nurses are human beings who require adequate rest to enable safe drug administration. The results were supported by Carlesi et al. (2017), who conducted a study to identify the relationship between the workload of the nursing team and the occurrence of patient safety incidents linked to nursing care in a public hospital in Chile. According to the study findings, the risk of committing an error was increased in all units due to heavy workload. In a similar finding, Johari et al. (2013) indicated in their study that the biggest factor which contributed to medication errors was heavy workload 46(95.8%). However, Cheragi et al. (2013) found that the most common causes were using abbreviations instead of full names of drugs and similar names of drugs. As a result, a lack of pharmacological knowledge was the greatest cause of medication errors.

Another major factor that respondents believed contributed to medication administration errors was high patient-to-nurse staffing ratio. This is similar to the results of previous studies that revealed that errors undertaken during medication administering are primarily associated with performance discrepancies caused by high patient to nurse staffing ratios, causing accidental errors and impaired memory related to excess workload (Gorgich et al., 2016; Mahmood et al., 2011). Simiyu, El-Banna, Fattah, and Omondi (2018) concluded in a similar study that the patient-to-nurse ratio in unit situations is the source of medication administration errors in the hospitals. Also, Ayorindea & Alabib (2019) indicated in their study that an increased patient to nurse staffing ratio constitutes the main contributing factor for the incident of medication administration errors.

Inadequate knowledge about the drug was the third main factor believed by our respondents to contribute to medication administration errors. This finding was supported by systematic reviews conducted in Australia and African hospitals as well as studies conducted in London and Tehran (Alomari et al., 2015; Alqasoumi, 2016; Ehsani et al., 2013; Mekonnen et al., 2018; Nkurunziza et al., 2018). This could be because knowledge serves as a foundation for decision making and implementation, and a lack of understanding leads to bad decision making and poor performance. Lack of familiarity with drugs' generic and brand names, doses, and pharmacological properties can create confusion (Kosari, 2018). Medication administration is a complex method that necessitates extensive intellectual engagement and critical thinking and involves a number of interrelated concerns such as correct dose regime, side effects, and the health presentation of the service user. Inadequate pharmacological knowledge and an inability to transfer that knowledge into clinical practice result in errors during medication administration (Hemingway et al., 2011). To maintain medication administration safety, make good clinical decisions, and perform a professional role in managing drug therapy and reducing adverse effects and common drug errors, nurses need to have good pharmacological knowledge (Wright, 2013).

The study showed significant differences between nurses' perceptions of the reasons for MAEs and demographic characteristics of the nurses, such as marital status, age, and experience of nurses. The results of the current study were supported by the Nkurunziza et al. (2018) study, which found that experience and marital status were significantly associated with factors contributing to MAEs. However, the results of the current study were inconsistent with those of the Cheragi et al. (2013) study, which found that there were no statistically significant relationships between medication errors

and years of working experience or age. There is weak evidence of MAEs being influenced by the age of nurses (Kerari & Innab, 2021).

5.1.3 The Barriers to Reporting MAEs among Nurses

The barriers to reporting MAEs included personal factors, reporting processes, and administrative factors.

5.1.3.1 Personal Factors

The first personal factor identified in the current study was a fear of being discriminated against by colleagues in the event that an RN reported an MAE. A study conducted in Malaysia (Samsiah et al., 2016) identified that nurses had concerns regarding their co-workers and colleagues when nurses reported MAEs, which contributed to an unreliable reporting rate of MAEs. Also, fear of punishment or negative impacts on reputation are common themes in the broader literature, and have been found to influence the reporting of MAEs across cultures (Rutledge et al., 2018; Soydemir et al., 2017).

5.1.3.2 Reporting Process Factors.

One of the barriers identified was that "incident reporting wastes too much time". Other studies have found comparable sentiments expressed by nurses. For example, Rutledge et al. (2018) report that nurses in the United States believe that reporting MAEs is a waste of time and that the process is too long. Interestingly, this suggests that a shorter and quicker reporting process for MAEs might increase reporting rates. Studies in both Saudi Arabia and Iran suggest that nurses find MAE reporting processes far too time-consuming and that they detract from the busy daily working lives of RNs (Hammoudi et al., 2018; Poorolajal et al., 2015).

The second reporting process factor identified by participants was that "incidence report forms are too complicated." This is supported by Lee et al. (2016), who found that Taiwanese nurses found the MAE reporting processes too complex to accurately complete. A study (Bahadori et al., 2013) in Iran suggests that nurses may not have a clear understanding of what constitutes an MAE, which influences the reporting of such. The same study recommends establishing a clear, simple reporting system for MAEs as well as educational sessions for nurses, in order to increase the rate of reporting.

The study showed significant differences between nurses' perception of barriers to reporting to MAEs and demographic characteristics of the nurses, such as age, educational level, job title, and experience of nurses. The study results were supported by Tabatabaee et al. (2014) study, which found that age was found to be significantly influential on reporting medication errors. The study's findings were supported by the findings of Nkurunziza et al. (2018), who discovered that all socio-demographic variables were significantly associated with barriers to self-reporting of MAEs. However, Mohammad et al. (2016) found that age is not significantly related to the barriers to reporting MAE.

5.1.3.3 Administration Factors

The most significant finding relating to administrative factors was: "Nursing administration believes that medication errors are a measure of the quality of nursing care provided". This is reflective of a general belief among RNs that MAEs receive a disproportionate amount of attention from nursing administration. A recent study in Serbia supports this view and suggests that a lack of a standard work culture places undue emphasis on errors and leads to a fear of reporting errors by RNs (Svitlica et al.,

2017). Similar findings have been reported in the United States, where one of nurses' primary concerns is that errors are seen as a reflection of the overall competence of the nurse (Rutledge et al., 2018). Another study (Hammoudi et al., 2018) in Saudi Arabia suggests that hospital administrators' responses to MAEs contribute to a decrease in the reporting rate of MAEs. This is consistent with the results reported in the current study.

The second most significant finding relating to administration factors was: receiving negative feedback from nursing administration. This finding indicates that RNs in Kuwait are fearful of receiving negative feedback from nursing administrators when they report MAEs. In a study conducted in the United Kingdom, RNs felt that they would face disciplinary action from nursing administration if they reported MAEs and that this contributed to a stressful work culture (Haw et al., 2014). Furthermore, Iranian nurses have reported being afraid to report MAEs because nursing administrators would blame the nurse or issue some form of punishment (Tabatabaee et al., 2014). Thus, the findings of the current study regarding the impact of administration factors on reporting MAEs appear to be well supported. A telling response to the survey's open-ended question reveals this fear succinctly: "If I report [an MAE], the administration will punish me."

5.2 Recommendations of the Study

Keeping in view of the results of the current study, the researcher recommends the following recommendations:

- Instructions for reporting MAEs should be set in the most comfortable way.

- Policymakers and hospital administrators must understand the factors that contribute to MAEs in order to develop policies and strategies to address those concerns and construct a safer health care system.
- Regular pharmacology and drug updates for nurses.
- The Administration should emphasize efforts to strengthen MAE reporting and organizational safety culture.
- The administration should formulate and implement strategies to change nurses' perceptions of the threat of reporting MAEs.
- Further research is also required to investigate the MAEs reporting policies of Palestinian hospitals.

5.3 Limitations of the Study

The current study has some limitations. The study relied on a self-reported questionnaire, which could lead to reporting bias due to the respondent's interpretation of the questionnaire or desire to express their experiences.

5.4 Strength of the Study

The response rate was high. This study also marked the first study in West Bank hospitals among nurses.

5.5 Conclusion

MAEs reporting is significant in nursing practice. Nurses, as front-line staff, are well-positioned to detect and report MAEs. MAEs reporting is a convenient method for recognizing potential system flaws that may cause the possibility of future errors. Consequently, MAE reporting can assist in finding and addressing prospective and actual safety issues, which can subsequently serve to avoid future errors. This study also

examined reasons for MAEs that require to be taken into account, such as high workload, high patient to nurse ratio on wards or units, and inadequate knowledge about the drug.

It also discussed the barriers to reporting MAEs among nurses in North West Bank hospitals. Personal factors, administrative factors, and the reporting system process comprise this dimension. The key factors that were considered as the main barriers to reporting MAEs among nurses in Palestine in this study were personal factors and the reporting system process.

Accordingly, the researchers recommended that healthcare organization leaders and policymakers review their MAE reporting policies and plan toward shifting the attitude and the culture of reporting MAEs and punishment steps to develop a non-blaming, non-punitive, and non-fearful culture that supports nurses in reporting their MAEs and tries to enhance the organization's safety culture. Furthermore, this study emphasized the significance of developing MAE reporting methods that are confidential, anonymous, simple, and effective.

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APPENDIX

QUESTIONNAIRE

The main reasons of medication errors and barriers of reporting in the North West bank governmental hospitals: Nursing Perspective

Section One: –Demographics and background characteristics

1- Age 20-29 years 30 -39 Years

40 -49 years 50 years and above

2- Gender a) Male b) Female

3- Marital status single married other

4- Educational level a) Diploma b) Bachelor c) master & more

5- Job position practical nurse staff nurse head nurse

6- Experience 1-4 years 5-9 years 10-14 years

15 -20 years more than 20 years

7- Working department medical surgical emergency room ICU

Maternity and gynaecology neonate orthopaedic other

8. Have you ever made a medication administration error? yes no
9. Have you ever reported any medications errors? yes no

Section Two: Reasons for Medication Administration Errors

		Strongly agree	agree	Neutral	disagree	Strongly disagree
1	High workload					
2	High levels of patient need					
3	High patient to nurse ratio on wards/units					
4	Drugs which look alike or have similar sounding names					
5	Lack of supervision for inexperienced staff					
6	Lack of medication skills competence by nurses					
7	Lack of training					
8	lack of instructions and policies in preparation and administering medication					
9	Distract					
10	Poor handwriting by doctor					

Section Three: Barriers for Medication Administration Errors Reporting

		Strongly agree	agree	Neutral	disagree	Strongly disagree
	Personal Factors					
1	I would be viewed as incompetent by colleagues					
2	I would be discriminated against by co-workers					
3	Other employees in the hospital would become aware of my medication error.					
4	It is likely I would face repercussions					
5	It is possible I may face lawsuit or legal action (patient or family's suing me)					
6	Patient or family's may develop a negative attitude toward me with a loss of confidence in my abilities					
	Administration Factors					
7	I would receive negative feedback from nursing administration if I were to report a medication error/s					
8	Nursing administration believe that on medication errors are a measure					

	of the quality of nursing care provided					
9	Nursing administration would focus on the individual nurse as the primary cause of the medication error rather than examining the system as a potential cause or contributor to the medication error					
10	The response toward staff by nursing administration would not match the severity of the medication error					
	Reporting Processes Factors					
11	Incident report forms are too complicated					
12	Incident reporting wastes too much time (e.g. filling out report, contacting the physician)					
13	Would not know how to report a medication error if it occurred					
14	Do you have any other reason that may influence your decision to report a medication error?					

الملخص

خلفية الدراسة: تحدث أخطاء إدارة الدواء في مراحل مختلفة من عملية استخدام الدواء، بما في ذلك الوصف والتوفير والإعطاء. قد ترتبط مثل هذه الأخطاء بممارسات أو تقنيات أو منتجات أو عقاقير وأنظمة أخصائي الرعاية الصحية ، بما في ذلك الوصفات الطبية وسوء التواصل ووضع العلامات والتعبئة والتسميات والتجميع والتوزيع والإعطاء.

الهدف: تهدف هذه الدراسة إلى تقييم تصورات الممرضات حول أسباب أخطاء إدارة الدواء والعوائق التي تحول دون الإبلاغ في المستشفيات الحكومية في شمال الضفة الغربية.

الطرق: دراسة وصفية مقطعية. شارك في الدراسة مائتان وثمانية وخمسة ممرضات من المستشفيات الحكومية في شمال الضفة الغربية. تم تقييم أسباب أخطاء إدارة الدواء ومعيقات الإبلاغ من خلال الاستبيان الذي وضعه الباحثون.

النتائج: بلغ معدل الاستجابة للدراسة 95٪، و15.4٪ من المشاركين قد قاموا بعمل أخطاء في إعطاء الأدوية بشكل عام، وأن 27.3٪ منهم أفادوا بأن لديهم أخطاء في إعطاء الأدوية في فلسطين. كانت الأسباب الرئيسية لأخطاء إعطاء الدواء هي عبء العمل المرتفع (4.79 ± 0.56)، وارتفاع نسبة أعدد المرضى إلى الممرضات في الأقسام/ الوحدات (4.7263 ± 0.64)، وعدم كفاية المعرفة بالدواء (4.69 ± 0.65). كما أن العوامل التي اعتبرت العوائق الرئيسية للإبلاغ عن أخطاء إعطاء الأدوية في هذه الدراسة هي العوامل الشخصية (3.97 ± 0.6)، وعملية نظام التقارير (3.95 ± 0.62)، والعوامل الإدارية (3.74 ± 0.6).

الاستنتاج: كانت الأسباب الرئيسية لأخطاء إعطاء الأدوية هي عبء العمل المرتفع، وارتفاع نسبة المرضى إلى الممرضات في الأقسام/ الوحدات، وعدم كفاية المعرفة بالدواء. ومع ذلك، فإن العوامل التي اعتبرت العوائق الرئيسية للإبلاغ عن أخطاء إعطاء الأدوية في هذه الدراسة هي العوامل الشخصية، وعملية نظام الإبلاغ، والعوامل الإدارية.

الكلمات المفتاحية: إبلاغ ، معيقات ، أخطاء إعطاء الأدوية، ممرضة، السلامة.