Arab American University

Faculty of Graduate Studies

Knowledge, Attitudes, and Practices of Nurses about Medication Errors at Arabi Group Hospitals: A Cross-sectional Study

By

Israa Badran

Supervisor

Dr. Ayesha AlRifai

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Thesis Approval

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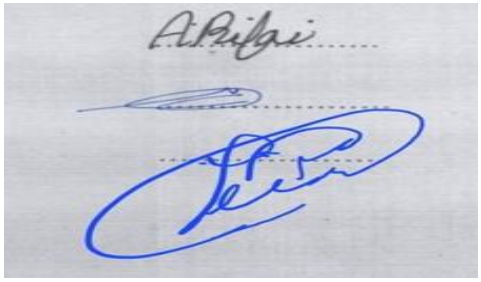
This thesis was defended successfully on 25.2.2025 and approved by:

Committee members	Signature
1. Dr. Ayesha AlRifai: Supervisor	
2. Dr. Yousef Al-Mimi: Internal Examiner	
3. Dr. Farid Ghrayeb: External Examiner	

Declaration

I, the undersigned, confirm the submission of the thesis titled:

Knowledge, Attitudes, and Practices of Nurses about Medication Errors at Arabi Group Hospitals: A Cross-sectional Study

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

The name of the student: Israa Badran

Student ID: 202020402

Signature**:** : Israa Badran

Date: 17.6.2025

Dedication

I want to thank everyone who has helped so much from the bottom of my heart, and guided me in my pursuit of scientific knowledge. To those who have mentored and opened doors for me, I am deeply grateful.

Really, I'm grateful to everyone who contributes to the establishment of educational institutions or extends a helping hand to students, whether it be through building schools, universities, or providing essential resources such as school bags. Your contributions have played a vital role in creating opportunities for young learners and fostering their educational development.

To every mother, father, sister, and brother who wholeheartedly support and encourage their children to strive for success, excellence, and creativity, I extend my sincere gratitude. Your unwavering dedication has been instrumental in nurturing their growth and enabling them to reach their full potential.

I want to express my profound appreciation to my parents, my partner, friends, coworkers, managers and teachers. Their unwavering support, love, and guidance have been pillars of strength throughout my journey. Their belief in me has fueled my determination to succeed.

Finally, I would like to extend my thanks to the Arab Hospitals Group for its initiative and its staff, for their support and facilitation of the research mission. I extend my appreciation to everyone mentioned here, as well as to all others who have played a part in my journey. Your support and contributions have shaped my path.

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Finally, I owe a special debt of gratitude to my family, whose love, patience, and constant support have been the foundation of my success. Without their sacrifices and encouragement, this achievement would not have been possible. I am deeply thankful and forever indebted to all those who contributed in some way to the completion of this thesis.

Abstract

Introduction: Medication errors are the most frequent type of medical mistakes, occurring when medications are either incorrectly prescribed or misused by patients under the supervision of a healthcare provider. Evaluating the factors that contribute to the underreporting of medication errors is essential for identifying solutions to prevent their recurrence and reduce the negative impact on patients, healthcare professionals, healthcare facilities, and the public.

Study Aim: This study aimed to determine knowledge, attitude and practices towards medication errors at Arabi Group Hospitals, Palestine.

Methods: A descriptive cross-sectional survey design was employed to assess the knowledge, attitudes, and practices regarding medication errors at Arabi Group Hospitals in Palestine. The study was conducted among healthcare providers, including 600 nurses working at these hospitals. A structured, pre-tested questionnaire was conveniently distributed to 306 participants, selected as the sample size based on calculations using the Raosoft sample size calculator.

Results: The results of this study indicated that the healthcare workers who participated displayed strong knowledge of medication errors 83%, which was reflected in their good practices. Majority of the participants (83%) exhibited good knowledge and (17%) had poor knowledge about medication errors reporting. About 57% respondents showed positive attitude and 43% respondents showed negative attitude about medication errors reporting. Good practice of medication error was only in 84% respondents. Employee factors to

medication underreporting recorded was fear of some variables including, litigation (64%), negative consequences (75%) and fear of being seen as incompetent (55%).

Conclusion: In healthcare settings, it is essential for management to be prepared to implement a reporting system that clearly defines adverse events and professional errors. Healthcare workers must feel safe to report incidents without fear of punishment or blame. Reporting is only valuable if it is followed by a comprehensive professional analysis at the management level, which can then lead to feedback and the development of strategies to enhance patient safety.

Keywords: Knowledge, Attitude, Practice and Medication errors.

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List of Abbreviations

ASHP	American Society of Health System Pharmacist
CCU	Cardiac care unit
ICU	Intensive care unit
IRB	Institutional Review Board
IVs	Intravenous
KAP	Knowledge, Attitude, and Practice
MEA	Medication Error Assessment
ME	Medication Error
NCC MERP	National Coordinating Council for Medication Error Reporting and Prevention.
SRS	Safety Reporting System
SPSS	Statistical Package for The Social Science

Chapter One

1. Introduction:

1.1 Background:

Medication error refers to any preventable event that may cause or lead to inappropriate medical use or patient harm while the medication is in control of the health care professional, patient or consumer. This medication error may be related to professional practice, procedures, systems and health care products. A medication error is defined as "any event that is inappropriate and leads to or may lead to a negative result while the patient is receiving care from a healthcare provider, patient, or consumer" by the National Coordinating Council for Medication Error Reporting and Prevention in the United States (Damin & Abukhalil, 2022).

Patient safety is one of the main concepts in the field of health care provision and a key factor in maintaining the quality of health care services. Preservation of patient safety is a major concern in health care provision systems. According to Valentin et al. one of the important stages of raising the safety level of patients is identification of medication errors and their causes (Ehsani et al., 2013).

Globally, most medication errors go unreported because of staff fear of punishment (Hume & Tomsik, 2014). In the United States of America, it has been found that over 60% of medication administrations have been found to have one or more errors associated with their administration. The identified errors such as labelling errors and bypassing the smart pump

and the drug library were predominantly associated with violations of hospital policy. (Schnock et al., 2017).

In African countries, medication error reporting systems have hardly been embraced (Kuitunen et al., 2021). However, even when their establishment is scaled up, both existing and new medication error reporting systems face the challenge of inherent weak-nesses in African healthcare systems including but not limited to counterfeit and substandard medicines, unavailability of fundamental infrastructure, shortage of human resources for health, limited awareness or interest and attitudes of health care workers, weak medicines regulatory systems, and scarce financial resources (Ronald Kiguba, Paul Waako, Helen B Ndagije, & Charles Karamagi, 2015).

In Uganda only 18% of the health workers were able to report having committed medication errors as they provided care to patients. Besides, 41% were able to point out medication errors committed by their colleagues without specifying individual errors committed. Although the Uganda's healthcare system is yet to establish a formal medication error reporting and evaluation system, data on health care practitioners' readiness, their attitudes and characteristics associated with medication error reporting in our resource-limited setting are lacking (Ronald Kiguba et al., 2015).

Regionally, recent research showed an interesting findings regarding the issues of nurses. For example, Hamdan and others (2022) raised the problem of intravenous drug therapy errors made during the medication process by the nurse in the ICUs. Their inquiry addressed the mediating effects of knowledge, attitudes and professional practices. Evidence suggest

deficits in best procedures especially hand hygiene and routine evaluation of clinical competence even when most of the nurses have a good theoretical knowledge. It also emphasizes the importance of ongoing education and adult monitoring in order to encourage the safe use of medications (Hamdan et al. 2022).

Raja et al. (2023) administered an online survey specifically intended to assess knowledge, attitude, and practices of nurses working in tertiary care settings. A claim was made that insufficient knowledge, together with difficulties in identifying the sources of medication errors, contributed to their underreporting. They also emphasize the necessity for improved systems for reporting errors and tackling curriculum issues to address the identified gaps (Raja et al., 2023).

Finally, Alenezi and Baker (2023) conducted research in Saudi Arabia to examine the connections between socio-demographic and occupational factors and nurses' knowledge, attitudes, and behaviors regarding medication errors. Their research discovered that educational level and gender significantly influenced attitudes, which in turn shaped behaviors. This highlights the necessity for more specific strategies to enhance medication safety practices (Alenezi & Baker, 2023).

In Palestine, the problem of medication error is of special concern owing to the political, economic, and social factors that do exist in the healthcare setting. Nurses are the main therapeutic agents who administer the medications and are thus key in controlling these errors.

Their knowledge, practices, and behavior in terms of medication safety are Critical in the reduction of such incidents and improvement of patient care. However, it was observed that knowledge, practices, and attitudes of nurses towards medication errors need to be taken into consideration in order to enhance safety within the healthcare setting. Nurses, being the key personnel who undertake administration of drugs, are able to significantly lower these mistakes owing to their ability and professional conduct.

Medication errors are a worldwide healthcare issue that provide a complex challenge with a range of effects, depending on the healthcare system and the resources available to address these issues. Further evidence of the complex factors influencing prescription errors can be found in studies from a variety of healthcare settings. This study found a high percentage of errors, particularly in relation to incorrect dosages, and linked the occurrence of these errors to a lack of understanding and negative attitudes.

The research results suggest that targeted training and a trustworthy error-feedback system could help address these problems (Alandajani et al., 2022). Prescription administration is one of the most recognized nursing tasks, comprising about 40% of a registered nurses work.

Many clinical catastrophes brought on by medical blunders are a result of these complications (Kim & Lee, 2020). In low- and middle-income countries, 8% of hospital patients suffer harm, with 83% of these cases being avoidable. In Palestine, harm occurs to one in seven hospital patients, with 59.3% of these situations deemed preventable. Enhancing patient safety is, therefore, a crucial goal in improving the quality of care delivered (Alser et al., 2020).

Continuously exposure to stressful situations in nurses' life both personally and professionally is one factor that contributes to prescription errors. The prevalence of mental illness and poor health is higher among critical care unit nurses than among nurses in medical and surgical units. A greater quantity of prescription drug mistakes are related to this greater stress. However, it is still unknown how exactly the general health of critical care nurses affects clinical error rates. In order to ensure patient safety as well as excellent medical care, nurses must report medication errors (Iqbal et al., 2023).

AL-Mutairi et al. (2021) state that because drug errors regularly lead to patient injury, they are a serious concern in healthcare facilities. Among all age groups, medication errors are associated with greater rates of morbidity and mortality, prolonged or avoidable inpatient stays, and higher healthcare costs for patients and systems (AL-Mutairi et al., 2021). In order ensure patient safety and high-quality care, nurses have to notify medication errors.

By adopting responsibly and reporting these mistakes, nurses can see the process as a chance to grow and establish a safer clinical setting. In many healthcare settings all throughout the world, safety reporting systems (SRS) have been routinely used to record incidents that raise concerns about patient safety (Alsulami et al., 2019). However, there is no legal system in Palestine for monitoring, records, and handle drug errors, which emphasizes the importance of raising awareness of the matter.

According to the information obtained from the Palestinian Ministry of Health (2020), this has resulted in general system inefficiencies, like common stakeouts of medicines, inadequate staffing in health facilities, and limited availability of technological equipment.

These challenges really heighten the risk for medication errors in the different steps of prescription, preparation, and administration.

For example, Hamdan et al. (2021) found that a large number of nurses working in Palestinian hospitals had inadequate knowledge about high-alert medications and safe administration protocols. On a similar note, Raghavendran et al. (2021) have demonstrated poor medication safety teaching among nursing students; hence, this requires integration into nursing curricula.

These knowledge gaps become further magnified by constraints on education. With few continuing professional development opportunities available and difficulties in logistics and financing, many nurses fall back on outdated practices. International research has shown regular training programs and simulation to be important in upgrading nurses' knowledge and minimizing mistakes (Mangalaraj et al., 2021; Vallabhaneni et al., 2023).

Hamdan et al. (2021) noted that one of the frequent variables that occurred around medication rounds were interruptions, whereas Jin et al. (2022) referred to communication breakdown and poor handoff processes. Some of the distractions for nurses working in Palestinian hospitals include interaction with the patients and incidents that occur unawares, which diverts attention away from the essential tasks.

The culture of blame is the primary barrier to medication safety improvement in Palestine. For example, Nazzal et al. (2022) showed that a fear of punitive action stands in the way of nurses reporting any errors, hence underreporting the same and subsequently missing great opportunities for learning and systemic improvement. While this problem is not unique to

Palestine, it has been felt more strongly within resource-constrained environments where systemic support for error reporting is minimal.

Nazzal et al. (2022) examined the attitude of nurses toward error reporting in hospitals in Palestine. Most of the nurses realized that reporting errors was an important factor in systemic improvement, although few of them felt safe under current policies. The results identified that shifting from a punitive approach to a learning-based management style is urgently needed concerning medication errors.

There has not been any much data done to establish the facts about medication errors and the healthcare practitioners in Palestinian hospitals. This study seeks to find out the knowledge, attitudes and practices of nurses towards medication errors among nurses.

1.2 Statement of the Problem:

Most medication errors are committed by nurses. The reason is that nurses are the largest therapeutic team and most of them comply with the drug orders and 40% spend their time in hospitals administering medicine to patients. Medication errors of nurses can lead to different problems such as unsuccessful and imperfect treatment, legal problems, increase of term and cost of hospitalization, damage to the professional reputation of nurses and mistrust of patients and the society in the health care system (Yoost and Crawford, 2021).

Medication error can result in adverse drug reactions(ADRs), drug-drug interactions, lack of efficacy, suboptimal patient adherence and poor quality of life and patient experience.

In turn, these may have significant health and economic consequences, including the increased use of health services, preventable medication-related hospital admissions and death.

It is here, considering the singularity of the context of Arabi Group Hospitals, that an attempt has been made to extend the scope of knowledge and to make a specific contribution that could be used in order to obtain the necessary actionable insights that can be used to develop better healthcare delivery results. Therefore, it should be clear that the issue of how to improve nursing curricula, ensuring retention of knowledge, and how to report medication errors exists in the forefront of nursing faculty's curricular plans.

1.3 Significance of the Study:

Practices, attitudes, and knowledge of nurses in the Arabi Group of Hospitals concerning medication errors are of interest to this study for many reasons. On one hand, medication errors represent a very dangerous risk to the health of the patient, possibly leading to very serious, multi-dimensional adverse outcomes that include but are not limited to all categories of determinants of health, hospital admissions, and the use of healthcare.

That is, the purpose of determining domain(s) in which to concentrate and medication administration technique shortcomings, the study addressed nurses' knowledge and actions. It was such data needed to develop targeted interventions and educational programs to enhance the competence of nurses and prevalence of medication errors.

To do so, existing research articles, e.g., Alenezi Baker, 2023, have already described how much knowledge and attitudes are of equal importance to gain clinicians' assistance in effectively reducing medication errors in clinical settings from the very first day that they are presented. The results of this present paper will add to the existing literature but also act as a baseline for evidence-based practice and policy that will be available to intervene on the context of Arabi Group Hospitals. In fact, the objective ultimately provides benefits to patient safety and health care quality and foster a culture of continuous learning and development for health staff nurses.

1.4 Aim/Purpose of the Study

To assess the knowledge, attitude, and practices of nurses towards medication errors in Arabi Group Hospitals, Palestine.

Research Objectives:

1- To describe the socio-demographic characteristics of nurses working at Arabi Group Hospitals, including age, gender, education level, and professional experience.

2- To assess nurses' level of knowledge regarding medication errors, including their awareness of causes, reporting procedures, and consequences.

3- To evaluate nurses' attitudes toward medication errors, including perceived barriers to reporting and their willingness to engage in preventive practices.

4- To examine nurses' practices related to medication safety, including adherence to hospital protocols and error reporting behaviors.

5- To identify and analyze factors associated with medication errors, such as workload, hospital policies, and fear of consequences.
6- To propose evidence-based recommendations for improving medication safety, fostering a culture of open reporting, and enhancing nursing education and hospital policies.

By attaining these objectives, the present study tries to contribute to a better understanding of medication errors committed by the nurses working in Arabi Group Hospitals. The research objectives have been addressed and the relationship between some socio-demographic features of nurses and their connection with the dynamics of medication errors are studied.

This would help in highlighting the main aspects that need emphasis to bring down medication errors, as the focus will be on knowledge, attitude, and practice assessment of nurses.

Several factors associated with the medication errors were systematically identified, which calls for targeted interventions and strategies to address the errors in clinical practice. Such findings advance the knowledge on medication safety within health care institutions and emphasizes the need for continuous education, policy change, and support to the nurses.

These factors have implications for practice and further research. Certain policy recommendations and training programs can be further optimized in light of the factors identified in this study to help in making medication use safer. Similarly, findings also serve as the foundation for subsequent studies targeted at improving patient safety and nursing practices in identical or other healthcare settings.

1.5 Study Question:

Medication error is an enormous challenge to healthcare and patient safety and quality of care. Frontline health provider's nurses, in particular share in the glue of giving and managing medications. Knowledge, attitudes, and practices, and factors associated with medication errors among nurses provide a basis for intervention.

This study aims to fill in these gaps by answering the following research questions:

[Q1] What is the level of nurses' knowledge regarding the causes, consequences, and reporting of medication errors at Arabi Group Hospitals?

[Q2] How do nurses' attitudes toward medication errors impact their willingness to report and prevent such errors?

[Q3] What are the current practices of nurses in preventing and reporting medication errors, and how do they align with hospital protocols?

[Q4] What systemic and individual factors contribute to medication errors among nurses at Arabi Group Hospitals?

Independent variable:

Demographic factors: Hospital setting, gender, age, years of work experience, educational level, and department.

Dependent variable:

- Knowledge Variables: Knowledge of medication errors, steps in reporting, and reportable errors.
- Attitudinal Variables: Opinions regarding the significance of reporting mistakes, perceived obstacles to reporting, including fear of repercussions or time limitations, and perceived effects on service enhancement.
- Practice Factors: Frequency and readiness to disclose mistakes, measures implemented after making an error, and compliance with safety guidelines such as the "Five Rights of Medication Administration."

1.6 Conceptual Framework:

1.6.1 Independent Variables:

1.Demographic Factors:

- Hospital setting.
- Gender.
- Age.
- Years of work experience.
- Educational level

- Educational level.

2.Knowledge Variables:

- Awareness of medication errors.
- Understanding of causes and consequences.
- Familiarity with steps in reporting errors.
- Knowledge of medication safety guidelines.

3.Attitudinal Variables:

- Perception of the importance of medication error reporting.
- Fear of consequences when reporting errors.
- Confidence in medication administration.
- Views on hospital safety culture.

4.Practice Variables:

- Frequency of medication error reporting.
- Adherence to safety protocols (e.g., "Five Rights of Medication Administration").
- Steps taken after identifying an error.
- Willingness to report errors.

1.6.2. Dependent Variables

These are the outcomes that the study aims to measure, which are influenced by the independent variables.

- **Medication Errors**

  - Occurrence of medication errors
  - Types of medication errors (wrong drug, wrong dose, administration errors, etc.)
  - Frequency of errors reported vs. unreported

1.7 Outline of the thesis:

The first part introduced the theoretical background and concept of the study. Medication errors represent one of the major concerns in healthcare today, especially in Palestine, due to socio-political and economic challenges. Such medication errors can be prevented by nurses through their knowledge, attitudes, and practices. This study aims to understand these factors among nurses at Arabi Group Hospitals, assess their impact on medication errors, and identify ways to improve medication safety and patient care outcomes. To this end, this chapter set forth the statement of the problem, the objectives, research questions, hypotheses, significance, operational definitions, and limitations of this study.

Chapter Two

2 Literature Review

2.1 Introduction:

Medication errors represent one of the major concerns worldwide, since this is affecting patients' safety and health outcomes. Because of the heavy workloads, lack of staff, and limited resources, these are especially risky in Palestine.

According to studies, healthcare workers—especially nurses—need to enhance their behaviors, attitudes, and expertise in order to effectively address the problem. Given the critical role nurses play in medicine delivery, the probability of errors is greatly influenced by their knowledge, attitudes, and behaviors. To effectively prevent and decrease these errors, it is essential to comprehend all of these aspects.

This literature review will establish the current level of understanding of knowledge, attitudes, and practice in relation to medication errors committed by nurses in Palestine, the rationale for these errors, implications of such to patient safety, and possible remedies toward safe medication practices. The findings of this review will be based on key research that addresses challenges and opportunities regarding improving medication safety in Palestinian healthcare.

2.2 The prevalence of Medication Errors in Palestine:

In the Palestinian health care system, this problem of medication errors is more common among nurses and nursing assistants, often exacerbated by heavy patient loads, understaffing, and poor working conditions. Due to the stigma attached to some kinds of medical errors, many are not discussed and others never reach the reporting system (Al-Mugheed et al., 2022).

Moreover, some factors of knowledge deficiency concerning health, carelessness in medication were emitted during the course of covid-19, which further increased the margins of error, mainly in the administration of medication (Hjouj et al., 2021). These findings shed light on the better education and support of nurses to improve the issues concerning avoiding medication errors. Medication errors are a priority patient safety concern worldwide, having implications for healthcare systems, patients, and healthcare providers. Various studies taken in different aspects of ME in Palestine have contributed to finding its prevalence, causes, and prevention. Generally speaking, the studies show that the proportion of medication errors represents an actual threat to health care not only in the entire State of Palestine but, especially in sensitive patient areas as a pediatric and neonatal intensive care unit. This happens because of the heavy workloads, lack of well-established rules, and unprepared staff that commits numerous errors (Shawahna et al., 2022).

A study by Al-Ramahi et al. (2017) indicates frequent inappropriate dosing among children patients, often due to unmeasured body weight or a not detailed enough double check of the

doses. Factors like bad communication, lack of electronic prescription systems, and not enough staff make the problem worse (Shawahna et al., 2019).

Ways to minimize these errors tend to encompass the incorporation of technology, including electronic health records, training for practitioners themselves to result in an attentive and safer environment as stipulated in Abukhader & Abukhader (2020, Shawahna et al. (2016). Resolving medication error issues within the Palestinian country requires widespread policymaking amendments, improving their infrastructure levels along with cultural and behavioral amendments.

2.3 Knowledge of Nurses on Medication Errors:

Knowledge among nurses about medication mistakes is important in ensuring that such incidences do not take place. In their study, Abdel Fattah A. Qaraman et al. (2022) mentioned assessing the knowledge of nursing students in the Gaza Strip. Most of the nursing students knew general safety measures, but the knowledge of proper medication practice was deficient.

The Ethiopian Journal of Health Sciences, 2022, also reported a gap in the complexities of medication administration as a com contributing factor to medication errors. Conversely, nursing education outcomes were associated with positive transformation in the nursing practice.

The study by Jou, Abdullah, and Ismail 2020 was thus apt in bringing out the need for continuous education to show that nurses who have undergone more training associate better in managing medication risks.

The different groups of studies all point towards one thing: the need for advancement of knowledge in certain practices that Palestinian hospital nurses have with respect to medication safety to a point that will reasonably minimize such mistakes. The knowledge of the nurses about medication errors is also very important because it allows the promotion of patient safety.

Alandajani et al. (2022) conducted research on assessing knowledge and attitude regarding medication errors among nurses in major hospitals in Jeddah, Saudi Arabia. This context is transferable to Palestine. Only 55% of the nurses who were interviewed in this present study demonstrated good knowledge about medication errors.

This is an overwhelming proportion whose knowledge gaps without corrective interventions may socially preclude safe medication administration. Usually, the etiology behind this knowledge deficit is because of a lack of enough education and from the stressful nature of an occupational setting, such as a critical care unit (Alandajani et al., 2022).

On the other hand, evidence shows that pharmacist-initiated educational correction of these errors is possible, aiming at increasing nurses' knowledge of safe medication practices in Palestine from a currently worrisome level contributing to a high rate of medication error abuse, conquesting errors do not require extensive research and qualified professional. Jaam et al. (2021) emphasize the importance of continual education and retraining.

The understanding of MEs by nurses is one of the most important factors in providing a safe environment for patients and reducing risks in healthcare environments. Many nurses are aware of common reasons for MEs, such as similar names of drugs and similar drug packaging, with average scores of 3.9 ± 1.4 and 4.1 ± 1.4 respectively (Crnjac et al., 2023).

However, knowledge gaps still exist, particularly related to broader issues like undefined definitions of MEs and lack of reporting systems that can be utilized (Abdellah & Mohammed, 2020).Other areas where gaps exist include understanding how to report issues. For example, 66.6% of nurses in Hail City, Saudi Arabia, did not know whom to report mistakes to, according to Alrasheeday et al. (2023).

Knowledge largely depends on education and experience. According to You et al. (2015), veteran nurses may not be familiar with new technologies or updated procedures, while younger nurses are keenly interested in learning how to avoid these mistakes. Yung et al. (2016) Identified that training programs directed at the "five rights"-right patient, medication, dose, route, time-can help build the nurse's confidence and competence for reducing medication errors.

More educated nurses will most probably report errors, such as intravenous medication-related. This indicates that the heightened awareness reinforces the heightened reporting of such incidents, Crnjac et al., 2023. Still, a majority of mistakes are not reported. That is, approximately 68.4% of professional nurses perceive that only 0–20% of intravenous medication errors are usually reported, and thus, they do not appreciate the magnitude of such errors, Crnjac et al., 2023).

This can be improved by promoting continuous learning, the use of user-friendly reporting tools, and regular training regarding frequent error situations (Abdellah & Mohammed, 2020; Yung et al., 2016).

These strategies will enhance the nurses' knowledge in various ways and provide them with better ways to avoid errors and thus create safer care for the patients.

2.4 Attitudes of Nurses Toward Medication Errors:

Attitudes toward medication errors impacts the conduct of the medical personnel within the clinical environment. The study by Qaraman et al. (2022) reported that nursing students with a positive attitude towards occupational safety paid more attention to the prevention of medication errors. Positive results were also obtained and reported in the Ethiopian Journal of Health Sciences where the need for a positive safety culture was highlighted as a way of reducing errors. In addition, Jou et al. (2020) found that active minded nurses who perceived their responsibilities as an obligation were more willing to practice measures that would decrease the chances of making medication errors.

Such findings demonstrate the importance of ensuring that there are measures that not only promote the education of nurses but also the love of safety improvement among nurses. Attitudes toward medication errors are a contributing factor as to whether such medication errors will be discovered and treated properly.

The study by Alandajani et al. (2022) also disclosed that nearly none of the nurses who managed the medication errors said or acted positively to them, approximately half of them

demonstrated a positive attitude to medication errors. In most health care institutions, however, the problem of underreporting remains a major concern due to a culture of blame or a lack of a structured mechanism that encourages incident reporting.

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In healthcare, medication errors (MEs) are a frequent problem that impact nurse practices and patient safety. Understanding nurses' views on medical errors enables us to comprehend their perspectives, the factors that may lead them to withhold disclosure of mistakes, and the wider systemic and cultural factors that shape these views.

Nurses usually understand how serious medication errors are and how they can affect patient results and the quality of nursing care. Many nurses have a good attitude about reporting errors, seeing it as a duty and a chance to make healthcare better (Yung et al., 2016). Nonetheless, although nurses typically express favorable feelings regarding disclosure, they still have considerable worries: specifically, anxiety about being blamed and punished, which includes harm to their professional reputation.

Approximately 65.4% of nurse's report feeling afraid of facing consequences, which hinders their honesty (Alrasheeday et al., 2023).It is here that the wish to speak the truth is joined by the fear of consequences in underlining a tension between moral stand and workplace realism. This anxiety is a consequence of assertions about broader problems, those that go via personal responsibility to more significant systemic weaknesses.

Many factors that relate to the reluctance of nurses to report errors concern views that generally, only the person committing the error is punished without the analysis of cause or system (Crnjac et al., 2023).This is because the work settings tend to perceive even minor failure as a sign of poor nursing; 88.9% of nurses perceived this negatively and felt unnecessary pressure resulting in loss of self-esteem in case of committing an error (Yung et al., 2016). This negative attitude towards blaming people not only stops people from

reporting mistakes but also makes it hard to talk openly about how to improve how we give medicine.

The unclear definitions of what counts as a mistake make nurses unsure about what they should report. For example, nurses may be ignorant on whether minor changes in the dosages are errors that have to be reported. In this line, Crnjac et al., (2023) identify indistinct definition of mistakes was leading to less number of reports due to nurses who were ignorant of, or did not agree, as to what constitutes an error.

In fact, 25% of the studies say that having a clear, agreed-upon definition of what a medication error is would help improve how nurses feel about reporting errors (Abdellah & Mohammed, 2020).Education and experience also affect attitudes in the group of nurses: Younger and less experienced feel more comfortable talking about the committed mistake as an understanding of openness and safety for healthcare has been well taught in classes. But, they might also feel more worried about making errors, especially with risky medicines like those given through IVs (You et al., 2015).

On the other hand, experienced nurses, even though they are confident in their abilities, might find reporting errors to be a hassle or take too much time, especially in places where the reporting systems are not well-organized or too complicated (Yung et al., 2016).There is a need to establish a non-punitive workplace where nurses would not view medication errors in terms of punishment but being open and proactive when they make such mistakes. According to Abdellah and Mohammed (2020), supportive environments where nurses are safe from any form of punishment in reporting errors have to be established. Continuous

learning and training can also help nurses understand that reporting errors is an integral part of patient safety and quality of care (You et al., 2015).

Personal, professional, and system-related factors together influence the attitudes of nurses regarding medication errors. Although many nurses understand the value of reporting errors, worries about being blamed, punished, and unclear definitions still pose major challenges. By dealing with these concerns through supportive management, education, and open communication, we can help nurses have a more positive outlook on reporting medication errors. This will ultimately enhance patient safety and promote a culture of ongoing learning.

2.5 Practice of Nurses in Preventing Medication Errors:

The effective management of medication error is quite closely related to the level of practical utilization of knowledge and attitudes as well by the healthcare professionals and other relevant personnel's. In a study conducted by (Qaraman et al., 2021) and the Ethiopian Journal of Health Sciences (2021), medication errors were noted to relate to deficiencies in the handling of medications, despite the fact that nursing students incorporated basic safety precautions.

As noted by (Jou et al., 2020), the practicability of such recommendations will support the routine administration of training and further audits which are necessary to achieve uniformity in the best practices of medication prescriptions. Further, it turns out that nursing practices in Saudi Arabia and Palestine are passive, as knowledge and attitudes amongst nurses help them to take a high risk of making medication errors, particularly error in doses.

Medication errors are reduced by educational strategies, continuing in-service training programs, and protocols.

Pharmacist's education interventions as it emphasizes in studies done by Jaam et al 2021 and ASHP Guidelines on Preventing Medication Errors In Hospitals 2019 are instrumental considering error reduction. Addressing the stress and workload faced by nurses in Palestine is one of the areas that need to be looked into in order to minimize medication error.

Thus, as per the findings, there is a need for routine training and strict adherence to policies in the hospitals in Palestine to reduce medication errors. Medication errors are a big issue in healthcare, since the consequences of such mistakes have effects on patients and influence how people perceive nursing care. The review examines what nurses do to prevent these errors and discusses the best ways to reduce the risks based on findings from recent research. Nurses often use double-checking methods to make sure the correct medicine goes to the right patient. Research shows that checking drug names, amounts, and how fast they are given is very important, especially for medicines given through a vein (IV), even though most errors are still reported by talking (Yung et al., 2016).

For example, mistakes like giving the wrong amount of medicine or the wrong medicine to a patient still happen a lot, even with prevention efforts (You et al., 2015). Another key way to reduce errors is by following established rules for giving medicine, like making sure you have the right patient, medicine, amount, method, and time, known as the "five rights." Ensuring the correct patient, medication, dose, route, and time is another key method to reduce mistakes. But issues like heavy workloads and not enough staff, which 35% of studies

point out as problems within the organization, can make it hard to follow these practices (Abdellah & Mohammed, 2020).

In order to verify and double-check medication data, nurses are increasingly embracing technology such as barcode systems and electronic health records. These systems aren't always utilized to their full potential, though (Yung et al., 2016).

The reasons why these methods aren't as effective as they could be are several. Heavy work and insufficient workers are the main causes of mistakes and shortcuts, which worsen the problem (Alotaibi, 2024).

The information about the medication is confusing, and some of these drugs appear quite similar either in looks or sound. Nurses believe that 0–20% of the IV-related errors are reported (Crnjac et al., 2023). Furthermore, it leads to underreporting because of the prevalence of fear of consequences due to blaming or punishment from 65.4 % of the nurses, contributing less learning and improvement chances to these mistakes and errors ,Alrasheeday, 2023;. Consequently, the need is determined by constant education and training related to safe practices during drug medication.

In this case, the nurses' skills are enhanced by frequent training on scenarios related to common mistakes, such as IV administration (You et al., 2015). It is found that more educated nurses report more IV errors, showing that they are aware of safety measures (Crnjac et al., 2023).

The non-punitive environment, according to Abdullah and Mohammed (2020), will assist nurses to report errors and improve their practice by focusing their attention on the

improvement of systems rather than blaming individuals. Anonymous reporting and open lines of communication encourage accountability without fear. Better nurse-to-patient ratios allow nurses the time to follow safe practices, important in the reduction of error rates (Alotaibi, 2024).

It is also important to ensure that useful feedback is given and open communication between managers and nursing staff is carried out. Regular meetings about near misses allow nurses to learn in the best way without being judged, hence making healthcare safe (Yung et al., 2016).

2.6 Challenges in Critical Care Setting with Factors Contributing:

Nurses operating within critical care units, especially in emergency department and intensive care settings, tend to experience peculiar circumstances that magnify the chances of making medication errors. Some contributions advocate that standard medication management, as well as the establishment of electronic prescribing systems, would alleviate these risks (D'Errico et al, 2022).

Palestine, similar challenges are evident, where insufficient continuous education and inadequate training contribute to nurses' limited knowledge, further exacerbated by challenging working conditions such as limited resources and high patient loads (Alandajani et al., 2022).

Medication mistakes in places like intensive care units (ICUs) are a big problem for keeping patients safe. Many studies show that these areas are complicated and have many risks. The

busy work, stress, and complex medicine schedules in ICUs lead to more medication errors. A study by (Muthusamy et al.,2018) found that about 30% of errors in ICUs were because of wrong drug amounts.

Most of these mistakes happened because of wrong calculations when giving medicine, especially for very sick patients who need doses based on their weight or complicated medicine mixes. A big challenge in critical care is the large number of medicines given to patients, especially those with many health problems.

The study conducted by McGillis et al. (2020) established that almost 45% of medication errors occur in critical care because of the complexity of the treatment process, including multiple medications and constant changes in dosages. Such a complex environment invites the occurrence of an error, especially during periods when there is high stress to make decisions.

Human factors such as tiredness and stress play a major role in medication errors within a critical care setup. A study by (Sorensen et al.,2018), indicated that 20% of medication errors in the ICU setting were related to tiredness among health workers, and this happens more during the night shift or after working for long hours.

This reflects the mental and physical challenges healthcare providers have to put up with in such situations, which may affect their capability for accuracy and focus. Poor communication exacerbates this issue, particularly during transitions of care or when multiple care providers are involved in managing a patient.

A study by (Geelen et al.,2017) found that 38% of medication errors in ICUs occurred because of poor communication during shifts. Important information about medications may be mislaid or misunderstood, with resultant incorrect prescriptions or missed doses.

2.7 Summary:

Medication errors are considered a serious threat to the safety and health outcomes of patients worldwide; Palestine is no exception. Specific conditions of a sociopolitical and economic nature further worsen the seriousness of the situation, which in turn further contributes to heavy workloads, lack of staff, and scarce resources.

Since nurses are major professionals who are involved with medication administration, they are supposed to play a critical role in the prevention of these errors. For medication errors to be reduced, an understanding of the needs of and improving their knowledge, attitude, and practice are required for successful solution development.

The results emphasize continuous education, an encouraging atmosphere, and proper management of available resources in regard to enhancing the safety of drugs and quality of patient care in the Palestinian setting. By the focused interventions in those domains, great enhancement will occur toward safety and quality of care for patients.

Chapter Three

3 Methodology

3.1 Introduction:

This chapter explains the research plan, how data was gathered, and how it was analyzed in this study. The main goal of this research is to assess the knowledge, attitudes, and practices (KAP) of nurses about medication errors at Arabi Group Hospitals. The next sections will describe the research plan, the creation and testing of the survey, how participants were chosen, how data was collected, and how it was analyzed. A conceptual framework will also be shown to give a theoretical background for the study.

3.2 Study design

This study adopts a cross-sectional research design as it provides an effective means to evaluate the current levels of knowledge, attitudes, and practices among nurses concerning medication errors at a single point in time. This design is especially appropriate for identifying patterns and relationships among variables, such as age, experience, and education level, and how these influence the behaviors and perceptions of nurses related to medication safety. Given the goal of the study is to inform immediate improvements in clinical practice and education, a cross-sectional approach allows for the timely collection of data from a broad sample without the need for prolonged follow-up. Additionally, this design is cost-effective and logistically suitable for the healthcare setting under study, making it a practical choice for capturing the complex interplay of individual and institutional factors that contribute to medication errors within the Arabi Group Hospitals.

3.3 Setting of the Study:

The study is to be carried out in three hospitals under the Arabi Group, namely,

1. Al Arabi Specialized Hospital,
2. Ibn Sina Specialized Hospital, and
3. Istishari Arab Specialized Hospital.

The target population consists of all registered nurses working in these hospitals. The sampling frame is designed based on an updated list of job functions from the human resources departments of the selected hospitals.

The study period was conducted from 20 November 2024 to January 2025.

3.4 Methods of Data Analysis

Statistical Tests: Descriptive statistics were used to present the demographic characteristics of the study participants. These statistics were also used to show the frequencies of personnel with sufficient and insufficient knowledge about blood transfusion. The ANOVA test and t-test were used to test the knowledge difference according to demographic variables, with alpha = 0.05 as the level of significance.

3.5 Population, Sample and Sampling:

3.5.1 Study Population:

The target population consists of all registered nurses working in these hospitals. The sampling frame is designed based on an updated list of job functions from the human resources departments of the selected hospitals.

3.5.2 Sample Size Calculation:

The sample size was calculated using the Raosoft sample size calculator with the following parameters:

- Total population size: 600 nurses.
- Confidence level: 95%, to ensure reliable and accurate results.
- Margin of error: 5%, which is within acceptable limits of error.
- Assumed response distribution: 50%, conservative estimate to maximize sample size
- The result from the calculator showed that 240 participants would be required to have a sample that is representative and statistically significant.
- The adjustments were also made for a 20% rate of incomplete responses.

3.5.3 Sample Distribution by Hospital:

Convenience proportionate sampling method was utilized.

The total sample size for this study was 302 nurses, distributed proportionally across three hospitals based on their share of the total nursing population (N = 600). The following table illustrates the distribution:

Table (3.1): Sample Distribution by Hospital

Hospital Name	**Total Nurses**	**Percentage of Total Population**	**Sample Size**
Al Arabi Specialized Hospital	175	29%	88
Ibn Sina Specialized Hospital	156	26%	74
Istishari Arab Specialized Hospital	269	45%	135
Total	600	100%	302

3.5.4 Sampling Justification

This study used a convenience proportionate stratified sampling method, which was well-suited to its cross-sectional design and the aim of assessing nurses' knowledge, attitudes, and practices related to medication errors across several hospital environments.

To ensure fair representation, the sample was stratified by hospital, reflecting the actual proportion of nurses working in each of the three facilities within the Arabi Group. This approach not only supports the generalizability of the results within the organization but also accounts for variations in institutional practices, patient populations, and workplace conditions that may affect medication safety.

Within each hospital stratum, participants were selected through convenience sampling. This decision was driven by practical challenges commonly faced in clinical research, including nurses' differing schedules and limited availability due to patient care responsibilities. Although this method carries some risk of selection bias, the impact was reduced by the study's relatively large sample size (n = 302) and the inclusion of nurses from a variety of departments and shifts. This helped ensure a broader range of experiences and viewpoints were represented in the data.

3.6. Participant Selection:

3.6.1 Sampling Method:

In this study, a convenience proportionate stratified sampling method was applied to select participants from the population of registered nurses across three hospitals affiliated with the Arabi Group. This approach was chosen to balance the need for representative data with the practical realities of conducting research in busy healthcare environments.

The sampling process began with stratification by hospital, meaning the total nurse population (N = 600) was divided into three groups according to the hospital in which they

worked: Al Arabi Specialized Hospital, Ibn Sina Specialized Hospital, and Istishari Arab Specialized Hospital. The sample size from each hospital was determined proportionally based on the number of nurses employed at each facility. This ensured that each hospital was fairly represented in the final sample, which comprised 302 participants.

Following stratification, convenience sampling was used within each hospital. Nurses were selected based on their availability and willingness to participate during the data collection period, which spanned from November 20, 2024, to January 2025. This method was considered the most feasible given the varying work schedules and patient care responsibilities of the nursing staff.

Although convenience sampling may limit the ability to generalize findings beyond the study population, combining it with proportional stratification helped to improve the representativeness of the sample. Overall, this sampling strategy was appropriate for the study's cross-sectional design and its aim of exploring nurses' knowledge, attitudes, and practices regarding medication errors across multiple hospital settings.

3.6. 2 Inclusion and Exclusion Criteria:

Inclusion Criteria:

o Nurses registered with the Palestine Commission for Health Specialties.

o Nurses with at least one year of professional experience in their respective roles.

o All genders, ages, educational levels, and cultural backgrounds are eligible.

Exclusion Criteria:

o The nurses on maternity leave or on internship.

o Student nurses or those with less than one year of professional experience.

o Nurses who have not undergone the orientation program.

3.7 Data Collection Tool

The study used an internationally validated questionnaire to ensure the reliability and validity of the data collected.

This study collected data on the socio-demographic characteristics and levels of KAP (knowledge, attitude, and practice) of participants related to medication errors, Appendix 1.

The sociodemographic information about the survey's participants was collected in the first section. The remaining sections tested the knowledge and attitude of the participants towards medication errors. The questionnaire also included a general information part that all participants had to answer related to the complications associated with a medication error that must be familiar to all participants and its effects on patient safety. Structured parts of the questionnaire are to measure demographic information, knowledge, attitudes, and practices (KAP) concerning medication errors.

The format is adapted from some previously used validated formats with a few modifications to suit the research context.

3.8 Survey Structure

The questionnaire used in this study was divided into four main sections, each designed to gather specific information relevant to the research objectives:

Section 1: Demographic Information

This section collected basic personal and professional details from participants, such as the hospital they work at, their gender, age, years of experience, educational background, and the department they are currently assigned to.

Section 2: Knowledge of Medication Errors

This part focused on assessing how well nurses understand medication errors. It included questions about their general awareness of the issue, how they define medication errors, the procedures they follow when an error happens, and what types of errors they believe should be reported.

Section 3: Attitudes Toward Medication Errors:

Here, the survey examined how nurses feel about medication errors and reporting them. It addressed factors such as their willingness to report mistakes, fears about potential consequences, and how familiar they are with existing hospital protocols related to medication safety.

Section 4: Practices Related to Medication Errors:

The final section looked at the nurses' day-to-day behaviors regarding medication errors. It asked whether they report incidents, how they communicate with patients about these situations, and how closely they follow established safety procedures.

Question Types:

o Multiple-choice questions, for example, demographic data and knowledge sections.

o Likert-scale items. For example, the attitudes and practices range from Strongly Agree toStrongly Disagree

o Yes/No questions. For example, personal experiences with medication errors.

3.8 Data collection process:

Following initial contact with the hospitals listed in the study, official approval for data collection was obtained through the Institutional Review Board (IRB) and subsequent administrative coordination. Each hospital provided written consent to participate in the research, and all approval documents have been included in the appendix for reference.

Despite obtaining the necessary permissions, the data collection process encountered significant challenges. Notably, ongoing security-related disruptions and repeated incursions in the city of Jenin created an unstable environment, which made it impossible to collect data in person at Ibn Sina Specialized Hospital. As a result, questionnaires for that hospital were distributed and completed electronically via Google Forms.

In contrast, data collection at Al Arabi Specialized Hospital and Istishari Arab Specialized Hospital proceeded in person as originally planned, with hard copies of the questionnaires administered to participating nurses.

3.10 Validity:

To establish validity of the modified survey, the researcher worked with nurse educators to evaluate face validity. Face validity is a measurement that evaluates the extent to which an item or instrument measures what it is described or proposed to measure (Privitera, 2017). This process allowed the researcher to determine if the tool will measure what was intended. The survey, with the title and headings omitted, was shown to ten nurse educators to assess their opinion of validity. Each of the educators defined the survey as a tool to evaluate or assess knowledge of medication errors and reporting errors.

3.11 Reliability:

Subscale reliability using Cronbach's alpha was assessed during the pilot study. Cronbach's alpha is a measurement of internal consistency to evaluate how multiple items measuring the same content are related (Privitera, 2017). Part A consists of questions 1-10 regarding why medication errors occur, and Part B consists of questions 11-19 regarding reasons why medication errors go unreported. The questions in Part A address research question one, questions in Part B address research question two, and the open-ended questions address research question three.

3.12 Pilot Study:

In order to ensure the accuracy and relevance of the data collection, a pilot study was conducted. The method used in the work was specifically targeted at sampling a total of 30

nurses from different departments of the selected hospital. This sample size was chosen to provide a representative overview of the nursing staff in the hospital setting. The main objective of the pilot study was to evaluate the feasibility and usability of the research tool. The researcher's goal was to determine whether the selected method of data collection through a distributed survey was appropriate and effective in collecting the necessary information from the relatives.

During the pilot study, researchers closely monitored the data collection process and actively sought feedback from participating caregivers. This feedback allowed them to identify potential problems or issues with the research tool and its implementation.

The tool was modified based on these insights to improve its clarity and relevance to the research objectives. In addition, data from the experimental study were analyzed and evaluated to determine their quality and utility. This analysis provides valuable insight into the feasibility and effectiveness of data collection methods to obtain the intended information from caregivers. The researchers reviewed the data to identify areas that needed adaptation or improvement to ensure a more rigorous and comprehensive approach to the study itself.

The questionnaire used in this study to assess the level of knowledge, attitude and practice toward medication errors were found to be comprehensible, applicable, and reliable. The questionnaire consisted of clear and precise questions covering the basic aspects of Medication errors. It is designed to assess knowledge, attitude and practice of nurses toward medication errors. The questions are in a multiple-choice format, Yes/No questions and Likert scale, which makes it easier to choose the answers. Furthermore, the utility of this tool

is evident as it is directly aligned with the research objectives of assessing the knowledge, attitude and practice of nurses toward medication errors.

To determine the reliability of the tool, Cronbach's alpha coefficient of 0.7 was calculated using a pilot study sample. A Cronbach's alpha value of 0.7 indicates a high level of internal consistency among the tool's items, suggesting that they measure the same underlying construct of knowledge, attitude and practice about medication errors. This demonstrates that the tool is reliable in capturing participants' knowledge accurately and consistently. Overall, the tool's clarity, relevance, and satisfactory reliability make it a suitable instrument for assessing nurse’s knowledge, attitude and practice toward medication errrs in subsequent research endeavors.

3.13 Ethical considerations:

A university affiliated with the Arab American (AAUP) community granted ethical approval for the study. and the hospital ethical review committee with a supporting letter was taken to conduct the study. The voluntary participation by participants was guaranteed, and the choice to withdraw. from the study was assured. Data stored and kept private access only to the researcher. Names of participants were not included. An explanation was given to the participants about the purpose of the study and got verbal consent from them for their approval to participate.

appendix 2 and appendix 3.

Chapter Four

4 Results

Introduction

The final sample consisted of 302 participants Table (4.1) summarizes the socio-demographic characteristics of the nurses working in three Arabi Group Hospitals in West-bank, Palestine. The results showed more than half of the participants 173 (57.3%) were males and 129 (42.7%) were females, majority of the respondents 187 (61.9%) were in the age-group of 25 years – 35 years whereas minority of 15 (9.6%) were in the age group of more than 35 years; 100 (33.1%) of participants working at the Arab hospital, 109 (36.1%) of participants working at Al-istishari hospital and 93 (30.8%) of participants working at Ibn-Sina hospital. The percentages of participants' working experience <5 years and between 5-15 years were approximately equal, 144(47.6%) and 143(47.4%), respectively, and only 15 (5.0%) were more than 15 years of experience. The majority 238 (78.8%) were holding bachelor degree, followed by 50 (16.6%) holding master degree, and only 14(4.6%) holding diploma degree. One third of participants 99 (32.8%) working in medical/ Surgical department and the minority 15 (5.0%) working on other departments.

Table (4.1) Study Sample Demographic Data

Characteristic	**Numbers**	**Percentages (%)**
Gender		
Male	173	57.3
Female	129	42.7
Age-group		
< 25 year	86	28.5
25-35 year	187	61.9
>35 year	29	9.6
Hospital setting		

Al-Arabi Specialized Hospital	100	33.1
Istishari Arab Specialized Hospital	109	36.1
Ibn-Sina Specialized Hospital	93	30.8
Experience		
<5 years	144	47.6
5-15 years	143	47.4
>15 years	15	5.0
Education		
Diploma	14	4.6
Bachelor	238	78.8
Master	50	16.6
Department		
Medical/Surgical dep.	99	32.8
Orthopedic dep.	41	13.6
Emergency dep.	30	9.9
ICU dep.	72	23.8
CCU dep.	28	9.3
Neonatal dep.	17	5.6
Others	15	5.0

4.2 Knowledge of nurses towards medication errors.

Have you ever heard about medication errors?

Table 4.2 presents the responses of the participants on the first knowledge question "had ever heard about medication errors", the results showed that the vast majority of the participants 260 (86.1%) had ever heard about medication errors, and 42 (13.9%) of them reported had never heard about medication errors.

Table 4.2: Shows whether respondents had ever heard about medication errors

Response	**Frequency**	**Percentage (%)**
Yes	260	86.1
No	42	13.9

Table 4.3 shows that majority of 251 (83.1%) defined medical errors as errors committed while administering medicines, followed by 29 (9.6%) defined medical errors as errors committed while preparing the medicine by health work whereas minority of 22 (7.3%) define it as errors that are committed while taking medications.

Table 4.3 Respondents' Definitions of a Medication Error:

Response	**Frequency**	**Percentage (%)**
Error committed while taking a medication	251	83.1
Error committed by a health work	22	7.3
Error committed while administering medicines	29	9.6
Error committed by the patient	0	0.00

Table 4.4 shows the responses of the participant on the question "Have you ever had of the steps involved in reporting a medication error?". It illustrates that majority of the respondents 250 (82.8%) had ever had of the steps involved in reporting a medication error whereas minority of 52 (17.2%) had never had of the steps involved in reporting a medication error.

Table 4.4: Respondents' Awareness of the Steps for Reporting a Medication Error

Response	**Frequency**	**Percentage (%)**
Yes	250	82.8
No	52	17.2

Table 4.5 presents the responses of the participant on the question "Do you know of any medication errors that are worth reporting while you perform your duties?". The results showed that majority of 257 (85.1%) knew of any medication errors that are worthy reporting while you perform your duties whereas minority of 45 (14.9%) didn't know of any medication errors that are worthy reporting while you perform your duties.

Table 4.5: Respondents' Awareness of Reportable Medication Errors During Duty

Response	**Frequency**	**Percentage (%)**
Yes	257	85.1
No	45	14.9

Table 4.6 illustrates that majority of the respondents 163 (54.0%) replied that wrong medicines administered as medical errors worthy reporting, followed by 82 (27.2%) reported that wrong drugs prescribed as medical errors worthy reporting, whereas minority of 33 (10.9%) and 24 (7.9%) replied that little dose administered and expired drug administered, respectively as medical errors worthy reporting.

Table 4.6: Types of Medication Errors Considered Worth Reporting by Respondents.

Response	**Frequency**	**Percentage (%)**
Wrong medicines administered	163	54.0
Wrong drugs prescribed	82	27.2
Expired drug administered	24	7.9
Little dose administered	33	10.9

Table 4.7 shows that majority of 288 (95.4%) thought that it was important to report medication errors whereas minority of 14 (4.6%) thought it wasn't important to report medication errors.

Table 4.7: Respondents' Views on the Importance of Reporting Medication Errors.

Response	**Frequency**	**Percentage (%)**
Yes	288	95.4
No	14	4.6

4.8. Attitudes of nurses towards medication errors:

4.8.1 Why Errors Occur:

In order to analyze the collected data, the use of descriptive statistics calculated means and standard deviations for each item, as shown in Table 4.9. For items in subscale A "Reasons Why Medication Errors Occur in Practice," the standardized means ranged from 4.01 to 2.04, indicating reasons for occurrence of errors ranked between moderately agree and moderately disagree. The standard deviation for individual items ranged from .93 to 1.19, indicating small variability between nurses.

4.8.2 Reporting Medication Errors:

For items in subscale B "Reporting Medication Errors", standardized means ranged from 4.21 to 2.26, indicating reasons medication errors may not be reported were ranked between moderately agree and moderately disagree. The standard deviations for subscale B ranged from .82 to 1.40.

Table 4.8: Means and standard deviations of attitudes of nurses towards medication errors (N = 302)

Item – Why errors occur	**Mean ± SD (1=Strongly disagree, 5= Strong agree)**
The names of many medications are similar.	4.01± 0.93
Providers' medication orders are unclear.	3.83± 1.00
Poor communication between providers and nurses exists.	3.79± 1.10
There is no easy way to look up medications on the floor	3.37± 1.00
There is not enough time to look up medications on the floor.	3.33 ± 1.10
Medication administration skills change often.	3.26 ± 1.19

Nurses are interrupted during medication administration.	2.87 ± 1.15			
Nurses are assigned too many patients, delaying medication administration times.	2.44 ± 1.00			
Nurses check the patient's ID band before medication administration.	2.16 ± 1.19			
Nurses use the Five Rights of Medication Administration.	2.04 ± 1.12			
Item- Why errors are not reported (*Fear of consequences*)				
Nurses may not think the error was important enough to report.	4.21±1.08			
Nurses fear negative consequences when reporting medication errors.	3.99±.82			
The patient or family might sue the nurse if a medication error is reported.	3.84±.98			
No harm came to the patient, so no error occurred.	3.67±1.33			
Nurses do not know how to report a medication error.	3.61±1.35			
Filling out an incident form to report an error takes too much time.	3.51±1.27			
Contacting a provider to report an error takes too much time.	3.23±1.39			
Nurses fear they will look incompetent to their peers.	2.26±1.40			
Attitudes of nurses towards medication errors				
	Agree		**Disagree**	
	Yes	**%**	**No**	**%**
Reporting a committed medication error can lead to serious consequences	219	72.5%	83	27.5%
The environment for reporting medication errors is friendly	104	34.4%	198	65.6%
I am willing to report the medication errors but I fear its effects	248	82.1%	54	17.9%
The hospital management encourages reporting of medication errors	67	22.2%	235	77.8%
Too much workload contributes to committing medication errors	223	73.8%	79	26.2%
Working at night increases the likelihood of medication errors	245	81.1%	57	18.9%
Junior staff make more errors compared to senior Staff	246	81.5%	56	18.5%

The result in Table 4.8 shows that names of many medications are similar is the main leading cause of medication error with a high mean of 4.01 and SD = 0.93, followed by orders are unclear and poor communication between providers and nurses exists.

The results also revealed that 219 (72.5%) of the respondents agreed reporting a committed medication error can lead to serious consequences whereas minority of 83 (27.5%) disagreed; shows that majority of 198 (65.6%) replied that the environment for reporting medication errors is friendly whereas minority of 104 (34.4%) disagreed; majority of the respondents 248 (82.1%) were willing to report the medication errors but I fear its effects whereas minority of 54 (17.9%) were not willing to report medication errors; majority of 235 (77.8%) agreed that the hospital management encourages reporting of medication errors whereas minority of 67 (22.2%) disagreed; majority of 223 (73.8%) agreed that too much workload contributes to committing medication errors whereas minority of 79 (26.2%) disagreed; majority of 245 (81.1%) agreed that working at night increases the likelihood of medication errors whereas minority of 57 (18.9%) disagreed; majority of 246(81.5%) agreed that junior staff make more errors compared to senior staff whereas minority of 56 (18.5%) disagreed.

4.9 Frequency analysis of responses of all participants:

The frequency analysis of the reasons that contribute to not reporting an error is shown in Table (4.9). In this analysis, the five-point response scale is reduced to a three-point scale: *"strongly disagree/disagree," "neutral," and "agree / strongly agree."* The most common cause of non-reporting of errors by nurses is that Nurses may not think the error was important enough to report, emphasize the individual errors are not recognized (n-220, 73%) as the cause of non-reporting of errors. The nurses fear of negative consequences when reporting medication errors (n-228, 75%). The Nurses fear that patient or family might sue

them if a medication error is reported by n-194 nurses (64%) as the cause of non-reporting of errors, and almost as many of them (n-181, 60%) believe that no harm came to the patient, so no error occurred. Nurses do not know how to report a medication error (n-178, 59%). Finally, filling out an incident form to report an error takes too much time is reported by n=177 nurses (59%) as the cause of non-reporting of errors.

Table 4.9: Nurses Attitudes Toward Reporting Medication Errors.

Item – Why errors occur	**Mean ± SD**	**I Strongly disagree/ disagree**		**Neutral**		**I Strongly agree/ Agree**	
		N	**%**	**N**	**%**	**N**	**%**
The names of many medications are similar.	**4.01± 0.93**	16	**5**	70	**23**	216	**72**
Providers' medication orders are unclear.	**3.83± 1.00**	30	**10**	82	**27**	190	**63**
Poor communication between providers and nurses exists.	**3.79± 1.10**	38	**13**	66	**22**	198	**65**
There is no easy way to look up medications on the floor	**3.37± 1.00**	61	**20**	110	**37**	131	**43**
There is not enough time to look up medications on the floor.	**3.33 ± 1.10**	65	**22**	103	**34**	134	**44**
Medication administration skills change often.	**3.26 ± 1.19**	72	**24**	90	**30**	140	**46**
Nurses are interrupted during medication administration.	**2.87 ± 1.15**	130	**43**	84	**28**	88	**29**
Nurses are assigned too many patients, delaying medication administration times.	**2.44 ± 1.00**	190	**63**	62	**21**	50	**16**
Nurses check the patient's ID band before medication administration.	**2.16 ± 1.19**	213	**71**	30	**10**	59	**19**
Nurses use the Five Rights of Medication Administration.	**2.04 ± 1.12**	221	**73**	31	**11**	50	**16**
Item- Why errors are not reported (*Fear of consequences*)							
Nurses may not think the error was important enough to report.	**4.21±1.08**	34	**11**	48	**16**	220	**73**
Nurses fear negative consequences when reporting medication errors.	**3.99±.82**	14	**5**	60	**20**	228	**75**

The patient or family might sue the nurse if a medication error is reported.	**3.84±.98**	24	**8**	84	**28**	194	**64**
No harm came to the patient, so no error occurred.	**3.67±1.33**	69	**23**	52	**17**	181	**60**
Nurses do not know how to report a medication error.	**3.61±1.35**	72	**24**	52	**17**	178	**59**
Filling out an incident form to report an error takes too much time.	**3.51±1.27**	77	**25**	48	**16**	177	**59**
Contacting a provider to report an error takes too much time.	**3.23±1.39**	104	**34**	56	**19**	142	**47**
Nurses fear they will look incompetent to their peers.	**2.26±1.40**	170	**56**	52	**17**	80	**27**

Comparison of the means:

The competency scores and cluster scores were compared based on hospital setting, gender, age-group, experience, education and department.

In this sample, analyses were conducted to explore differences in Nurses Attitudes Toward Reporting Medication Errors between male and female healthcare providers. Although there is a difference in mean score, but no significant gender differences were observed in all Nurses Attitudes Toward Reporting Medication Errors (Table 4.10).

Table 4.10: Comparison of Nurses Attitudes Toward Reporting Medication Errors by Gender

Domain	**Gender**	**N**	**Mean (SD)**	**t-statistics (df)**	**P-value**
Why errors occur	Male	173	3.14(.36)	1.41(300)	.159
	Female	129	3.08(.34)		
Why errors are not reported (Fear of consequences)	Male	173	3.53(.55)	-.47(300)	.642
	Female	129	3.56(.54)		
Attitudes of nurses towards medication errors	Male	173	4.19(.64)	-.16(300)	.875
	Female	129	4.20(.63)		

Two Nurses Attitudes Toward Reporting Medication Errors domains were found to have significant differences in the mean based on hospital setting (Table 4.11).

Why errors are not reported (Fear of consequences) F = 6.77, p = 0.001 and attitudes of nurses towards medication errors F = 3.65, p = 0.027. But no significant difference in the third domain why errors occur by hospital setting F = 1.30, p = 0.274.

Table 4.11: Comparison of Nurses Attitudes Toward Reporting Medication Errors by hospital

Domain	**Hospital Setting**	**N**	**Mean**	**F-statistics(df)**	**P-value**
Why errors occur	Al-Arabi Specialized	100	3.11(.36)	1.30(2)	0.274
	Istishari Arab Specialized	109	3.08(.34)		
	Ibn-Sina Specialized	93	3.16(.35)		
Why errors are not reported (Fear of consequences)	Al-Arabi Specialized	100	3.41(.53)	6.77(2)	0.001
	Istishari Arab Specialized	109	3.8(.58)		
	Ibn-Sina Specialized	93	3.52(.48)		
Attitudes of nurses towards medication errors	Al-Arabi Specialized	100	4.28(.52)	3.65(2)	0.027
	Istishari Arab Specialized	109	4.06(.54)		
	Ibn-Sina Specialized	93	4.25(.80)		

To help further understand Nurses Attitudes Toward Reporting Medication Errors domains. One Way ANOVA was conducted to explore differences in Nurses Attitudes Toward Reporting Medication Errors domains subscales between the participants by age-group of healthcare providers. Significant age-group differences were not observed in all Nurses Attitudes Toward Reporting Medication Errors domains.

Table 4.12: Comparison of Nurses Attitudes Toward Reporting Medication Errors by Age-group

Domain	Age-group	N	Mean(SD)	F-statistics(df)	P-value
Why errors occur	less than 25	86	3.11(.38)	1.16(2)	.315
	25-35	187	3.11(.33)		
	more than 35	29	3.13(.36)		
Why errors are not reported (Fear of consequences)	less than 25	86	3.54(.58)	1.25()2	.289
	25-35	187	3.53(.52)		
	more than 35	29	3.56(.64)		
Attitudes of nurses towards medication errors	less than 25	86	4.12(.67)	.73(2)	.485
	25-35	187	4.22(.63)		
	more than 35	29	4.23(.55)		

One Way ANOVA was also used to help further understanding the Nurses Attitudes Toward Reporting Medication Errors domains based on years of experience of healthcare providers. No Significant differences were observed in all Nurses Attitudes Toward Reporting Medication Errors domains based on years of experiences.

Table 4.13: Comparison of Nurses Attitudes Toward Reporting Medication Errors by Experience.

Domain	Experience	N	Mean	F-statistics(df)	P-value
Why errors occur	less than 5	144	3.09(.38)	1.78(2)	.171
	5-15	143	3.14(.31)		
	more than 15	15	3.03(.32)		
Why errors are not reported (Fear of consequences)	less than 5	144	3.53(.56)	1.78(2)	.170
	5-15	143	3.52(.50)		
	more than 15	15	3.80(.70)		

Attitudes of nurses towards medication errors	less than 5	144	4.15(.62)	1.48(2)	.230
	5-15	143	4.21(.65)		
	more than 15	15	4.39(.54)		

Table 4.14 shows a significant difference in one domain of the Nurses Attitudes Toward Reporting Medication Errors domains based on education of healthcare providers namely "Why errors occur", F = 2.38, P<.001. Whereas, No Significant differences were observed in the other two domains of the Nurses Attitudes Toward Reporting Medication Errors domains based on years of experiences.

Table 4.14: Comparison of Nurses Attitudes Toward Reporting Medication Errors by Education.

Domain	**Education**	**N**	**Mean**	**F-statistics(df)**	**P-value**
Why errors occur	Diploma	14	2.73(.23)	2.38(2)	<.001
	Bachelor	238	3.14(.36)		
	Master	50	3.07(.28)		
Why errors are not reported (Fear of consequences)	Diploma	14	3.49(.63)	.08(2)	.882
	Bachelor	238	3.54(.55)		
	Master	50	3.57(.51)		
Attitudes of nurses towards medication errors	Diploma	14	4.13(.60)	1.23(2)	.216
	Bachelor	238	4.17(.65)		
	Master	50	4.33(.53)		

The results in Table 4.15 shows no significant difference in all domains of the Nurses Attitudes Toward Reporting Medication Errors domains department of healthcare providers.

Table 4.15: Comparison of Nurses Attitudes Toward Reporting Medication Errors by Department.

Domain	Department	N	Mean	Std. Deviation	Minimum
Why errors occur	**Medical/Surgical dep.**	99	3.14(.37)	.96(6)	.456
	Orthopedic dep.	41	3.11(.28)		
	Emergency dep.	30	3.20(.29)		
	ICU dep.	72	3.05(.33)		
	CCU dep.	28	3.04(.43)		
	Neonatal dep.	17	3.11(.44)		
	Others	15	3.13(.28)		
Why errors are not reported (Fear of consequences)	**Medical/Surgical dep.**	99	3.43(.49)	1.98(6)	.068
	Orthopedic dep.	41	3.65(.46)		
	Emergency dep.	30	3.66(.49)		
	ICU dep.	72	3.51(.55)		
	CCU dep.	28	3.75(.71)		
	Neonatal dep.	17	3.51(.67)		
	Others	15	3.46(.57)		
Attitudes of nurses towards medication errors	**Medical/Surgical dep.**	99	4.21(.62)	1.27(6)	.273
	Orthopedic dep.	41	3.95(.70)		
	Emergency dep.	30	4.26(.57)		
	ICU dep.	72	4.22(.73)		
	CCU dep.	28	4.21(.50)		
	Neonatal dep.	17	4.25(.63)		
	Others	15	4.34(.23)		

4.16 Practices of nurses towards medication errors:

Table 4.16 shows that majority of the respondents 167 (55.3%) had never committed a medication error in the last three months whereas minority of 135 (44.7%) had ever committed a medication error. The majority of the respondents 194 (64.2%) had ever

witnessed a colleague commit a medication error whereas minority of 108 (35.8%) had never witnessed a colleague commit a medication error. It also shows that more than half of 172 (57.0%) replied that they would be willing to report in case they committed a medication error whereas minority of 130 (43.0%) they wouldn't be willing to report themselves.

Table 4.16: Frequency and percentage of Practices of nurses towards medication errors.

Item	**Yes**		**NO**	
	No	**%**	**No**	**%**
Nurses fear they will look incompetent to their peers	135	**44.7**	167	**55.3**
Have you ever witnessed a colleague commit a medication error?	108	**35.8**	194	**64.2**
If committed a medication error, would you be willing to report it?	130	**43.0**	172	**57.0**
Would you apologize to the patient/caretaker in case of a medication error?	255	**84.4**	47	**15.6**
Is there a protocol for reporting medication errors at this facility?	104	**34.4**	198	**65.6**
Do you think reporting medication errors can improve services at this facility?	188	**62.3**	114	**37.7**

The majority of 255 (84.4%) replied that they would apologize to the patient/caretaker in case of a medication error whereas minority of 47 (15.6%) wouldn't apologize to the patient/caretaker in case of a medication error. The results showed that 198 (65.6%) replied that there was no protocol for reporting medication errors at their health facilities whereas minority of 104 (34.4%) replied that was protocol for reporting medication errors at their health facilities. Table 4.17 shows that majority of 188 (62.3%) thought that reporting medication errors could improve services at this facility whereas minority of 114 (37.7%) didn't think reporting medication errors could improve services at this facility.

4.17 Regression Analysis:

Upon further examination of the nurses' attitudes regarding the reporting of medication errors, the study found that the fear of consequences was a notable predictor of their attitudes toward reporting such errors (β = .210, p = .045).

Table 4.17: Relationship between Fear of Consequences and Nurses Attitudes Toward Reporting Medication Errors.

Variable	***B***	**SE**	**β**	***t***	**p**
Why errors are not reported (Fear of consequences)	.210	.104	.116	2.015	.045

Moreover, in the analysis of nurses' attitudes toward reporting medication errors, the study revealed that nurses' attitudes toward medication errors were a significant predictor of their willingness to report such errors (β = .162, p = .015).

Table 4.18 Relationship between Attitudes of nurses towards medication errors and Nurses Attitudes Toward Reporting Medication Errors

Variable	***B***	**SE**	**β**	***t***	**P**
Attitudes of nurses towards medication errors	.162	.067	.139	2.437	.015

Chapter Five

5 Discussion

5.1 Introduction:

This chapter presents the results of the research report. The findings are discussed in relation to the study's objectives, with a focus on the most significant results relevant to the research. Additionally, conclusions and recommendations are provided based on the study's findings.

5.2 Knowledge of nurses towards medication errors:

Confusion among healthcare workers regarding the definition of medication errors and the reporting process was found to hinder the reporting of such errors (Soydemir et al., 2019). Issues such as unclear understanding among nurses about what qualifies as a medication error, when these errors should be reported to supervisors, and the fear of disciplinary action for reporting were highlighted as concerns. Subsequent studies replicated Gladstone's research (Ulanimo et al., 2007), revealing that confusion about the definition of medication errors persisted among staff.

Lack of clear definition of medication error in Arabi Group Hospitals was demonstrated in this study. Despite that 83% of respondents were aware of clear definition of medication errors as mistakes made during medication administration, indicating that a majority of participants understood the concept of medical errors, but 17% were not. Confusion in medication error definition and lack of clear reporting systems contribute to poor reporting of errors in the hospital. With clear definition of medication errors and an appropriate working reporting system it is expected that reporting of errors would be helping the hospital

develop effective strategies for a safer healthcare system. This is consistent with previous study by by Brabcova et al. (2023) exploring the reasons for medication administration errors from nurses' perspectives reported similar findings; these authors found that illegible medical orders and errors in drug names caused medication administration errors. In addition, other studies have reported that confusion in drug orders, medication packaging issues, poor communication, unclear medication orders, and transcribing issues contributed to medication administration errors (Alblowi et al., 2021; Alzoubi et al., 2023; Ayorinde & Alabi, 2019; Hammoudi et al., 2018).

Furthermore, a study by Cooper, DiGiovanni, Schultz, Taylor, and Nossaman (2012), which found that 85% of respondents recognized the meaning of medical errors. Additionally, 89% of respondents acknowledged the importance of reporting medication errors while performing their duties, suggesting that they were well-informed about the need to report such errors. This finding is consistent with a study by Cheragi et al. (2013), which showed that 65% of healthcare workers understood the value of reporting medical errors.

5.3 Attitudes of nurses towards medication errors:

The process of administering drug therapy is a complex component of an even more intricate healthcare system. Issues can arise at any point in the process, from prescription to drug delivery (Dirik, 2019). Simply encouraging individuals to be cautious is not an effective error prevention strategy, as it does not address the underlying factors contributing to mistakes (Wachter & Gupta, 2018). To truly reduce the likelihood of errors, a holistic approach that considers the entire system—ranging from drug manufacturers to the end users of the

therapy—is necessary. In recent years, researchers have increasingly focused on systemic factors related to medication errors, such as patient health, staff availability, documentation policies, physical environment, lighting, organizational culture, communication, routine practices, and the reporting of adverse events (Anđelić, Savić, Kozić, 2021; Kim and Kim, 2019; Ambwani, Misra, Kumar, 2019).

Understanding why medication errors go unreported in healthcare institutions is crucial for improving the reporting system. The findings from this study offer valuable insights into the organizational barriers that hinder the reporting of medication errors.

In this study, nurses identify several key reasons for not reporting medication errors. These include the perception that the error wasn't significant enough to report, concerns about negative consequences from reporting, fear of potential lawsuits from patients or their families, the belief that no error occurred if no harm was done to the patient, uncertainty about how to report the error, and the time-consuming nature of completing incident forms. Upon analyzing the findings, it becomes clear that nurses are more afraid of management's reaction than the responses of their peers or patients. This suggests that nurses are less concerned about the reactions of team members and more fearful of those in formal authority positions within the organization. This attitude aligns with the traditional management approach in healthcare settings, which often focuses on assigning blame rather than understanding the causes and reasons behind errors. Similar findings have been reported by other studies, which have reported that this factor is considered a major obstacle to reporting medication administration errors (Alzoubi et al., 2023; Dyab et al., 2018; Fathallah Mostafa et al., 2023; Hammoudi et al., 2018; Yousef et al., 2021; Yung et al., 2016). In addition, other studies have reported that nurses refrained from reporting errors to avoid punishment or legal

actions (Abou Hashish & El-Bialy, 2013; Brabcova et al., 2023; Mohammad et al., 2016; Rutledge et al., 2018). Nurses are expected to perform flawlessly, which creates a reluctance to admit mistakes, as they fear punishment regardless of the context. Environments that treat errors as personal failures discourage reporting. Fear of management is frequently cited as the main reason for not reporting errors in numerous studies. According to the research, barriers to reporting medication errors can be categorized into two main groups: organizational barriers "such as culture, reporting systems, and management behavior" and personal or professional barriers "including fear, responsibility, and nurse characteristics" (Vrbnjak et al., 2016).

The study results revealed that the majority of participants strongly agreed that factors such as fear of the impact of medication errors on staff performance evaluations, fear of punishment, concern about being labeled incompetent by colleagues, and the tendency to blame individuals rather than the system, all acted as barriers to reporting medication errors. Such a culture can negatively impact the quality of care and safety of patients (Abou Hashish & El-Bialy, 2013; Dyab et al., 2018; Hughes, 2008). In a systematic review that was conducted by Albalawi et al. (2020), the blame culture was highlighted as a negative factor within the healthcare services in Saudi Arabia. Hence, it is essential to establish a culture that prioritizes safety and implements a supporting mechanism for nurses to report errors.

The regression analysis conducted to determine whether fear of consequences and Attitudes of nurses towards medication errors have a direct impact on Nurses Attitudes Toward Reporting Medication Errors found statistical evidence supporting a direct effect. However, fear of consequences and Attitudes of nurses towards medication errors were responsible for 12% and 14 of the variance in Nurses Attitudes Toward Reporting Medication Errors.

5.4 Practices of nurses towards medication errors:

The results of this study revealed that 84.4% of respondents stated they would apologize to the patient or caregiver in the event of a medication error. This suggests that the respondents demonstrated a positive approach toward addressing medical errors. This contrasts with the findings of Wittich, Burkle, and Lanier (2014), who discovered that healthcare workers were generally unwilling to apologize to patients when medical errors occurred.

Chapter six

6.0 Conclusion and Recommendation:

The process of issuing medication in healthcare settings involves multiple disciplines and is inherently complex. Errors can happen at any point in this process, including during prescription, storage, dispensing, or administration. It is crucial to report these errors so that the underlying causes, whether related to management or employee actions, can be identified and addressed. Reporting medication errors also plays a key role in preventing their recurrence, which in turn helps reduce the overall occurrence of such errors in the future.

The study's findings reveal that 198 respondents (65.6%), more than half, strongly agreed that the environment for reporting medication errors is a key factor contributing to the underreporting of errors from a managerial perspective. Additionally, 219 respondents (72.5%), 223 respondents (73.8%), and 246 respondents (81.5%) strongly agreed that other factors, such as the potential serious consequences of reporting an error, heavy workload, and lack of training and orientation, also play significant roles.

Addressing these factors is expected to increase the rate of error reporting, which in turn would help reduce the occurrence of medication errors. Palestinian could benefit from global initiatives aimed at reducing the frequency of medication errors and their associated adverse drug events by establishing a centralized reporting system in all healthcare facilities.

6.1 Limitation of the study:

The study mainly focused on the factors contributing to medication errors and the reporting of such errors at Arabi Group Hospitals. However, it did not evaluate the hospital's medication error rate or the current rate of medication error reporting. Due to financial constraints and limited funds, the researcher used her personal savings to address this issue.

When interpreting study results, it is important to recognize these limitations and consider strategies to mitigate their impact, such as improving participant comfort, ensuring clear communication of the study's importance, and carefully selecting the sample to account for multiple aspects of the specialty.

Furthermore, limitation was using cross-sectional study design, unlike other types of observational studies, cross-sectional studies do not follow individuals up over time. They are usually inexpensive and easy to conduct. They are useful for establishing preliminary evidence in planning a future advanced study, and it is therefore difficult to prove causal relationships between the scales and their associated factors by using cross-sectional design.

6.2 Recommendations:

This study provides evidence that knowledge is a key factor in improving practices. With a solid understanding, practices are enhanced. Therefore, we recommend the following actions for healthcare facilities, the Ministry of Health, and future research:

6.2 .1 Implications for Nursing Practice:

1. The study's results may alert nurse managers and nurses to be aware of the causes of the errors, enabling them to avoid them and work together to promote their reporting.

2. The results can also be used to develop appropriate protocols for drug administration and enhance safety education. In addition, the healthcare institutions in this study and similar ones can review and adjust their policies and procedures accordingly.

   Nurses should be educated about medication administration and able to assess their knowledge and skills. Such education should ensure that nurses check the accuracy and completeness of medication orders and practice medication administration within the policies and procedures related to medication administration.

6.2.2 Recommendations for Health Organizations and the Ministry of Health:

1. Enhance the knowledge of healthcare staff by regularly organizing continuous medical education programs on the risks of medical errors and how to prevent them.

2. Health centers should create a supportive environment for risks of medical errors

3. Workloads for healthcare personnel should be managed to prevent overload.

4. Senior healthcare professionals should be encouraged to supervise junior nurses during medication administration.

5. Along with practicing the reporting of medication errors, there is a need for more coursework on ethics and ethical nursing practices. Nurses have a responsibility to

report all medication errors, regardless of whether harm was caused, to prevent future mistakes and learn from them.

6. The Ministry of Health should advocate for increased funding to support awareness campaigns about medication administration, risks of medical errors and the importance of error reporting.

6.3 Future study:

The following topics could be explored by future research to expand knowledge in this field.

- Factors that prevent healthcare workers from reporting medication errors to hospital administration.
- A further research is recommended to be carried out in specific units (surgical ward, paediatric, Obstetrics and Gynaecology, Intensive care units etc) of the hospital since that will give clear indication of what is prevalent in the individual hospitals for management to take action. Research is recommended to be carried out into the feasibility and effectiveness of adopting the computerized order entry with clinical decision-support systems.
- A process improvement study using rapid cycle testing to define, measure, analyze, improve and control interruptions and distractions, using observations of nurses administering medication and doctors prescribing.
- Further study is also warranted to evaluate the implementation of the new reflective learning tool on the PICU study to determine the impact on individual and shared

learning and the best time for completing the tool (e.g., immediately after error as is current practice or at a less anxious time).

- Development of a tool for managers on PICU to improve consistency around management following a ME to ensure clearer communication and documentation. Future work could also include the role of leadership, as it would be interesting see how the nurse manager's role influences the creation of a positive learning climate

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Appendices

Appendix 1: Research Questionnaire

Arab American University – Ramallah

Faculty of Graduate Students

Knowledge, Attitudes, and Practices of Nurses about Medication Errors at Arabi Group Hospitals: A Cross-sectional Study

My name is Israa Badran, I am a graduate student of the Master's in Quality Management in Healthcare Institutions program at Arab American University.

The purpose of this study is to explore the knowledge, attitudes, and practices of nurses regarding medication errors within Arabi hospital groups. Your valuable insights will contribute to our research and enhance our understanding of medication safety.

The study aims to assess the nurses' knowledge, attitudes, and practices (KAP) concerning medication errors specifically addressing medication safety, including identifying, reporting, and preventing medication errors. Participation in the study is voluntary, responses will be

kept confidential and anonymous, and participants have the right to withdraw at any time without explanation. The study adheres to ethical guidelines, poses no risks, and welcomes participants to reach out with any concerns or questions.

By completing this questionnaire, you are contributing to the advancement of patient safety and health care practices.

By completing this questionnaire, you are contributing to the advancement of patient safety and health care practices.

Contact information:

E-mail address: israabed97@outlook.com

Please answer all the questions to the best of your ability.

Section 1: Demographic data		
1- Hospital setting:		
○ Arab specialist hospital ○ Istishari Arab hospital ○ Ibn-Sina Arab hospital		
2- Gender:		
○ Male	○ Female	
3- Age (in completed years):		
○ <25	○ 25-35	○ >35
4- Years of work experience:		
○ <5	○ 5-15	○ >15

5- Educational level:			
○ Diploma Degree	○ Bachelor's Degree	○ Master's Degree	○ PhD. Degree

6-Department:

a. Medical surgical department

b. Orthopaedic department

c. Gynaecology department

d. Emergency department

e. Oncology department

f. Intensive care unit (ICU)

g. Cardiac care unit (CCU)

h. Others

Section 2: Measure knowledge about medication errors and reporting system. You have (6 questions)

7- Have you ever heard about medication errors?

a. Yes
b. No

8- If yes, how would you define medication error?

a. Error committed while taking a medication
b. Error committed by a health work
c. Error committed while administering medicines
d. Error committed by the patient

9- Have you ever had of the steps involved in reporting a medication error?

a. Yes
b. No

10- Do you know of any medication errors that are worth reporting while you perform your duties?

a. Yes
b. No

11- If yes, which medication errors are worth reporting?

a. Wrong medicines administered
b. Wrong drugs prescribed

c. Expired drug administered

d. Little dose administered

12- Do you think it is important to report medication errors?

a. Yes

b. No

Section 3. Nurses' attitudes about medication errors and reporting system. (18 questions)

To what extent do you agree with the following statements:	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
13. The names of many medications are similar.					
14. Providers' medication orders are unclear.					
15. Poor communication between providers and nurses exists.					
16. There is no easy way to look up medications on the floor.					
17. There is not enough time to look up medications on the floor.					

18. Medication administration skills change often.					
19. Nurses are interrupted during medication administration.					
20. Nurses are assigned too many patients, delaying medication administration times.					
21. Nurses check the patient's ID band before medication administration.					
22. Nurses use the Five Rights of Medication Administration.					
23. Nurses may not think the error was important enough to report.					
To what extent do you agree with the following statements:	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
24. Nurses fear negative consequences when reporting medication errors.					

25. The patient or family might sue the nurse if a medication error is reported.					
26- No harm came to the patient, so no error occurred.					
27- Nurses do not know how to report a medication error.					
28- Filling out an incident form to report an error takes too much time.					
29- Contacting a provider to report an error takes too much time.					
30- Nurses fear they will look incompetent to their peers.					

Section 4: Nurses practices about medication errors. (You have 6 questions)

31- Nurses fear they will look incompetent to their peers.

a. Yes

b. No

32- Have you ever witnessed a colleague commit a medication error?

a. Yes

b. No

33- If committed a medication error, would you be willing to report it?

a. Yes

b. No

34- Would you apologize to the patient/caretaker in case of a medication error?

a. Yes

b. No

35- Is there a protocol for reporting medication errors at this facility?

a. Yes

b. No

36- Do you think reporting medication errors can improve services at this facility?

a. Yes

b. No

Appendix 2: Informed Consent and Participant information sheet

AAUP-IRB-R APPLICATION FORM

Applicant Information	
Name of Applicant(s):	Israa Abd El-Hadi Othman Badran
University ID No.:	202020402
Faculty:	**Faculty of Administrative and Financial Sciences.**
Department:	Administration & Financial Sciences department
Program:	Master degree of quality management in healthcare institutions
Name of main supervisor:	Dr. Ayesha AlRifai
Name of co-supervisor(s):	
Name of external supervisor:	

General Information	
Study title:	Knowledge, Attitudes, and Practices of Nurses about Medication Error at Arabi hospital groups: A Cross-sectional Study.
Study summary:	Patients safety is one of the vital objectives of the palatable of care inside the time of world medical services. Many explorations have perceived medicine mistakes as fundamental to preventable harm to victims and decreasing impacted individual insurance. Nurses play a crucial role, as they often are the ones who administer medications directly to patients. Because of the importance of medication errors and their impact on the patient by exposing him/her to life-threatening situations, the measurement of knowledge, attitudes, and practices of nurses toward medication error to enhance medication handling and reporting system, that help

to decrease and detect a near-miss mistakes before reach to the patient.

This study can help to develop policies to increase the quality of the medication process from ordering to administrative, these process that including healthcare provided from physician order drugs to pharmacist how to dispense medication then nurse how prepared than giving medication to a patient in such as policies of five right for the medication (right patient, right drug, right dose and right time), sometimes need to add way or polices to ensure medication process in an appropriate way, then use KAP study for measure knowledge, awareness and help to improve hospital process in risk management and patient safety (Dawin Abukhalil et al., 2022)

This study aims to assess the knowledge, attitudes, and practices (KAP) of nurses towards medication errors at Arabi hospital groups, with the goal of developing strategies to enhance medication safety..

Type of the study:

Non-experimental (non-interventional) descriptive study.

Has this study been conducted at AAUP in the past?

No

If yes, give details:

Has this study been conducted in Palestine in the past?

Yes

If yes, give details:

There is one previous study in Palestine that talks about awareness of nurses toward medication error. In my study research will talk about knowledge, attitudes and practices of

	nurses, to cover all side ,it is more comprehensive than other study.
Is this research funded?	No
If yes, give details:	

Research Details

Study introduction and background:	Patient safety is a vital objective in healthcare, particularly in preventing medication errors, which are preventable mistakes in administering drugs that can harm patients. Medication errors involve the wrong use of healing stock or harmful outcomes for patients and can occur during prescribing, dispensing, or administration by healthcare professionals like doctors, pharmacists, and nurses (Alandajani et al., 2022; Damin Abukhalil et al., 2022; Carandang et al., 2015). These errors, especially prevalent in clinical settings with varying drug delivery methods and patient conditions, lead to higher illness and death rates, longer hospital stays, and increased healthcare costs (Kim & Lee, 2020; AL-Mutairi et al., 2021). The World Health Organization reports significant patient harm from medical care, with a notable portion preventable (Alser et al., 2020). Factors like nurse workload, long working hours, and lack of staff contribute to medication errors (Fasolino & Snyder, 2012). Reporting these errors is crucial for improving patient safety and learning from mistakes (Alsulami et al., 2019). In Palestine, the lack of a regulatory system highlights the need for improved education, training, and reporting (Damin Abukhalil et al., 2022).
Why it is important to conduct this study?	Because of the importance of medication errors and their impact on the patient by exposing him to life-threatening situations, the measurement of knowledge, attitudes, and practices of nurses about medication error to enhance medication handling and reporting system, that help to

to decrease and detect a near-miss mistakes before reach to the patient.

This study can help to develop policies to increase the quality of the medication process from ordering to administrative, these process that including healthcare provided from physician order drugs to pharmacist how to dispense medication then nurse how prepared than giving medication to a patient in such as policies of five right for the medication (right patient, right drug, right dose and right time), sometimes need to add way or polices to ensure medication process in an appropriate way, then use KAP study for measure knowledge, awareness and help to improve hospital process in risk management and patient safety (Damin Abukhalil et al., 2022)

This study aims to assess the knowledge, attitudes, and practices (KAP) of nurses towards medication errors atArabi hospital groups, with the goal of developing strategies to enhance medication safety..

Type of the study:

Non-experimental (non-interventional) descriptive study.

Has this study been conducted at AAUP in the past?

No

If yes, give details:

Has this study been conducted in Palestine in the past?

Yes

If yes, give details:

There is one previous study in Palestine that talks about awareness of nurses toward medication error. In my study research will talk about knowledge, attitudes and practices of

decrease and detect a near-miss mistake before reach to the patient.

This study will help develop policies to improve the quality of the medication process from ordering to administrative, these process that including healthcare provided by a physician ordering drugs to a pharmacist dispensing medication then a nurse preparing and giving medication to a patient in such as policies of five right for the medication (right patient, right drug, right dose and right time), sometimes need to add way or polices to ensure medication process in an appropriate way, then use KAP study for measure knowledge, awareness and help to improve hospital process in risk management and patient safety (Damin Abukhalil et al., 2022)

Study objectives:

1) Describe the socio-demographic characteristics of participating nurses.
2) To assess the knowledge of nurses about medication errors at Arabi group hospitals.
3) To assess the attitudes of nursing about medication errors iat Arabi group hospitals
4) Assess practices of nursing about medication errors at Arabi group hospitals.
5) Identify the factors associated with medication errors among the nurses at Arabi group hospitals.

Methodology

Study design: Cross-Sectional design

Method of data collection:	Quantitative method
Sampling method:	They employ Cluster random sampling and proportional stratified sampling techniques to select participants based on number of nurses in each hospital.
Study population (sample size and target group):	The study population include all nurses working at Arabi groups hospital. The sample size is calculated using Raosoft calculator. With a 95% confidence interval and a 5% margin of error according to the region's population size estimated at 20,000 (the highest number that raosoft takes), the minimum sample size is recommended to be 377.
How will the data be collected?	self- administered surveys are delivered to the responders via Google Forms. It is essential that each participant follows the instructions when filling out the self-administered questionnaire.
Who will collect the data?	Israa badran the researcher of study
How long will the study be?	In December 2024
Ethical Issues	
Are the patients file or medical records needed?	□ No
Are human subjects involved?	□ No
Does the study involve people from vulnerable groups?	□ No

How long is each participant going to be involved in the study?	Once all hospitals give their consent, the chief administrators of the selected hospitals receive consent papers to email to the nurses. Each consent form is signed by the nurses before their participation in this study. Nurses are informed about the purpose of the study and confidentiality of all information provided is assured. Additionally, they are reminded that participation in the study is voluntary and that their information will only be used for research.

For experimental (interventional) study.

What is the intervention (educational program, drugs, therapy, treatment, medical device, …etc.) of this study?	1. Educational program, 2. Drugs 3. Therapy 4. Treatment 5. Medical device 6. Other
Who will give the intervention?	
Is the intervention of the study New?	□ Yes □ No
.If yes, is the new intervention tested before?	□ Yes □ No □ Not applicable
.If yes, has the new intervention granted license?	□ Yes □ No □ Not applicable
.If yes, Who gave the licenses?	
How much is the intervention cost?	
Who will pay?	

Is there any continuity of treatment provided after the study is completed?	◻ No
Does this study involve any clinical procedure?	◻ No
Does this study include taking blood, tissue, biological sample from human subjects?	◻ No
What is the language of the questionnaires?	English
Did you translate the questionnaires from the original language?	◻ Yes
Will the questionnaires / interview include sensitive, embarrassment, upsetting topics?	◻ No
What are the benefits for the participants?	Absolutely, participating in the questionnaire offers numerous benefits for nurses. It allows them to re-evaluate their knowledge and compare their experiences with peers, which can highlight areas where they may need further learning. Understanding their own experiences with medication errors and how they handle them can illuminate gaps in knowledge or practice. Moreover, it can help identify specific training needs, enabling nurses to seek out relevant education or professional development opportunities. This process not only enhances their skills and confidence but also contributes to overall patient safety by reducing the likelihood of medication errors.
Is there any potential harm for the participants?	◻ No

. If yes, please specify?

. If yes, how are you going to minimize it?

Is there an insurance coverage for the study?	▫ No
Is there any payment for the participants?	▫ No
Is there any payment for the persons who will be recruited for the study?	▫ No
How will the data / records (e.g. questionnaires) of the participants be kept?	When you use Google Forms for administering questionnaires, it makes the process of collecting and managing data both easy and secure. Each response is saved in real-time and securely stored in Google Drive, with encryption ensuring that the data is safe. Only those who need to see the responses should have access to the form and its data. To protect the privacy of participants, it's important to avoid asking for personal information unless it's absolutely necessary. I will also anonymize the data to keep identities confidential. Regular backups of the data are a good idea to prevent any loss, and you can easily download the responses in formats like CSV or Excel for offline storage. For data analysis, I will use tools within Google Sheets or any other statistical software, while always maintaining the data's integrity and confidentiality. This method ensures that participants' privacy is respected and that the data collected is well-protected and managed effectively.
How will you keep the anonymity of the participants?	avoid asking for personal information unless it's absolutely necessary, there is no question personal talk about name.
Who will have an access to the research data?	No one just the researcher has access to data. Access to the research data will be strictly controlled to ensure confidentiality and security.

- For Students, your supervisor must check the application and be copied in the email.
- Every application might takes 30 days for review.

Appendix 3: IRB Approval Letter

Arab American University
Institutional Review Board - Ramallah

الجامعة العربية الأمريكية
مجلس اخلاقيات البحث العلمي – رام الله

IRB Approval Letter

Study Title: "Knowledge, Attitudes and Practices of Nurses about Medication Errors at Arabi Group Hospitals: A Cross-sectional Study".

Submitted by: Israa Abd El-Hadi Othman Badran

Date received: 9th November 2024

Date reviewed: 13th November 2024

Date approved: 18th November 2024

Your Study titled **"Knowledge, Attitudes and Practices of Nurses about Medication Errors at Arabi Group Hospitals: A Cross-sectional Study"** with the code number **"R-2024/A/160/N"** was reviewed by the Arab American University Institutional Review Board - Ramallah and it was approved on the 18th of November 2024.

Sajed Ghawadra, PhD
IRB-R Chairman
Arab American University of Palestine

الجامعة العربية الأمريكية - فلسطين
مجلس اخلاقيات البحث العلمي - رام الله
IRB-R
ARAB AMERICAN UNIVERSITY-PALESTINE
INSTITUTIONAL REVIEW BOARD - RAMALLAH

General Conditions:

1. Valid for 6 months from the date of approval.
2. It is important to inform the IRB-R with any modification of the approved study protocol.
3. The Bord appreciates a copy of the research when accomplished.

رام الله – فلسطين

Tel: 02-294-1999 **E-Email:** IRB-R@aaup.edu **Website:** www.aaup.edu

Arab American University
Institutional Review Board – Ramallah

الجامعـــة العربيـــة الأمريكيـــة
مجلس اخلاقيات البحث العلمي – رام الله

PARTICIPANT INFORMATION SHEET

AAUP-IRB-R Code No.: .....
AAUP-IRB-R Date: 9 November 2024

Study Title: Knowledge, Attitudes and Practices of Nurses about Medication Errors at Arabi Group Hospitals: A Cross-sectional Study

We would like to invite you to take part in a research study. Before you decide whether to participate, you need to understand why the research is being done and what it would involve. Please take time to read the following information carefully; talk to others about the study if you wish.

Ask us if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish to take part.

1. What is the purpose of this study?

1) Describe the socio-demographic characteristics of nurses.
2) To assess the knowledge of nurses about medication errors in Arabi group hospitals.
3) To assess the attitude of nursing about medication errors in Arabi group hospitals
4) Assess practice of nursing about medication errors in Arabi group hoapitals
5) Identify the factors associated with medication errors among the nurses in Arabi group hospitals.

2. Why is this study important?

Because of the importance of medication errors and their impact on the patient by exposing him to life-threatening situations, the measurement of Knowledge, attitude, and practice of nurses toward medication error to enhance medication handling and reporting system, that help to decrease and detect a near-miss mistake before reach to the patient.

This study can help to develop policies to increase the quality of the medication process from ordering to administrative, these process that including healthcare provided from physician order drugs to pharmacist how to dispense medication then nurse how prepared than giving medication to a patient in such as policies of five right for the medication (right patient, right drug, right dose and right time), sometimes need to add way or polices to ensure medication process in an appropriate way, then use KAP study for measure knowledge,

awareness and help to improve hospital process in risk management and patient safety (Damin Abukhalil et al., 2022)

3. What is the procedure that is being tested? *(If applicable)*

NO

4. Why have I been invited to participate in this study?

All the nurses registered with the Palestine commission for health specialties who completed at least one year of experience in their job in Al-Arabi group hospitals regardless of their gender, age, educational level, or cultural background.

5. Who should not participate in the study?

Nurses on maternity leave, internship, and student nurses, nurses under one year of experience, and nurses who have not received the orientation program.

6. Can I refuse to take part in the study?

Yea you can, the participation in the study is volunteer and that their information will only be used for research, each participant can withdraw from the study any time.

1. What will happen to me if I take part?

Absolutely, participating in the questionnaire offers numerous benefits for nurses. It allows them to re-evaluate their knowledge and compare their experiences with peers, which can highlight areas where they may need further learning. Understanding their own experiences with medication errors and how they handle them can illuminate gaps in knowledge or practice. Moreover, it can help identify specific training needs, enabling nurses to seek out relevant education or professional development opportunities. This process not only enhances their skills and confidence but also contributes to overall patient safety by reducing the likelihood of medication errors.

How long will I be involved in this study?

Once all hospitals give their consent, the chief administrators of the selected hospitals receive consent papers to email to the nurses. Each consent form is signed by the nurses before their participation in this study. Nurses are informed about the purpose of the study and confidentiality of all information provided is assured.

Just one month for data collection and after analysis depend on data result, should be apply training program for increase awareness, knowledge and enhance practice of nurses.

2. What are the possible disadvantages and risks?

There is no risk or harm possible happen , and no disadvantage can be founded in this study .

3. What are the possible benefits to me?

The measurement of Knowledge, attitude, and practice of nurses toward medication error to enhance medication handling and reporting system, that help to decrease and detect a near-miss mistake before reach to the patient.

This study can help to develop policies to increase the quality of the medication process and they help to safe life of many patient .

4. Who will have access to my medical records and research data?

In a research study, access to your medical records and research data will be restricted to a select group of individuals (research team) to ensure your confidentiality and privacy.

5. Will my records/data be kept confidential?

Yes, your records and data will be kept completely confidential. We follow strict ethical guidelines and legal requirements to make sure your privacy is protected. Only a small group of authorized individuals, such as the principal investigator, key members of the research team, data analysts, and possibly regulatory authorities or ethics committees, will have access to your data. These people are trained to handle your information responsibly and ensure its confidentiality. We use measures like data anonymization, secure storage, and controlled access to protect your information throughout the study. Your privacy is very important to us, and we take every precaution to safeguard it.

When use Google Forms for administering questionnaires, it makes the process of collecting and managing data both easy and secure. Each response is saved in real-time and securely stored in Google Drive, with encryption ensuring that the data is safe. Only those who need to see the responses should have access to the form and its data.

To protect the privacy of participants, it's important to avoid asking for personal information unless it's absolutely necessary. You can also anonymize the data to keep identities confidential. Regular backups of the data are a good idea to prevent any loss, and you can easily download the responses in formats like CSV or Excel for offline storage.

What will happen to any samples I give? *(If applicable)*

The two-proportion sample formula to calculate the sample size. They base this percentage of medication administration errors among nurses in AL-Arabi groups hospital using the main causes of these errors as two relative variables to calculate the sample size. The total sample size is 420 people after considering a power of 80%, a confidence level of 95%, and an estimate of 20% for incomplete data. They employ Cluster random sampling and proportional stratified sampling techniques to select participants based on number of nurses in each hospital.

6. What will happen if I don't want to carry on with the study?

You have the right to withdraw at any time without any penalty or loss of benefits to which you are otherwise entitled.

7. What will happen to the results of the research study?

This study can help to develop policies to increase the quality of the medication process from ordering to administrative, these process that including healthcare provided from physician order drugs to pharmacist how to dispense medication then nurse how prepared than giving medication to a patient in such as policies of five right for the medication (right patient, right drug, right dose and right time), sometimes need to add way or polices to ensure medication process in an appropriate way, then use KAP study for measure knowledge, awareness and help to improve hospital process in risk management and patient safety.

8. Will I receive compensation for participating in this study?

There's no compensation for participating, your involvement is incredibly valuable. Your participation contributes to important research that can improve healthcare practices and patient safety. Your input and experiences can help shape better policies and training programs for healthcare providers.

Who should I contact if I have additional questions/problems during the study?

If you have any additional questions or encounter any problems during the study, you should contact research team, their contact information should be provided to you when you agree to participate in the study.

Researcher contact details:

E-mail: i.badran1@student.aaup.edu

Contact Number : 0568511318

9. Who should I contact if I am unhappy with how the study is being conducted?

(By email please).

Institutional Review Board – Ramallah
Arab American University
Email: IRB-R@aaup.edu

Appendix 4: Facilitate a research mission

Arab American University
Faculty of Graduate Studies

الجامعة العربية الأمريكية
كلية الدراسات العليا

2024/11/5

الى من يهمه الامر

تسهيل مهمة بحثية

تحية طيبة وبعد،

تُهديكم كلية الدراسات العُليا في الجامعة العربية الأمريكية أطيب التحيات، وبالإشارة الى الموضوع أعلاه، تشهد كلية الدراسات العُليا في الجامعة أن الطالبة **اسراء عبد الهادي عثمان بدران** والتي تحمل الرقم الجامعي 202020402 هي طالبة ماجستير في برنامج إدارة الجودة في المؤسسات الصحية وتعمل على رسالة الماجستير الخاصة بها بعنوان:

"Knowledge, Attitudes, and Practices of Nursing Medication Error in Arabi hospital groups: A Cross-sectional Study"

تحت إشراف الدكتورة عائشة الرفاعي. نأمل من حضرتكم الإيعاز لمن يلزم لمساعدتها للحصول على المعلومات اللازمة للدراسة، علماً أن المعلومات ستستخدم لغاية البحث فقط وسيتم التعامل معها بغاية السرية، وقد أعطيت هذه الرسالة بناءً على طلبها.

وتفضلوا بقبول فائق الاحترام

عميد كلية الدراسات العُليا

د. نوار قطيط

كلية الدراسات العليا
FACULTY OF GRADUATE STUDIES

Jenin Tel: +970-4-2418888 Ext.:1471,1472 Fax: +970-4-2510810 P.O. Box:240
Ramallah Tel: +970-2-2941999 Fax: +970-2-2941979 Abu Qash - Near Alrehan
E-mail: FGS@aaup.edu : PGS@aaup.edu Website: www.aaup.edu

Approval for Data Collection from Al-Arabi Specialized Hospital:

Approval for data collection from Istisiari Arabi Hospital:

RE: بحث علمي

OA Othman Awad
To You and Sanaa Alshrafi
9 Dec

الزميلة اسراء المحترمة
تحية طيبة وبعد:
يسعدنا اعلامك انه تم الموافقة على بحثك
جزيل الشكر

From: Othman Awad
Sent: Sunday, December 1, 2024 11:03 AM
To: Israa Badran <israa.badran@iah.ps>; HR <hr@iah.ps>
Cc: Sanaa Alshrafi <sanaa.alshrafi@iah.ps>
Subject: RE: بحث علمي

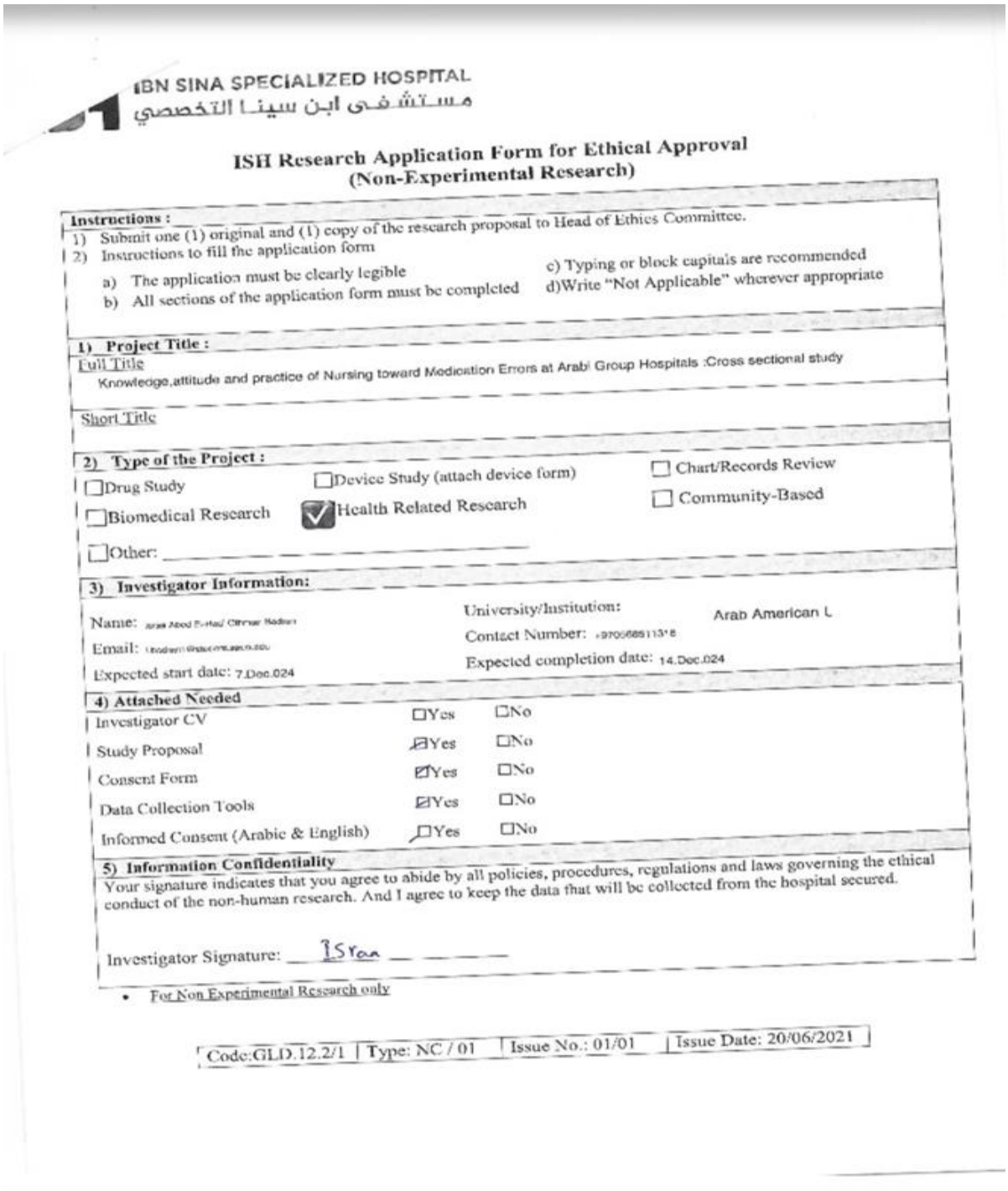
الزميلة اسراء المحترمة
تحية طيبة وبعد:
لاحقا الى طلبك لعمل بحث في المستشفى الاستشاري العربي ، مرفق طلب عمل البحث ، يرجى منك تعبئته ومن ثم ارساله مع جميل أوراق البحث كاملة ليتم دراسته من طرف اللجنة والرد عليك
جزيل الشكر

From: Israa Badran <israa.badran@iah.ps>
Sent: Sunday, December 1, 2024 10:43 AM
To: HR <hr@iah.ps>
Subject: بحث علمي

تحية طيبة وبعد
اود الاستفسار عن عدد المرضين الموظفين في كل من (مستشفى الاستشاري , المستشفر العربي التخصصي و ابن سينا)
وذلك لغرض البحث العلمي لاتمام رسالة الماجستير
كما انه تم ارفاق لكم نموذج تسهيل المهمه البحثية
ارجو الرد العاجل وذلك لضيق الوقت المتوفر

Mail Calendar Apps

Approval for data collection from Ibn Sina Specialized Hospital:



IBN SINA SPECIALIZED HOSPITAL
مستشفى ابن سينا التخصصي

ISH Research Application Form for Ethical Approval
(Non-Experimental Research)

Instructions :
1) Submit one (1) original and (1) copy of the research proposal to Head of Ethics Committee.
2) Instructions to fill the application form
   a) The application must be clearly legible
   b) All sections of the application form must be completed
   c) Typing or block capitals are recommended
   d) Write "Not Applicable" wherever appropriate

1) Project Title :
Full Title
Knowledge,attitude and practice of Nursing toward Medication Errors at Arabi Group Hospitals :Cross sectional study

Short Title

2) Type of the Project :
☐ Drug Study ☐ Device Study (attach device form) ☐ Chart/Records Review
☐ Biomedical Research ☑ Health Related Research ☐ Community-Based
☐ Other: _____

3) Investigator Information:
Name: [redacted] University/Institution: Arab American U
Email: [redacted] Contact Number: [redacted]
Expected start date: 7.Dec.024 Expected completion date: 14.Dec.024

4) Attached Needed

Investigator CV	☐ Yes	☐ No
Study Proposal	☑ Yes	☐ No
Consent Form	☑ Yes	☐ No
Data Collection Tools	☑ Yes	☐ No
Informed Consent (Arabic & English)	☐ Yes	☐ No

5) Information Confidentiality
Your signature indicates that you agree to abide by all policies, procedures, regulations and laws governing the ethical conduct of the non-human research. And I agree to keep the data that will be collected from the hospital secured.

Investigator Signature: ISraa

- For Non Experimental Research only

Code:GLD.12.2/1 | Type: NC / 01 | Issue No.: 01/01 | Issue Date: 20/06/2021

IBN SINA SPECIALIZED HOSPITAL
مستشفى ابن سينا التخصصي

For ISH – HR Department Use			
Receiving Date	03.12.2024	Application completed	☑Yes ☐No
HR Department Note	تم استلام جميع الأوراق ومتبقي ال CV . تم الاستلام. [illegible]		
Transfer Date	03.12.2024	HR Department Stamp	IBN SINA SPECIALIZED HOSPITAL مستشفى ابن سينا التخصصي دائرة الموارد البشرية
For ISH - Ethics Committee Use			
Receiving Date	03.12.2024	Research Approval	☑Yes ☐No

Head of Ethics Committee Comment:

لا مانع

Head of Ethics Committee Signature: IBN SINA SPECIALIZED HOSPITAL مستشفى ابن سينا التخصصي Ethics Committee **Date:** 3/12/2024

For ISH - CEO Use

CEO Comment:

لا مانع

CEO Signature: ______ **Date:** 03.12.2024

Code:GLD.12.2/1	Type: NC / 01	Issue No.: 01/01	Issue Date: 20/06/2021

الملخص

معرفة واتجاهات وممارسات الممرضين حول الأخطاء الدوائية في مستشفيات المجموعة العربية: دراسة مقطعية

الخلاصة:

الخلفية: الأخطاء الدوائية هي النوع الأكثر شيوعًا من الأخطاء الطبية، وتحدث عندما يتم وصف الأدوية بشكل غير صحيح أو يساء استخدامها من قبل المرضى تحت إشراف مقدم الرعاية الصحية. يعد تقييم العوامل التي تساهم في عدم الإبلاغ عن الأخطاء الدوائية أمرًا ضروريًا لتحديد الحلول لمنع تكرارها وتقليل التأثير السلبي على المرضى ومتخصصي الرعاية الصحية ومرافق الرعاية الصحية والجمهور.

هدف الدراسة: هدفت هذه الدراسة إلى تحديد المعرفة والمواقف والممارسات تجاه الأخطاء الدوائية في مستشفيات المجموعة العربية في فلسطين.

الطرق: تم استخدام تصميم مسح وصفي مقطعي لتقييم المعرفة والمواقف والممارسات فيما يتعلق بالأخطاء الدوائية في مستشفيات المجموعة العربية في فلسطين. وقد أجريت الدراسة على مقدمي الرعاية الصحية، بما في ذلك 600 ممرض وممرضة يعملون في هذه المستشفيات. تم توزيع استبيان منظم ومختبر مسبقًا بشكل ملائم على 306 مشاركين، تم اختيارهم كحجم العينة بناءً على الحسابات باستخدام حاسبة حجم العينة Raosoft.

النتائج: أشارت نتائج هذه الدراسة إلى أن العاملين في مجال الرعاية الصحية الذين شاركوا أظهروا معرفة قوية بالأخطاء الدوائية، وهو ما انعكس في ممارساتهم الجيدة. ومع ذلك، فإن هذه المعرفة لم تتوافق مع المواقف الإيجابية تجاه الأخطاء الدوائية.

الاستنتاج: في أماكن الرعاية الصحية، من الضروري أن تكون الإدارة مستعدة لتنفيذ نظام الإبلاغ الذي يحدد بوضوح الأحداث السلبية والأخطاء المهنية. يجب أن يشعر العاملون في مجال الرعاية الصحية بالأمان عند الإبلاغ عن الحوادث دون خوف من العقاب أو اللوم. لا تكون التقارير ذات قيمة إلا إذا أعقبها تحليل مهني شامل على مستوى الإدارة، والذي يمكن أن يؤدي بعد ذلك إلى الحصول على تعليقات وتطوير استراتيجيات لتعزيز سلامة المرضى.

الكلمات المفتاحية: المعرفة والموقف والممارسة والأخطاء الدوائية