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KNOWLEDGE, ATTITUDE AND PRACTICE REGARDING MEDICATION ERROR AMONG REGISTERED NURSES AT TERTIARY CARE HOSPITALS OF BANNU, PAKISTAN

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Abstract

Knowledge, Attitude, and Practices Regarding Medication Errors Among Registered Nurses at Tertiary Care Hospitals of Bannu, Pakistan

Background: *In the medical field, medication errors are a serious problem that can have a negative impact on patient outcomes. Improving patient safety and lowering the frequency of medication errors requires an understanding of registered nurses' (RNs') knowledge, attitudes, and practices.*

Objective*: This study aims to assess the KAP related to medication errors among RNs in tertiary care hospitals in Bannu, Pakistan.*

Methods*: A sample of registered nurses employed in different departments of particular tertiary care hospitals participated in a cross-sectional study. A structured questionnaire intended to assess participants' attitudes regarding reporting medication errors, their knowledge of medication errors, and their present drug delivery methods was used to gather data. To find trends and correlations, statistical analysis was done.*

Results*: Intriguing differences in staff demographics that could affect patient care dynamics were found in the study, which was carried out across three hospitals. The largest age group at KGN Teaching Hospital was 25–35 years old, making up 41.67% of the workforce. Of them, 72.22% were female. With nurses accounting for an astounding 88.89% of the workforce, they were well-represented in this group, underscoring the vital role that nursing plays in the healthcare team. In contrast, the age distribution of the staff at DHQ Teaching Hospital was comparable, with 36.0 percent of them being between the ages of 20 and 25. Nursing professionals made up 92.00% of the workforce, with female employees accounting for 64.00%, underscoring the facility's nursing preponderance.*

On the other hand, Women and Children Hospital had a higher percentage of employees between the ages of 25 and 35 (55.56%), with 81.48% of the workforce being female. Additionally, 81.48% of the positions at this hospital were in nursing, demonstrating the critical role that nursing staff play in providing specialized care.

***Conclusion**: The study emphasizes that in order to improve nurses' understanding and confidence in administering medications, certain educational interventions and legislative changes are required. Reducing prescription errors and promoting open reporting can improve the safety culture and, eventually, the quality of patient care at Bannu's medical institutions.*

INTRODUCTION

1.1 BACKGROUND OF THE STUDY

Medication is one of the frequently used in hospitals to treat illnesses throughout the world (1).Medication error is one of the concerns by the nursing profession, although improper medication use has disastrous effects on patients, increases adverse events, morbidity, hospital stay, and costs, mortality. Meaning of Medication Error The drugs that have a high risk of fatal consequences on the patient, if used improperly in the wrong drug, wrong dose, wrong route. (2).Medication error are considered to be a greater risk of causing significant harm to patents if used in error .Nursing errors in medication administration and medication malpractices are among the most underreported medical problems globally (3). Therefore, medication safety and pharma co vigilance are very essential in health care systems to ensure patient safety and remain to be a major concern to stakeholders, healthcare professionals, especially pharmacists, and inevitably, patients (4). Medication errors encompass all events that may occur at any stage of the medication process including prescribing, transcribing, dispensing, administering and monitoring, with or without patient harm [5]. Medicine administration in the hospitals forms a very significant care activity that demands extensive detail consideration and compliant adherence to the set protocol. Safe usage of medicines is crucial in ensuring positive patient outcomes as well as minimizing risks associated with medication-related errors. Medication errors are those preventable events which may lead to inappropriate medication use or even patient harm. These can occur at any point in the medication process, including prescribing, dispensing, administration, and monitoring. [1].

Hospitals are complex systems where a variety of medical specialists deal with a wide range of drugs on a daily basis. Medication errors are made more likely by this intricacy as well as the fast-paced, high-pressure environment that characterizes hospital settings. Numerous things might lead to these mistakes, such as poor record-keeping, a lack of understanding of medications, misunderstandings between medical professionals, and malfunctions in the system that is meant to prevent them [2]. Medication errors can have serious repercussions, from mild side effects to life-threatening circumstances, and they place a heavy load on healthcare systems around the globe. According to estimates, hundreds of thousands of patients are impacted by pharmaceutical errors annually, making it one of the most prevalent types of errors that occur in hospitals [3]. Improving hospital safety culture, fostering better provider-to-provider communication, putting in place reliable electronic prescribing systems, and training employees on the value of drug safety are the main strategies used to lower medication errors. Improving patient safety and the standard of care in hospitals requires an understanding of the reasons behind pharmaceutical errors and the application of mitigation techniques. Better patient care requires an understanding of prescription errors, which are often overlooked in Pakistani healthcare facilities because of manual or semi-automated prescribing systems.

Pharmacy interventions, which are considered to be an essential component of contemporary pharmacy services that inspire the standard of care, prevent major organ damage and potentially life-threatening conditions, and are known to lower patient medication costs and contribute to the rationalization of medication therapy, can help minimize these errors. Around the world, pharmacists are acknowledged for their involvement in patient-centered care. Clinical outcomes are improved, mortality rates are decreased, and avoidable adverse drug reactions are decreased when pharmacists participate in clinical rounds, check patients' medical records, reconcile prescriptions, and counsel patients about their drugs upon discharge and throughout follow-up.However, the doctor of pharmacy program in developing nations like Pakistan is more focused on industry than on hospitals or patient care, and there aren't many schools that prepare pharmacists for clinical services, which makes it difficult for hospitals or clinical pharmacists to fulfill their patient care responsibilities.

This is one of the reasons why hospitals and community pharmacies in Pakistan are understaffed, with few certified pharmacists available. Though pharmacy services are expanding, in Pakistan, pharmacists in hospitals and communities are mainly focused on inventory management, with the exception of a few hospitals where pharmacists are a vital element of patient-centered care.[4]

Nurses are the professionals closest to patients and the last link in the medicine administration chain. Medication safety, which is the result of nurses' shared values and beliefs, can be taught, developed, and internalized in undergraduate nursing programs to change safety culture. There is scant evidence that healthcare educators specifically include medication safety in their professional education programs. Thus, nursing students may receive limited instruction in mistake management approaches. Much of the evidence comes from rich countries, leaving the understanding of and solutions to dangerous drugs in developing countries underexplored. The current literature on medication errors concentrates on registered nurses, whereas nursing students' contributions to medication management go undocumented.[5]

The National Coordinating Council for Medication Error Reporting and Prevention defines medication error as "any preventable event that may cause or lead to inappropriate medication use or patient harm while the medication is under the control of the health care professional, patient, or consumer." Such incidents may be associated with professional practice, health care items, methods, and systems, such as prescribing, order communication, product labeling, packaging, and nomenclature, compounding, dispensing, distribution, administration, education, monitoring, and use. The American Society of Hospital Pharmacists argues that the establishment of pharmaceutical error prevalence is challenging because there are differences in terms. Medication errors can take place at all stages in the process. Control a medicine from prescription to administration. A potential effect of medication errors includes causing damage to patients to an extent of death or severe illness and a huge cost for the healthcare system. This also results in patient dissatisfaction and mistrust towards the health profession. [6]

The drug process involves the involvement of a number of health care professionals like doctors, pharmacologists and nurses. The whole pharmaceutical process starts from the prescription of the prescribed medicine by doctors to a patient to the administration of the drug and observing the response of the patient to the drug. Nurses are involved in the last stages of the pharmaceutical process and, in essence, are responsible for administering drugs to patients. The Nursing and Midwifery Council of the United Kingdom points out that a medical administration requires scientific judgment, knowing, and skill application. Actually, the time taken by a nurse in a shift time to deal with issues on drugs is 40 % of their working time. Therefore, the front line healthcare practitioners, the nurse, are more likely being blamed for pharmaceutical errors,.Indeed, nurses are said to be on the "sharp end" of such practice. A definition adapted from the American National Coordinating Council for Medication Error Reporting and Prevention shall be used in this paper: "A medication error is any preventable event that may cause or lead to inappropriate medication use or patient harm while the medication is under the control of a

healthcare professional, patient, or consumer." Such events may be linked with professional practice, healthcare items, procedures, and systems, including prescribing, order communication, product labeling, packaging, nomenclature, compounding, dispensing, distribution, administration, education, monitoring, and use". [7]

1.2 DEFINITION OF MEDICATION ERRORS

According to the National Coordinating Council for Medication Error Reporting and Prevention, "any preventable event that may cause or lead to inappropriate medication use or patient harm while the medication is in the control of the health care professional, patient, or consumer"(5).Medication errors happen when weak medication systems prescribing, transcribing, dispensing, administration and monitoring practices, which can then result in severe harm, disability and even death (13).medication errors experienced by nurses involve missing or bypassing the administration, wrong medication, inappropriate doses, and errors in terms of patients, routes, rate, and timing of medication (3).one third of medication errors occurring in general medical practices related to prescribing errors. Most of them emanated from the breakdown of communication. Medication errors contribute towards adverse events which compromise on the safety of patients. The same adversely places such huge financial burdens on health systems (17). The medicinal chain is an intricate drugs supply chain that has aspects with multi-disciplinary involvement. Its chain involves lots of steps from prescription stages to administration, involving a lot of risks, hence prone to error. In a hospital, medication errors are prevalent at every point, and it is estimated that a patient admitted to a hospital experiences at least one form of medication error on any given day, which exposes the safety and outcomes of therapy to serious threats (18).Medication errors may result from failure to satisfy any of the ten rights that include right patient, right medication, right time, right dose, right route, right education advice, rights to refuse, right assessment, right evaluation response, and documentation (19).Errors with the use of high alert drugs are dangerous and lead to serious patient harm or even loss of life. Medications with a narrow therapeutic index, such as anticoagulants or Warfarin, may prove disastrous if used inappropriately since any slight overdose can cause massive bleeding. Infusion of medications like Potassium chloride (KCl) and Insulin also proves serious adverse event when rapid intravenous administration is conducted. In critical care settings, the most common high alert medications are Inotropes and vasopressors, and the inappropriate administration of such medicines tends to be particularly disastrous. Despite the low frequency, high-alert medications cause the majority of the medication-related deaths (5).MAE can be avoided by the use of regular reporting systems and barriers from reporting errors such as fear, heavy workload, time constraint, and negative employees' perceptions of error (19).Several factors have been discovered to be linked with under-reporting of MAEs. They include; personal fear of reporting an error for example, anxiety about a legal action being taken, not enough time for the completion of the report, ignorance that an error occurred, and fear and embarrassment because of manager's and colleagues' reactions in case an error has occurred (20).Fear of nursing administration is the leading cause associated with the under-reporting of MAEs. Continued learning education about the importance of reporting MAEs as well as the enforcement of efficient and realistic rules in a non-punitive environment will be potential benefits to avoid the repetition of the same mistakes, thus ensuring safety for the patients (20).MAEs result due to names of drugs similar in look and sound, unclear labelling and dose packaging, and confused packing (21).Registered nurses faced recurrent medication errors caused by overload, extra working hours, insufficient staffing with inadequate support, and length of the shift. Medication errors are based on a lack of knowledge and miscomputation of doses. Competence skills in drug calculation are registration requirements to become a nurse, and their learning abilities over the rigid protocol which discourages thinking ability of nurses. Besides, attention to continuous education with clinical and theoretical support would promote prevention against the occurrence of medication errors (23).

1.3 EPIDEMIOLOGICAL STATISTICS REGARDING MEDICATION ERRORS

Medication errors are a universal problem where 5.0% is fatal, and almost 50.0% of them can be prevented (23). According to the WHO, MEs are ranked in the top ten of the causes of death and disability worldwide (1). According to the World Health Organization, medication errors are the leading cause of healthcare-acquired injuries that amount to about $42 billion yearly, almost 1% of the total global healthcare costs (18). In-hospital incidence for adverse drug events was high, which varied between 2 to 6 events per 100 admissions (23). The emergency hospitalizations due to ADRs vary in their incidence within the ranges of 0.2-41.3% in all countries involved, while 28.9% are preventable. In US, hospital admissions because of ADRs stand at 15%. WHO's quality assurance and medicine safety team always promotes the safe use of drugs (22). One in every 10 hospitalized patients in high-income countries was harmed by AEs, and half of those was deemed preventable. More than 7 million hospitalized patients in the United States suffered from MEs, and MEs are estimated to cost $40 billion in total per year. Reported in the United Kingdom is 2.37 million MEs with a yearly economic burden of £98.5 million per year. In Low Middle-Income countries more than 134 million AEs occur due to unsafe medications; over 2.6 million deaths occur due to it annually (1).It has been studied that 19% errors that occurred in the A/E settings of Intensive Care Units (ICUs) proved fatal and 42% are crucial for follow up(23).outpatients account for (39.0–44.0%), Emergency wards accounts for(60.0–73.5%), transcription account 16.9% and 13.8% for in patients and discharged patients, whereas errors in discharge summaries ranged between 16.0-36.0%. According to CDC, "About one in three US adults takes five or more medications". Adverse drug effects contribute to about 700,000 emergency department visits and 100,000 hospitalizations annually. Nearly 5% of hospitalized patients experience an adverse drug effect and making them one of the most common types of inpatient medication errors (6). From 29.8% to 47.8% of medication errors occur during the prescribing stage; from 10.0% to 51.8% of medication errors occur during transcribing, from 11.3% to 33.6% of medication errors occur during dispensing and from 14.3% to 70% of medication errors occur during the administration stage. Most medication errors happen in the administrative stage in clinical settings, accounting for 53%. In Italy, prescribing accounts for 16.5% of medication errors. 11% of medication errors occur during transcribing and 13.5% of medication errors occurs during the dispensing stage (9).in Australia, the medication error is a major contributor to medical errors (26% of the 27,000 medication related incidents) (14).and in Finland 700 to 1700 people died each year from medication-related errors (19).medication errors were common, as there was one error of every five administered doses of medication. Error reasons Common errors were time (43%), omission (30%), dose (17%), and unauthorized drug (4%). Errors rated potentially harmful are 7%. The most salient problem was "defective medication administration systems." Hospital Jordanian nurses reported a number of errors they know they have made up to six in their nursing practice. However, US nurses reported up to five errors during their entire nursing career (15).(a) Prescription errors; were recorded as follows; drug-drug interaction 68.2%, incomplete prescription 25.0%, monitoring 12.6%, wrong drug 13.0%, underdose 12.6%, wrong interval 12.0%, and overdose 7.0%. (b) Nursing errors; as in wrong rate (34.0%), wrong time administration (28.6%), wrong dose (25.3%), medication omitted (24.0%), wrong fluid (22.4%), wrong drug (21.1%), wrong route (19.9%), and wrong patient (19.7%). (c) Pharmacist errors; as in wrong medication (25.0%), excessive dose (23.0%), poor labeling (23%), wrong dosage errors (21.8%), wrong strength (10.8%), wrong quantity (6.9%), and wrong direction dispensing (2.3%). Prescription and administration types of drug errors are considered common ones and contribute up to 65.0%–87.0% drug errors(23). Among the drug errors that appeared during administration, documentation had (23.0%), dispensing had (22.0%), prescribing was (21.0%), monitoring had (1.0%), and errors at the administration step contributed to the remaining 33.0%. Errors were also tied to omission (25.0%), dosage (30.0%), unauthorized drugs, and the wrong time, patient, and administration technique. (23). MEs are the leading causes of avoidable patient harm in the health care system across the world.39% of

MEs occur among general practitioners, 38% among nurses, and 23% among pharmacists. The ME prevalence among nurses ranges between 16 and 27% (16). Administration of drugs is responsible for one death every day, while approximately 1.3 million people in the United States of America suffer injury yearly due to such errors. Some studies have documented 10%, 19.5 %, and 22.2 % incidences, respectively in developed countries (21). The death toll is also not a minor problem because approximately 100,000 people died due to adverse drug events alone (24). The prevalence of MEs caused by HAMs ranges between 3.8% and 100% in hospitals and has a pooled prevalence rate of 16.3%. The seriousness of these errors in this systematic review ranged between 0.1% and 19.2% for minor and major errors, respectively, while serious errors ranged from 0.2% to 15.4%, and 1.9% resulted in death (1).errors during administration of high-alert medications includes the administration of drugs at wrong rate. It showed that 6.2 % of the medication errors were caused by misadministration techniques. The main cause of 97% of the 265 IV medication errors was that drugs were administered at a rate higher than the recommended rate. pointed out that the administration of concentrated electrolytes or epinephrine at a high rate could cause harm to the patient (11). Pakistan is a resource limited country where disease burden is very high. The current status of country's health care system is worrying. Deaths by medication errors are common, but such are never documented as there is no available mechanism and the apprehension of the reaction from the relatives of the patients or detrimental after effects on one's career. A high profile case of 9 months old baby death in the private sector hospital of Karachi, (Capital city of Sindh, Pakistan) pointed out that the sudden administration of 15% potassium chloride (KCl) injection led to high alert-related medication errors in the country.(7)

1.4 MEDICATION SAFETY STRATEGIES

Nurses specifically are imperative in evaluating such errors since they are, for the most part, in a situation to see medication errors directly and find a way to lessen the danger of medication errors. Their uncommon position is regularly fortified by their continuous learning concerning the medications in addition to their strategies regarding planning and controlling the medicines and for checking the impacts of the treatment. All nurses must get comfortable with different methodologies to forestall or diminish the probability of medication errors (23). Here are certain techniques to follow:

1.4.1 Guarantee the five privileges of the prescription organization

Nurses must guarantee that institutional approaches identified with prescription interpretation are pursued. It isn't adequate to translate the medicine as prescribed, however, to guarantee the right medicines recommended for the right patient, right time, the right measurements, through the right course, and planned effectively (otherwise called the five rights) (23).Nurses are the health care professionals who administer the medications to the patients (4).

1.4.2 Pursue legitimate medication reconciliation techniques

Foundations must have instruments set up for medicine reconciliation while exchanging a patient starting with one establishment then onto the next or starting with one unit then onto the next in a similar organization. Audit and check every prescription for the right patient, right medicine, right measurements, right course, and right time against the exchange (transfer) requests, or medications recorded on the exchange archives. Nurses must contrast this with the Medication Administration Record (MAR). Frequently not all components of a medicine record are accessible for simple confirmation, yet it is of central significance to check with each conceivable source including the releasing or exchanging establishment/unit, the patient or patient's family, and doctor, to forestall potential mistakes identified with inappropriate reconciliation (23).

1.4.3 Have the doctor (or other nurses) read it back

This is a procedure whereby a nurse peruses back a request to the recommending doctor to guarantee the arranged medicine is deciphered accurately. This procedure can likewise be completed starting with one medical nurse then onto the next whereby a medical nurse peruses back a request deciphered to

the doctor's structure to another medical nurse as the MAR is checked on to guarantee precision (23).

1.4.4 Document everything

Nurses play a crucial role in reinforcing patient safety (3). This incorporates legitimate medicine naming, clear documentation, or appropriate recording of administered medicine. An absence of appropriate documentation for any prescription can result in an error. For instance, a nurse neglecting to report an as required prescription can result in another administration being directed by another healthcare provider since no documentation signifying past administration exists. Perusing the medicine name/label and expiration date of the medicine is additionally another best practice. A right prescription can have a wrong mark or the other way around, and this can likewise prompt a medicine error (23).

1.4.5 Guarantee appropriate storage of medications for legitimate adequacy

Health care providers should avoid the medication storage with close or identical names or package on them at the same medication stock rack. Alphabetized drug storage could lead to unintentional confusion. Besides, it is essential to separate 'high alert' medications from other medications to avoid ambiguity. Medications that ought to be refrigerated must be kept refrigerated to look after adequacy, and medications that ought to be kept at room temperature ought to be put away in like manner. Most biological items require refrigeration, and if a multi-dose vial is utilized, it must be named to guarantee it isn't utilized past its lapse/expiration date from the date it was opened. Thus, it is recommended to keep it organized and control access to it (23).

1.4.6 Consider having a drug guide accessible consistently

Nurses should have cleared understanding about the use of medication on patients and it is highly preventable. Nurses can play a significant role in preventing patients from medication administration Errors (2).Regardless of whether it's print or electronic is a matter of personal (or institutional) inclination, however, both are similarly significant in giving imperative data on most classifications of prescription, including trade/generic names, therapeutic class, dosing, nursing consideration, side effect, drug-drug interaction and medication cautionary, for example, 'don't crush, or give with the meal' (23).

1.4.7 Know institution policies, regulations, and guidelines

Nurses should be familiar with the policies and guidelines and how to apply them. Since these regulations and policies could provide necessary information regarding drug ordering, transcription, administration, and documentation. Besides, it could provide information for the nurses about black box warnings, look alike, sound alike, and warning labels (23).

1.5 PROBLEM STATEMENT

The introduction highlights the significant concern of medication errors, which pose a greater risk of severe harm to patients when administered incorrectly (1, 17). Despite the critical role nurses play in medication administration, these errors are frequently underreported, often due to factors such as fear of repercussions and inadequate systems for reporting (3, 20). The high incidence of medication errors, compounded by systemic issues in medication management, results in substantial adverse events, increased morbidity, extended hospital stays, and even fatalities (18, 23). This scenario underscores the urgent need for enhanced educational interventions and systematic strategies to improve knowledge and reporting practices among healthcare professionals, aiming to bolster patient safety (12, 23).

The pervasive issue of medication errors, particularly with high-alert medications, represents a critical threat to patient safety in healthcare settings, exacerbated by systemic underreporting and inadequate education among nursing professionals, necessitating targeted interventions to enhance knowledge and improve medication administration practices (1, 3, 17, 20).

1.6 SIGNIFICANCE OF THE STUDY

This study is significant as it addresses the critical issue of medication error, which are known to result in severe patient harm or death. By focusing on the

role of nursing professionals in the medication administration process, the research aims to highlight the importance of enhancing knowledge, attitudes, reporting practices, and systemic safeguards to improve patient safety. Furthermore, the study's findings can contribute to the development of targeted educational interventions and institutional policies, ultimately leading to a reduction in medication errors and enhancing the overall quality of care in healthcare settings.

1.7 GAP OF THE STUDY

Despite the recognition of medication errors as a leading cause of patient harm, there remains a notable gap in understanding the specific factors contributing to underreporting and errors in the administration of high-alert medications within nursing practice. Existing literature often lacks comprehensive insights into the educational needs of nursing professionals concerning HAMs and the effectiveness of current reporting mechanisms. Additionally, there is limited research on implementing systematic strategies tailored to nursing staff that could foster a culture of safety and accountability. This study aims to fill these gaps by exploring the knowledge deficits, attitudes, and practices of nurses, along with the barriers they face, thereby informing the design of effective training and support systems.

1.8 OPERATIONAL DEFINITIONS

1.8.1 Medication Error (ME)

Medication errors are defined as any preventable incident that may cause or contribute to incorrect prescription usage or patient harm and occurs at any stage of the pharmaceutical process, including prescribing, transcribing, dispensing, administering, and monitoring. Miscommunication, insufficient information, system failures, and environmental distractions are all potential causes of these errors, which can lead to adverse drug events (ADEs), greater morbidity, longer hospital admissions, and even death.

1.8.2 Knowledge of Medication Error

Knowledge of Medication Error refers to an understanding and awareness of the various types, causes, and consequences of medication errors, as well as prevention techniques. This involves knowledge of the medication administration procedure, the "five rights" of medication administration (right patient, right medication, right dose, right route, and right time), and the value of effective communication among healthcare professionals.

1.8.3 Attitude towards Medication Error

Attitudes toward pharmaceutical Error pertain to healthcare professionals' ideas, perceptions, and emotional responses to the occurrence and prevention of pharmaceutical errors. This covers their attitudes toward the importance of medicine safety, their perceived responsibility for preventing errors, and their willingness to disclose errors. A good attitude can include a dedication to patient safety, a willingness to engage in lifelong learning, and proactive participation in safety practices.

1.8.4 Practice of Medication Error

The practice of medication error refers to the actual behaviors and activities conducted by healthcare practitioners that contribute to the occurrence or avoidance of medication errors during the medication procedure. This involves actions including prescribing, transcribing, dispensing, administering, and monitoring drugs. Adherence to established protocols and recommendations, good communication among healthcare team members, adequate documentation, and the use of safety precautions, such as the "five rights" of medicine administration, are all important parts of this profession.

1.9 RESEARCH QUESTION

1. What is the level of knowledge, attitudes, and practices (KAP) among nurses' regarding Medication Error?

1.10 OBJECTIVES OF THE STUDY

1. Knowledge of nursing staff regarding the medication error.
2. Attitude of nursing staff regarding the medication error.
3. Practices/Response of nursing staff regarding the medication error.

LITRETURE REVIEW

This study was conducted in USA (Swansea University, Singleton Park) Researcher investigated. The Nursing students' perspectives of the cause of medication errors. Between November 2011 and November 2012, four focus groups were conducted with 24 nursing students from various academic semesters at a Tehran nursing school. The qualitative descriptive design discovered themes and subthemes through content analysis.

There are two prime themes that surface, namely: "underdeveloped caring skills in medication management" and "unfinished learning of safe medication management," which are later differentiated into "drifting between being worried and careful" and "contextualizing pharmacology education." Respondents indicated vulnerabilities to "drug errors" throughout their programs and named circumstances under which safety is compromised among patients. Nursing courses need to spend much on medication management. In this process, academic institutions and clinical mentors should profoundly support nursing students to be knowledgeable, skillful, and safe practitioners.(17)

This was a research study done in Saudi Arabia (King Fahad Medical City) Resercher investigated Medication safety knowledge, attitude, and practice among hospital pharmacists in tertiary care hospitals in Saudi Arabia: a multi-centre study This cross-sectional investigation was done from July 2019 to January 2020. The study included pharmacists from tertiary care hospitals in Riyadh, Saudi Arabia. This study used a self-administered questionnaire with 63 items divided into 19 knowledge-based, 15 attitude-based, and 29 practice-based categories.

350 pharmacists were distributed, and of the returned, 289 accepted in about 82.6% response rate. Ninety-six percent majority and 96.5 % respectively reported familiarity with VP concept, along with what they believe the tool would function and. Ninety percent respondents mentioned ADR may or may not be prevented. However, the results showed the pharmacists lacked information regarding the general PV field as a whole since most of them answered wrongly on the independent treatment of ADRs and on the enhanced drug reaction, international location of the ADR, and online database of the World Health Organization for reporting ADRs. Further, partly or fully wrong answers were documented from questions that involved single or multiple correct answers. Concerning the attitude of respondents, 96.9% showed interest in reporting ADRs and concurred that ADR is crucial for safe drug use. Even though a general positive attitude has been noted, pharmacists have identified that the three significant barriers that discourage reporting of ADRs are: unavailability of information regarding ADRs, unawareness about the requirement to report ADRs, and lack of time. On practice, 69.2% reported receiving training on ADRs reporting, and 70% have reported ADRs more than once a week. The pharmacists were distributed at 350, and 289 agreed to participate, which is 82.6% response rate. Most pharmacists are aware of the concept of VP and its activities (96.5%) and (87.2%), respectively. Additionally, 90% believe that ADR can be both preventable and unpreventable. The study showed that most pharmacists were not aware of the PV field, such as questions related to independent ADRs, augmented drug reactions, international locations, and the World Health Organization's "online database" for reporting ADRs. For the questions with one or more right answers, incomplete or wrong answers were recorded. 96.9% of participants expressed interest in reporting ADRs and agreed that it is crucial for safe drug use. Despite the positive attitude, the three major challenges in reporting ADRs identified by pharmacists are lack of knowledge, awareness, and time constraint. In practice, 70% reported ADRs more than once a week. However, 69.2% received instruction on how to report them. There is limited knowledge in Riyadh hospitals among the surveyed pharmacists about the field of PV. The pharmacists were pleasant and conducted practices effectively. Education and friendly environment are necessary for encouragement of ADR reporting and support of PV activities in Saudi Arabia.(20)

MGM Medical College and LSK Hospital, Kishanganj, Bihar, India. An Analysis of Medication Errors in a Tertiary Care Teaching Hospital. This is a retrospective analysis of the reported inpatient medication errors from January 2018 to December 2019 at a 600-bed tertiary care teaching hospital in Bihar. Data extracted through pharmacy software revealed that there were 1501 reported medication

mistakes and 28,472 orders during the study period. Data from the Incident Report Form was imported into an Excel spreadsheet and variables were analysed using descriptive statistics. Rate of pharmaceutical mistake per hundred orders was 5.27. Most of medication errors (96.8%) occurred on the ward. Most of medication errors (66.42%) occurred between 4:00 PM and 8:00 PM. Highest percentage of medication errors was by Doctors, which is 69.8%. The most common prescription and transcribing problems combined gave rise to pharmaceutical errors standing at 1015 that accounted for 67.62%. Dose-related errors accounted for the majority of medication errors at 70.43%, or 1058. In spite of the regulations that govern safety medicine handling and use in hospitals, the study established that they still occur. Effective measures of pharmaceutical safety, which include the "Swiss-cheese" Model, help prevent these risks from finding their way to the patient. More research on pharmaceutical errors, including "near miss" incidents, is required to identify gaps in the process and develop effective intervention options for improvement. (35)

This study was conducted in Greece (AHEPA University Hospital, Thessaloniki, Greece) Reserchер investigated An inside look into the factors contributing to medication errors in the clinical nursing practice. To search the Pubmed database, we used the following search terms: medication errors, contributing/etiologic/risk factors, nurses, and nursing. Articles must have been published in English between January 1990 and December 2012 to be included in the existing review. We included 13 original research publications. System-related subcategories account for factors that contribute to medication errors in clinical nursing practice. The first section presents an overview of the research articles used in this review, while the second gives the five main contributing variables to medication errors, ranked by kind and relevance. The result reveals that both individual and organizational factors are significantly significant regarding drug errors. It is critical to recognize contributing factors because detecting medication errors by nurses has been viewed as patient misconduct. Medication errors both at the individual level and at the health-related level must be addressed to be resolved. (24)

The researcher conducted the study in Iran., Ardabil University of Medical Sciences, Ardabil, Iran. Medication errors among nurses in teaching hospitals in the west of Iran: what we need to know about prevalence, types, and barriers to reporting. The researcher used convenience sampling approach in selecting participants for this study. Participants: n= 500 nurses. Socio-demographical characteristics of participants were established by a self-administrated questionnaire on 10 items, causes of major MEs on 31 items, and barriers toward nurse manager reporting on 11 items. The data gathering occurred between September 1, and November 30 2016. We fitted a negative binomial regression model that analyzed the most important determining factors of the prevalence rate of ME among nurses. Prevalence of ME: The prevalence rate of 17.0% has 95% CI for between 13.7% and 20.3%. The most prevalent types of MEs reported were in the timing (24.0%), followed by dose errors (16.8%), and incorrect patient allocation (13.8%). The most basic reasons according to the nursing staff that caused MEs are an overwhelming workload and shift work. We found that 45.0% of nurses failed to report MEs. Nurses were less likely to report MEs due to a heavy workload (mean score: 3.57±1.03). Navigating nurses being male, having another separate job, or working on fixed shift were more likely to experience MEs (p=0.001). Our study documented a heavy prevalence of MEs in the west of Iran, and a heavy workload is considered the most important barrier to reporting MEs for nurses. Thus, appropriate strategies such as reduction of the nursing staff workload should be formulated to address MEs and enhance patient safety in hospitals within Iran.(36)

This study was carried out in Australia, (Monash University, School of Rural Health, Traralgon) Reserchер investigate Hospital medication errors: a cross-sectional study. A 5 year cross-sectional research. The rate of MEs was 1.05 per 100 hospitalized patients. The errors took place mostly during the months of May to August, when the temperatures are relatively low. The errors appeared most frequently on Mondays and Tuesdays. Furthermore, more errors were committed during the day- between 7 a.m. and 8 p.m.- than at other times. 57.8% of the ME had an ISR ≥4. 41.8 % had an ISR of 3. An ISR level-1 event for the given period was found only on

one occasion between 2014 and 2018 while six ISR level 2 events were registered. Administration errors were the cause of the greatest number with 1070 or 56.8%. Of the prescribing mistakes, this was the type of the mistake at 433 which accounted for 23. International hospitals are still struggling with the issue of MEs. Health professionals' inexperience and nurse–patient ratios may be underlying causes that need to be addressed. High-intensity and satisfactory training of junior staff for prescribing and administering drugs and nurse workload management may be possible solutions to decrease MEs in hospitals. (37)

This study was conducted Pakistan (The Indus Hospital, Karachi, Pakistan.) Resercher Investigate Prevention of Medication Errors in a Pakistani Hospital Because of Concurrent Evaluations and Interventions by Pharmacists. Retrospective evaluation of e-prescriptions issued at an inpatient pharmacy of a tertiary care facility. Throughout the study duration, a total of 1336 interventions have been accepted. 83.2% of the interventions minor to moderately harmful. The most frequent errors were adjustment of doses, drug replacement with a therapeutic or another brand, too frequent frequency of the drugs, time more than needed, duplication, culture and sensitivity-based use of drugs, inappropriate drugs, incorrect route, dosing form, addition, and interaction. Concurrent prescription evaluation by pharmacists reduces unnecessary drug errors, potentially reducing healthcare costs and patient hospital stays.(38)

METHODOLOGY

3.1 RESEARCH DESIGN

The knowledge, attitudes, and practices of registered nurses regarding medication mistake in Bannu's tertiary hospitals were evaluated using a descriptive cross-sectional method.

3.2 STUDY SETTING

The clinical settings of the following Bannu hospitals served as the study's setting:

- District Headquarters Teaching Hospital, MTI Bannu.
- Khalifa Gul Nawaz Teaching Hospital, Bannu
- Women and Children Hospital, MTI Bannu

3.3 POPULATION & SAMPLING

The sample size was n=152, calculated through a Raosoft software while the total population consisted of 250 registered nurses from the tertiary care institutions in Bannu, DHQ, KGN, and Women and Children institutions. Simple Random sampling as well as Convenient sampling was the sample strategy employed in this investigation. The investigation could be completed quickly because to this sampling technique. The study comprised nurses of both sexes and all ages.

3.4 INCLUSION AND EXCLUSION CRITERIA

3.4.1 INCLUSION CRITERIA

- Registered nurses (RN) working in Bannu hospitals (DHQ, KGN, Women and Children) with clinical experience.
- Nurses who have worked in hospitals during the past year.
- Nurses who are willing to participate and provide informed consent.
- Nurses who can read and understand questionnaire language. (English)

3.4.2 EXCLUSION CRITERIA

- Nurses who do not consent to participate in the study.

3.5 DATA COLLECTION

A questionnaire consisting of 34 questions that were adopted from the study was shared with Nurses online with a brief description of the nature of the study (Medication Error) & the procedure of how to complete the questionnaire was highlighted to them. This questionnaire comprises 34 questions and will have four sections. The sociodemographic section includes 6 questions, Knowledge of Medication Error will be assessed using 22 multiple-choice questions, Medication Error practice will be assessed with 3 questions while the attitude was measured through 3-point Likert scale statements.

3.6 DATA ANALYSIS

The data that was gathered underwent coding, and the analysis was carried out using SPSS version 27 software. Descriptive statistics such as frequencies, means, and standard deviations were utilized, and

the findings were presented using bar charts, frequency tables, and pie charts for Sociodemographic variables. The responses regarding knowledge and practice towards medication error were examined, considering that both knowledge and practice are categorical variables. The results were conveyed in percentages. Attitude was assessed using 3-item Likert scale statements ranging from scores 1 to 3, with a maximum possible score of 10. Attitudes were treated as a continuous variable, with a score of 6 or above indicating a positive attitude, and less than 7 indicating a negative attitude.

3.7 ETHICAL CONSIDERATION

Each hospital's ethical committee granted ethical approval, upholding human rights and ensuring informed consent. All data was treated confidentially, with responses coded and securely stored to safeguard participants' privacy. Prior to completing the questionnaire, each participant provided informed consent and was assured of their anonymity, confidentiality, and right to withdraw from the study. Additionally, they were informed about the medication error before data collection commenced.

RESULTS

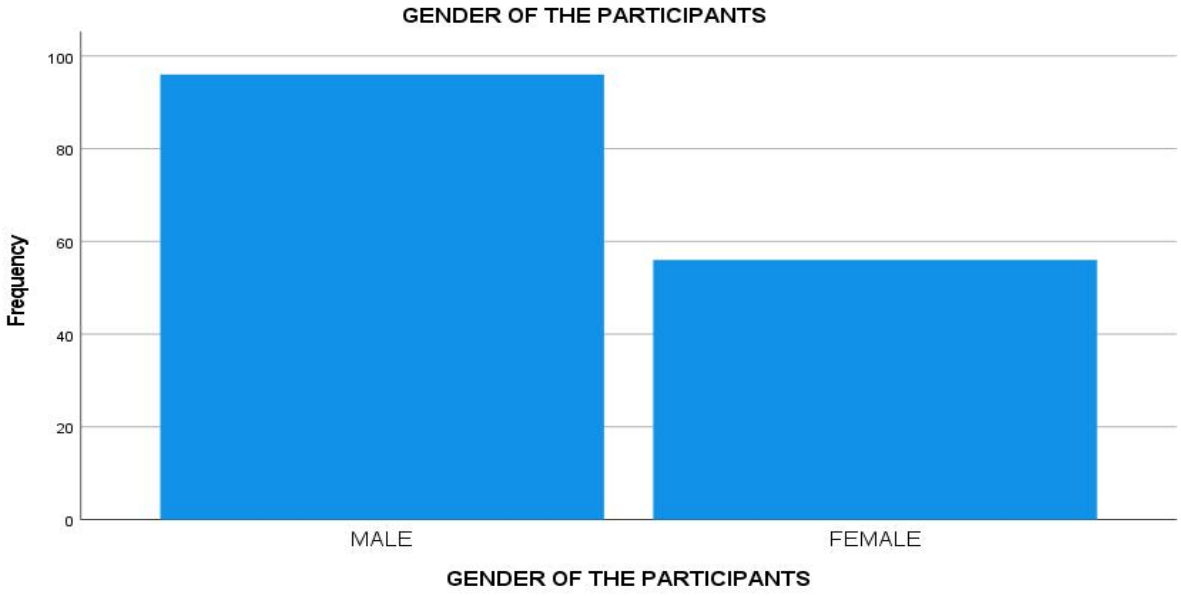
4.1 SOCIODEMOGRAPHIC SECTION

Out of the 161 respondents, the age distribution shows that 108 individuals (67.1%) were aged between 20 and 40 years, while 44 respondents (27.3%) fell within the 41 to 60 age range. The majority of participants are in the younger age category, specifically between 20 and 40 years old, as indicated by the descriptive statistics for age. The mean age value is 1.29, and the standard deviation is calculated at 0.455.

AGE OF THE PARTICIPANTS					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	20-40	108	67.1	71.1	71.1
	41-60	44	27.3	28.9	100.0
	Total	152	94.4	100.0	

Table: 1 Age of the participants

The study's participant gender breakdown reveals that out of 161 total respondents, 96 (59.6%) were male, and 56 (34.8%) were female. There were 9 (5.6%) instances categorized as missing data. Of the valid responses, 63.2% of participants were male, and 36.8% were female.



The mean years of experience of the subjects are as follows: Of the 161 participants, 86 (53.4%) had less than 5 years of experience, 34 (21.1%) reported between 5 and 15 years, and 32 (19.9%) reported greater than 15 years of experience. It appears that most of the respondents experienced relatively early years, with more than half having less than 5 years of experience in their profession.

The current positions of the participants were distributed as follows: Among the total respondents, 33 (20.5%) were internees, 88 (54.7%) were staff nurses, 17 (10.6%) were head nurses, and 14 (8.7%) were supervisor nurses.

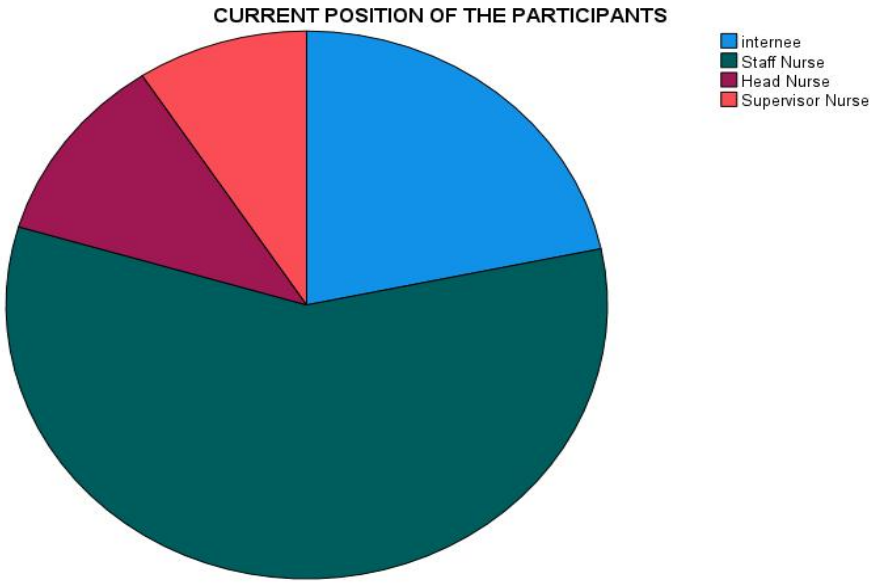


Figure: 2 Current Position of the Participants

The educational qualifications of the participants were categorized into 4 categories for total participants in which 73 (45.3%) had a Diploma in Nursing, 68 (42.2%) held a Bachelor of Science in Nursing, and 11 (6.8%) had a Master of Science in Nursing. This distribution indicates that most participants had either diploma or bachelor's-level qualifications, with a smaller percentage holding advanced degrees in nursing.

4.2 KNOWLEDGE

How would you define medication error?

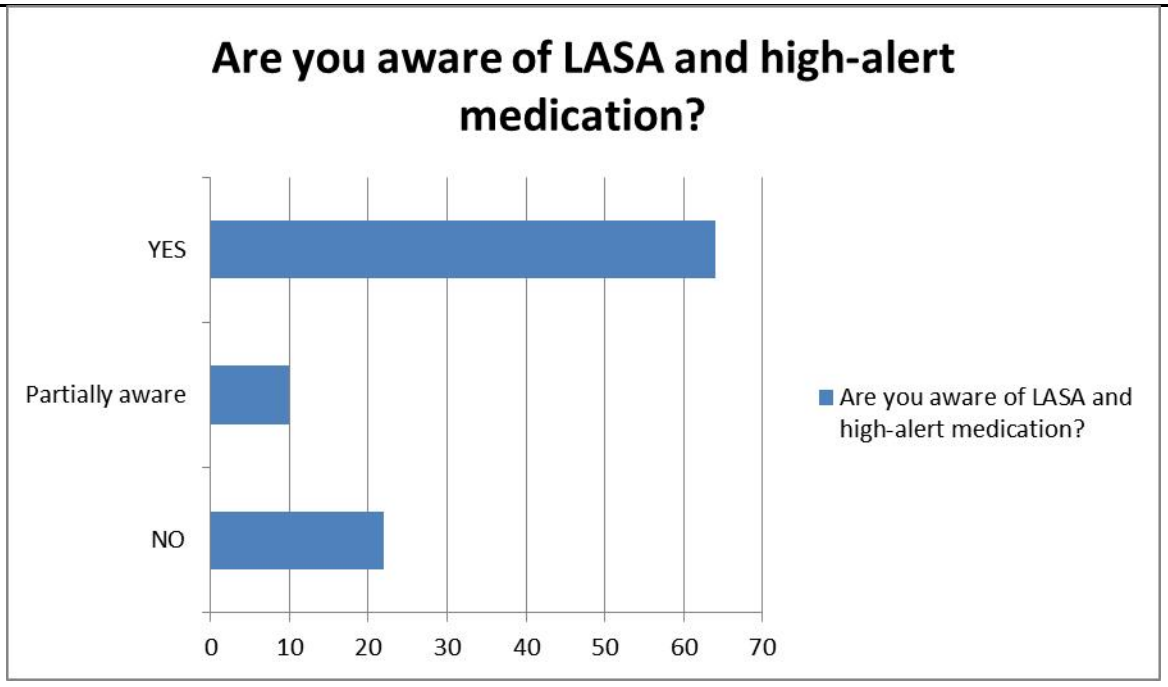
In the Current study, participants were asked to define medication error. The numbers fell into three main categories: a mistake in prescribing was at 55.3%, a mistake in administering was at 26.1%, and deviation from intended medication therapy was at 13.0%. Respondents, when asked regarding the most common medication error experienced, reported incorrect timing at 28.6% and both wrong medication and wrong route at 26.7% followed by omission at 11.2% and other errors at 1.2%.

Which of the following can be a cause of medication error?

The respondents elicited a good number of causes associated with medication errors. The majority cause obtained was high workload, at 36.6%. Poor communication followed at 24.8%, while inadequate knowledge accounted for 21.1% of the responses. Other causes accounted for only 1.9% of the respondents.

Are you aware of LASA and high-alert medication?

Given the question to determine whether they knew about LASA (look-alike, sound-alike) and high-alert medications, 63.4% were aware, 21.7% were not aware, and 9.3% were only partly aware. Familiarity with hospital protocols for reporting medication errors varies, having being very familiar by 47.8%, somewhat familiar by 33.5%, and not familiar by 12.4%.

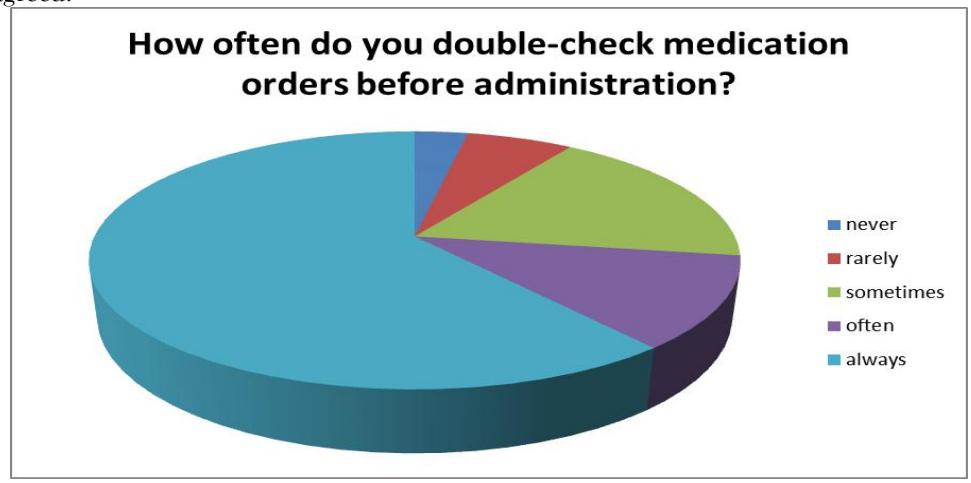


Do you believe that reporting medication errors leads to improvements in medication safety?

Most of the respondents (87.0%) agreed that reporting medication errors enhances the safety of medication, but 5.6% were neutral, and 1.9% disagreed. Similarly, 87.0% of the respondents agreed that there is a higher probability of medication errors in a busy or understaffed setting. Only 7.5% disagreed.

How often do you double-check medication orders before administration?

The largest number of respondents admitted that they always double-check medication orders at 58.4%, followed by 16.8% who reported sometimes double-checking; a minority percentage reported checking orders often (10.6%), rarely (6.2%), or never (2.5%).



How frequently do you participate in training sessions related to medication safety?

Regarding education, 46.6% said they were regularly educated about medication safety-related information, 34.2% said occasionally, and 13.7% said they were never educated about the subject. Regarding questions on preventing medication errors, respondents differed from each other, but most, at 62.1%, said that double-checking orders was the best, while others believed that reliance on verbal orders

alone was enough (14.3%). Other responses given included ignoring allergies at 5.6% or reducing communication at 12.4%.

How often should medications be checked for accuracy before administration?

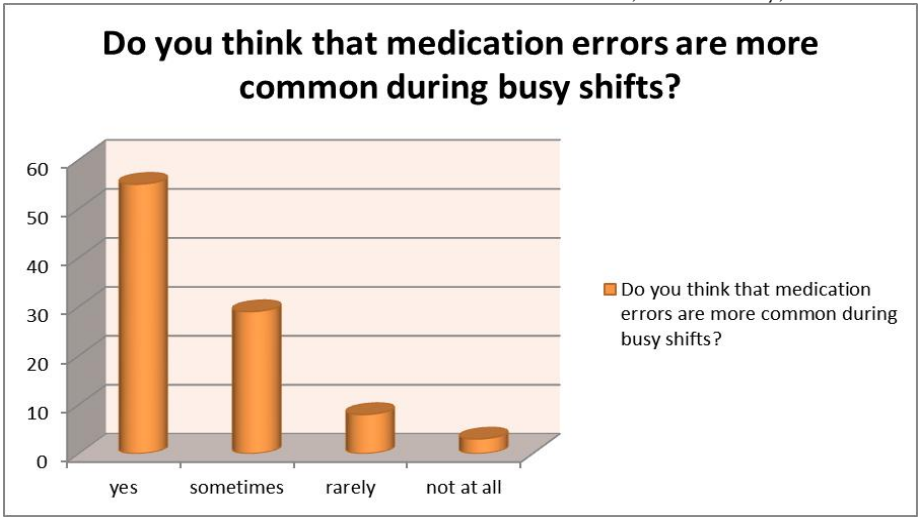
On the issue of medication accuracy checks before administration, 39.8% said checking twice; 31.1% agreed that the check should be done only once; 23.6% said there is a need for three checks. To avoid medication being given to the wrong patient, 62.7% said to check only the label, and 20.5% thought that checks should be made up for the name of the patient and date of birth.

How important do you think it is to report medication errors?

Asked how important it is to report medication errors, 73.9 percent rated this aspect as very important, 13.7 percent as moderately important, with smaller percent totals rating this aspect as slightly important (5.6%) or not at all important (1.2%).

Do you think that medication errors are more common during busy shifts?

Responding to whether medications occur more frequently during busy shifts, 54.7% said yes, whereas 28.6% indicated that this happens sometimes, 8.1% rarely, and 3.1% never do.



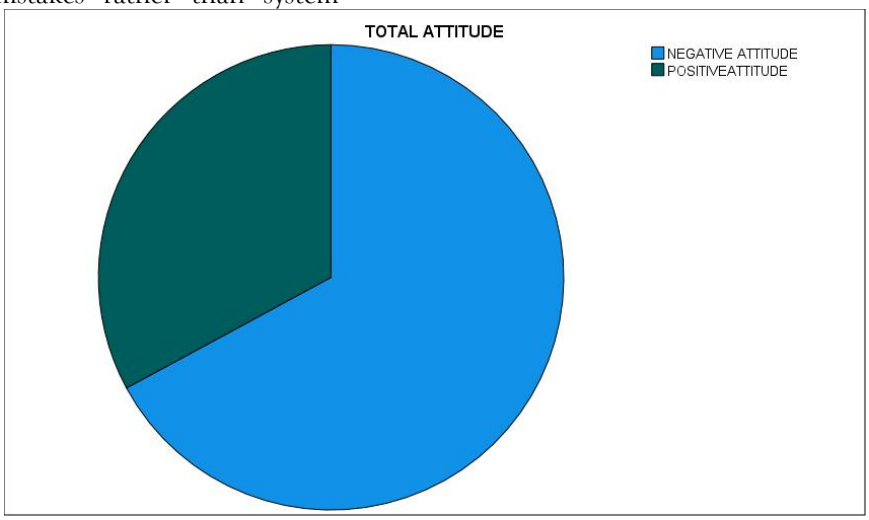
Variable	Categories	Frequency	Percentages
How would you define medication error?	Mistake in prescribing	89	55.3
	Mistake in administrating	42	26.1
	Devnation from intended medication theraphy	21	13.0
Which medication error you have experienced mostly?	Wrong medication	43	26.7
	Wrong route	43	26.7
	omission	18	11.2
	Incorrect timing	46	28.6
	others	2	1.2
Which of the following can be a cause of medication error?	Poor communication	40	24.8
	Inadequate knowledge	34	21.1
	High workload	59	36.6
	Lack of protocols	16	9.9

	Others	3	1.9
Are you aware of LASA and high-alert medication?	No	35	21.7
	Partially aware	15	9.3
	yes	102	63.4
How familiar are you with your hospital's protocol for reporting medication errors?	Not familiar	20	12.4
	Somewhat familiar	54	33.5
	Very familiar	77	47.8
Do you believe that reporting medication errors leads to improvements in medication safety?	Disagree	3	1.9
	Neutral	9	5.6
	Agree	140	87
Do you think that medication errors are more likely to occur in a busy or understaffed environment?	No	12	7.5
	Yes	140	87.0
How often do you double-check medication orders before administration?	Never	4	2.5
	Rarely	10	6.2
	Sometimes	27	16.8
	Often	17	10.6
	Always	94	58.4
How frequently do you participate in training sessions related to medication safety?	Regularly	75	46.6
	Occasionally	55	34.2
	Never	22	13.7
What is the most effective way to prevent medication errors?	Rely on verbal orders	23	14.3
	Double check	100	62.1
	Ignore allergies of patients	9	5.6
	Reduce communication	20	12.4
How often should medications be checked for accuracy before administration?	Once	50	31.1
	Twice	64	39.8
	Trice	38	23.6
Which practice helps minimize the risk of administering medication to the wrong patient?	Check label only	101	62.7
	Ask pt's name and DOB	33	20.5
	Use ame medication for all	12	7.5
	Relying on memory	6	3.7
How important do you think it is to report medication errors?	Not impimportant	2	1.2
	Slightly important	9	5.6
	Moderately important	22	13.7
	Extremely important	119	73.9
Do you think that medication errors are more common during busy shifts?	Yes	88	54.7
	Sometimes	46	28.6
	Rarely	13	8.1
	Not at all	5	3.1

4.3 ATTITUDE

As we discussed earlier, in this study, a **positive attitude** towards medication errors refers to a mindset where healthcare professionals feel confident and comfortable with reporting errors. They believe that most errors are caused by systemic issues and that reporting errors leads to improvements in patient safety. This attitude focuses on identifying and fixing system-level problems to prevent future errors. On the other hand, a **negative**

attitude reflects hesitation or discomfort in reporting errors. Professionals with this view are more likely to fear punishment or blame, and they tend to attribute errors to individual mistakes rather than system failures. This can result in underreporting and less focus on addressing systemic issues that contribute to errors.



igure 3: Attitudes

In the attitude toward medication errors analysis, most of the subjects exhibited a negative attitude. Among 152 valid responses 63.4% of respondents, n = 102, presented a negative attitude, which corresponds to 67.1% if computed by valid percentage. On the other hand, 31.1% of the respondents, n = 50 demonstrated a positive attitude, that is, 32.9% by valid percentage. There were 9 missing responses (5.6%), which were not included in the valid percentage calculation. Overall, the findings suggest that a significant proportion of respondents express unwillingness or discomfort with some elements of medication Error reporting.

4.2 PRACTICE

In a very recent survey conducted within the profession of nursing about medication errors, it was reported that a large proportion of subjects face medication errors frequently or occasionally. The frequency was 39.8% and the occasional occurrence was 37.9%. In case of a medication error, most (57.1%) will report it immediately because of concern for patient safety. However, fewer still would talk to a colleague about it (25.5%), tell the patient (7.5%), or write it up and do nothing more (4.3%).

The medication administration process had several areas requiring improvement. For example, 60.2% rated better training and education as areas requiring improvement, while 29.2% indicated an improvement in communication among staff, and only 5.0% suggested the need for improved technology and tools. These observations necessitate a more focused intervention of improvement in training, communicating, and prevalence reducing medication errors in the practice setting.

Table 3: Practices of the participants

Variable	Categories	Frequency	Percentages
How frequently do you encounter medication errors in your practice?	Frequently	64	39.8
	Ocassionlly	61	37.9
	Never	27	16.8
What steps do you typically take when you notice a medication error?	Report it immediately	92	57.1
	Discuss it with a colleague	41	25.5
	Inform the patient	12	7.5
	Document it but do not take further actions	7	4.3
In your opinion, what could be improved in the medication administration process to reduce errors?	Better training and education	97	60.2
	Improved communication among staff	47	29.2
	Enhanced technology and tools	8	5.0

DISCUSSION SECTION

Significant trends identified from the knowledge, attitudes, and practice of healthcare professionals regarding medication errors were strongly reflected among the nursing staff. Thus, several vital findings align well with recent studies that might further insight into how these results could be contextualized within the broader framework of medication safety and strategies to reduce errors.

5.1 Medication Errors Knowledge:

The majority of the respondents showed a good awareness of the nature of medication errors; most selected the prescription error to be the most common type of error, that is, at 55.3% followed by the administration error at 26.1%. These findings conform to various research studies lately that focus on the importance of correct prescription and administration to alleviate medication errors. Medication errors due to incorrect prescription and medication administration remain one of the common errors that persist and continue to abound in hospitals despite being aware that some of them are due to high-pressure situations. This would thus imply that these errors remain partly systemic in most cases, especially on workloads and communication (1) Anderson.

More importantly, LASA and high-alert medications were recognized by respondents with an affirmation of knowledge congruent with ISMP recommendations at 63.4%. Indeed, Gupta et al. insist that one of the prime strategies to ensure safety measures against errors should be continuous education concerning high-risk medication (2)

5.2 Attitudes toward Medication Errors:

In the view of the study, a higher percentage (63.4%) of respondents came up with a worse attitude toward reporting medication errors due to the fear of being blamed or punished. Attitude and these kinds of perceptions have been stated as a major source of resistance in conquering patients' safety improvements by several studies lately. For instance, Johnson et al. revealed that fear of punitive measures results in substantial under-reporting of medication errors that consequently undermine the healthcare systems' ability to effectively address root causes (3). Non-punitive reporting methods, which have been demonstrated to increase reporting rates and strengthen the safety culture within healthcare facilities, are being advocated more and more in the literature as a solution to this problem (4).

5.3 Practice and Medication Error Prevention:

In the response, 39.8% of the respondents reported experiencing drug errors very frequently; another 37.9% of them reported that the frequency of such errors was not so high. The high rate thus also reflects the results of most recent large-scale studies, where identical rates of drug errors have been identified with especially very high rates found in the most stressful setups and contexts, like those of emergency departments and intensive care units (ICUs) (5). More encouraging, however, was the

proactive behavior of 57.1% of respondents who reported medication errors promptly, it might then indicate an awareness of patient safety responsibilities, though communication with colleagues over mistakes made (25.5%) and patients (7.5%) was not high; this discrepancy is then something that can be bridged by the application of team-based approaches to preventing errors (6).

5.4 Recommendations for Reducing Medication Errors:

Better training (60.2%) and enhanced communication (29.2%) were cited by the majority of research participants as essential areas for improvement to lower medication mistakes. These suggestions are consistent with the most recent research from 2023, which indicates that communication training and focused educational interventions can greatly lower the frequency of pharmaceutical errors, particularly in high-risk environments (7). Although its uptake is still restricted, improved technology use such as barcode scanning and computerized prescription systems is also recognized as a method to reduce errors.

The findings of the study line up with the overall trend of current research, especially in regards to the ongoing prevalence of prescription mistakes in healthcare settings as a result of systemic problems such heavy workloads, communication mistakes, and harsh behaviour towards reporting errors. To be able to increase medication safety and reduce errors in healthcare practice, the study underlines on the importance for ongoing education, greater interaction, and technological advancements. Additional research should concentrate on investigating how well non-punitive error reporting systems function and how team-based interventions can help develop a more open culture concerning the safety of medications.

CONCLUSION

The crucial lessons learnt by this study show considerable errors in relation to the management of drugs in a practice by a professional doctor or any medical care provider. A large number of respondents 55.3 percent) think errors primarily involve error prescribing while most common error identified is an inappropriate time and medication/vehicle, (28.6%), route and vehicle respectively (26.7). Most cited factors were increased workload; (36.6 %), thus highlighting a better and well-working distribution and employment force as it largely determines reducible errors.

Only 47.8% were very familiar with the reporting protocols, hence, indicating gaps in knowledge. 87% of the respondents felt that reporting errors enhanced safety; however, 63.4% still responded in a negative way to reporting for fear of blame. The reasons therefore indicate a need for building a blame-free reporting culture. Encouragingly, 58.4% of respondents always double-check medications, and 46.6% participate in safety training, though more consistent participation is recommended. For error prevention, 62.1% prioritize double-checking, and 60.2% advocate for improved training and communication. In summary, a supportive reporting culture, ongoing safety training, and workloads can collectively reduce medication errors and enhance patient safety. Improving the quality of care within healthcare settings depends on addressing these factors.

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