Unveiling the Complexity of Medication Errors: A Nursing Perspective on Contributing Factors to Medication Errors

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ABSTRACT

Context: Medication errors have long been associated with poor medical care quality, lengthy hospital stays, substantially increased medical costs, and a decline in patient confidence in the hospital's ability to provide quality care. Additionally, it is imperative to acknowledge that nurses serve as the final defense in mitigating medication errors and ensuring patient safety.

Aim: To identify the factors contributing to King Abdullah Medical City's medication errors.

Methods: A descriptive cross-sectional study was conducted in King Abdullah Medical City from January 2023 till March 2023. A total number of 262 nurses were included in this study. Data were collected through an online questionnaire of 28 questions, including nurses' demographics, work-related characteristics, and factors contributing to medication errors from nursing perspectives.

Results: It was observed that overworked or exhausted healthcare professionals had the highest responses, with a mean score of 4.46±0.78, followed by insufficient staffing, with a mean score of 4.43±0.88. Regarding patient-related factors, the complexity of the clinical case, including multiple health conditions, polypharmacy, and high-risk medications, had the highest responses with a mean score of 4.20±0.83. Concerning work environment contributing factors for medication errors, it was found that the highest responses were to workload and time pressure factors, with a mean score of 4.50±0.71.

***Conclusion*:** Based on the results of this study, the main contributory factors to medication errors were overworked or exhausted healthcare professionals, insufficient staffing, violation of the eight rights of medication administration by nurses, inadequate drug knowledge and experience, nurses' failure to record the administered drug on the patient's record, and inadequate communication between healthcare providers and patients.

Keywords: Medication errors, contributing factors, nursing

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1. Introduction

Many individuals will engage in pharmacological interventions at some stage of their lifespan to prevent or manage medical conditions. However, drugs taken improperly may result in serious injury, disability, and even death. Medication errors are common health issues in the African healthcare system *(WHO, 2017; Mekonnen et al., 2018)*. The

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most frequent medication errors, known as medication administration errors (MAEs), can harm patients, medical personnel, and healthcare facilities *(Elliott et al., 2018)*.

Annually, inside the confines of the United States, only a range of 7,000 to 9,000 individuals experience mortality as a direct consequence of a medication error. Moreover, a substantial number of patients have adverse reactions or complications associated with medication yet frequently fail to document or disclose such occurrences. The annual financial burden of caring for individuals who experience a medication error surpasses $40 billion, impacting a population of more than 7 million patients. In addition to the financial implications, patients endure psychological and physical distress because of prescription errors. One significant outcome of medication errors is the resultant decline in patient satisfaction and the subsequent erosion of trust in the healthcare system *(Whittaker, 2018).*

Medication errors have long been linked to poor medical care quality *(Jolivot et al., 2016)*, long hospital stays *(Sheikh et al., 2017)*, significantly higher medical costs *(Choi et al., 2016)*, and a decline in patient confidence in the hospital's ability to provide quality treatment *(Di Muzio et al., 2017).* The primary focus of healthcare systems globally is the safety of patients. This concern has been identified and shared by the World Health Organization (WHO), which, since 2001, has requested that health organizations take urgent action to address this matter. Nurses, who are directly responsible for assistance, play a vital role in guaranteeing patients' safety. Furthermore, patient safety plays a significant role in influencing the quality and consistency of healthcare services. It serves as a crucial indicator of healthcare quality and encompasses a range of nursing care procedures *(Zeleke et al., 2014)*.

According to the guidelines provided by the National Coordinating Council for Medication Error Reporting and Prevention, a medication error refers to an avoidable incident that may lead to inappropriate medication usage or harm to the patient while the medication is supervised by a healthcare provider or the patient's care. Errors in any of the steps mentioned are usually related to incorrect prescription information, improper medicine storage, or non-compliance with recommended preparation methods. These dangerous circumstances should be avoided *(Mekonnen et al., 2018)*.

In March 2017, the WHO published “Medication Without Harm.” WHO Global Patient Safety Challenge advised efforts to decrease patient damage brought on by unsafe medication practices and prescription mistakes. The primary objective of this initiative is to secure worldwide dedication and implementation of measures aimed at decreasing significant, avoidable harm caused by medication by 50% within the next five years. This initiative will be achieved by specifically targeting harm that arises from medication errors or hazardous practices that result from inadequacies in healthcare. Other main goals are to evaluate the magnitude and nature of preventable injury and bolster the surveillance systems employed to detect and monitor it *(Donaldson et al., 2017)*.

It is essential to note that the administration of pharmacological therapy accounts for 40% of total nursing clinical activity in hospitals and that nurses are the patient's last line of defense in preventing medication errors (MEs) *(Lapkin et al., 2016)*. Nurses administer most of the medication. Frequently observed medication errors encompass technical inaccuracies, insufficient documentation, administration to an incorrect patient, dispensing of incorrect medication, administering via an incorrect route, incorrect dosage, and improper timing *(Feleke et al., 2015; Fathi et al., 2017; Alemu et al., 2017).* Numerous researchers have examined the causes of MEs and discovered that systemic and personal factors might cause medication errors *(Parry et al., 2015).* Errors in dosage calculation, overcrowded hospital units, employee fatigue *(Saleh et al., 2014)*, a lack of understanding, and unsuitable environmental conditions are a few of the main causes of MEs *(Zarea et al., 2018).*

One of the best strategies suggested to lower the frequency of MEs and thereby increase patient safety is to recognize and address the relevant variables. Medication error reporting identifies the contributing causes *(Lee, 2017)*. Nurses implicated in medication administration errors were discovered to experience emotional distress, diminished self-assurance, and disciplinary measures, particularly in cases where the error led to significant harm to the patient. In addition, the healthcare providers also lost the confidence of patients and their families who encountered medical adverse events *(Agbor, 2016)*.

2. Significance of the study

Between March 2018 and June 2019, 71,332 reports of drug errors were recorded in Saudi Arabia, leading to an estimated medication error rate of 0.15%. Enhancing patient safety by acquiring additional data on medication errors is a primary objective of the Ministry of Health in Saudi Arabia. The Ministry is responsible for maintaining a database of medication errors, analyzing the associated contributing factors, and utilizing the data to establish strategies for reducing their incidence.

Firstly, Medication errors are a prevalent phenomenon within healthcare environments and can yield severe repercussions for patients, such as adverse drug reactions, extended hospitalizations, and potentially fatal outcomes. Therefore, identifying the factors contributing to medication errors is crucial in improving patient safety and reducing such errors.

Secondly, the study can help healthcare providers at King Abdullah Medical City to understand the root causes of medication errors and develop strategies to prevent them. Healthcare providers can implement targeted interventions such as staff training programs, improved communication protocols, and technology-based solutions by identifying the factors contributing to medication errors.

Thirdly, the study can contribute to knowledge of medication safety in healthcare settings. The findings of this study can be used by other healthcare facilities facing similar challenges in reducing medication errors. Overall, this study is significant as it can improve patient safety and quality of care at King Abdullah Medical City.

3. Aim of the study

To identify the factors contributing to medication errors at King Abdullah Medical City.

4. Subjects & Methods

4.1. Research design

A descriptive cross-sectional study was conducted in 2022. Descriptive cross-sectional studies provide data for describing the status of phenomena or relationships among phenomena at a fixed point in time. This design can be considered a "snapshot" of the frequency and characteristics of a condition in a population at a particular point in time *(Kesmodel, 2018).*

4.2. Study setting

This study was conducted at King Abdullah Medical City, Holy Makkah (KAMC). The KAMC was established in 2008 with a 390-bed capacity. It specializes in four core medical areas: Oncology, cardiology, neuroscience, and specialized surgeries. KAMC has critical care units and medical-surgical units. It has specialized centers such as endoscopy, ophthalmology, and diabetes centers.

4.3. Subjects

This study included a convenience sample of 262 registered nurses with at least one year of nursing experience employed in inpatient units. The calculation of the sample size was performed using Epi Info software, considering a population size of 688, an expected frequency of 50%, a confidence coefficient of 95%, an acceptable margin of error of 5%, a design effect of 1.0, and a cluster size of 1. The sample size that was necessary for the study was 247. Participants were recruited through a nonprobability convenience sampling method, whereby nurses were invited to participate voluntarily.

4.4. Tools of data collection

Data was collected through an online questionnaire developed by a researcher based on relevant literature *Tang et al. (2007); Abdi et al. (2018).*

Section I includes nurses' demographics and work-related characteristics such as age, gender, nationality, work experience in KAMC, and level of education.

Section II: Factors contributing to medication errors.

The researcher developed this part after reviewing the appropriate literature *Tang et al. (2007); Abdi et al. (2018)* to ascertain the causative elements of medication errors. It consisted of 28 questions in which questions from 1- 12 were related to factors associated with health care professionals, 13,14 were related to the factors associated with patients, 15-19 were related to the factors associated with the work environment, 20, 21 were related to factors associated with medicines, 22, 23 were related to the factors associated with tasks and 24-27 were related to the factors associated with computerized information systems. The last question was about the staff's perception of the most critical stage of the medication process leading to medication error.

The scoring methodology employed for the questionnaire was based on a 5-point Likert scale. The response to these questions was scored as 1-5, ranging from unimportant to very important. The least acquired total score is 27, and the maximum is 135. Higher scores in one area indicate the importance of that area. A mean score of more than 4 indicates a very important factor.

4.5. Procedures

After getting official permission from King Abdullah Medical City, Holy Makkah IRB was registered at the National Biomedical Ethics Committee, King Abdulaziz City for Science and Technology, with an approval number 22-986. The study was done accordingly. Three experts in the field of the study tested the questionnaire for its content validity, and the necessary modifications were made accordingly. The reliability was tested for a developed questionnaire using Cronbach's coefficient alpha (0.85).

Scheduled meetings with each hospital's head nurse and nurses were held to discuss the study's purpose and the data collection procedure. Data were gathered using an anonymous online questionnaire method.

Pilot study: A preliminary investigation was conducted on a subset comprising 10% (26 nurses) of the total sample in order to ensure the clarity, applicability, and comprehensibility of the research instrument, as well as to identify any potential challenges that may arise during the data collection process. Consequently, the requisite modifications were made. The individuals who participated in this pilot study were not incorporated into the sample population of the study.

The study's goals, a link to the online survey, detailed instructions on how to complete it, confidentiality guidelines, and the contact information of the principal investigator were all sent to all nurses in all units via email. The email emphasized the study's voluntary and anonymous nature and detailed how the results would be disseminated. The email also provided the researcher's email and phone number in case recipients had concerns or wanted more information. Consent was not sought in a clear-cut manner. Participants were informed that their return of the questionnaire signified their acceptance into the study. From January 2023 through March 2023, data were gathered. The data collection process included three email reminders.

Ethical Consideration: The study's purpose, risks, and benefits for participation were described to all participants. Participants were guaranteed anonymity, privacy, data confidentiality, and the right to decline participation in the study.

4.6. Data analysis

The findings were verified. Subsequently, the data was recorded in the SPSS system files utilizing the SPSS package version 22. Verifications were conducted to prevent any potential errors that may have occurred during the data entry process. Ultimately, the data underwent analysis and interpretation. The categorical variables were quantified using numerical values and percentages, whereas the

continuous variables were represented using the mean and standard deviation. An Independent t-test was used to test differences between the means of the two groups. The level of significance was ascertained at $p \leq 0.05$.

5. Results

Table 1 shows the demographic characteristics of the nurses. It was seen that more than half of the nurses (64.9%) were 30-39 years old, and 24.8% of nurses were 20-29 years old. More than half of the nurses (66.4%) were females, and others (33.6%) were males. More than two-thirds of nurses (74.4%) were non-Saudi. Moreover, 40.1% of nurses had 4-8 years of experience in KAMC, and slightly less than one-quarter of nurses (23.3%) had 8-12 years of experience in KAMC. It was also found that most nurses (80.5%) had baccalaureate degrees, and 8.8% had master's degrees in nursing.

Table 2 shows the nurses' responses to contributing factors for medication errors associated with health care professionals, patients, and the work environment. It was observed that overworked or exhausted healthcare professionals had the highest responses, with a mean score of 4.46±0.78 followed by insufficient staffing (4.43±0.88) and nurses' failure to comply with the eight rights of medication administration, with a mean score of 4.42±0.75. The lowest responses were related to the lack of therapeutic training factor, with a mean score of 4.16±0.91, a personal neglect factor of 4.18±0.90, and physical and psychological challenges, with a mean score of 4.26±0.84.

Regarding patient-related factors, it was noted that the complexity of the clinical case, including multiple health conditions, polypharmacy, and high-risk medications, had the highest responses with a mean score of 4.20±0.83, followed by patient characteristics with a mean score of 4.05±0.97.

Concerning work environment contributing factors for medication errors, it was found that the highest responses were to workload and time pressure factors with a mean score of 4.50±0.71, followed by lack of standardized protocols and procedures with a mean score of 4.30±0.84. In contrast, the lowest responses were related to issues associated with the physical work environment factor, with a mean score of 4.10±0.69, followed by the distractions and interruptions factor, with a mean score of 4.26±0.82.

Table 3 shows the nurses' responses to contributing factors for medication errors associated with medicines, tasks, and computerized information systems. It was observed that pharmaceutical similarities in form and name had the highest responses with a mean score of 4.28±0.92, followed by inappropriate forms and naming of drugs with a mean score of 4.26±0.95.

Regarding contributing factors for medication errors associated with tasks, it was noted that the highest responses were to the patient monitoring factor, with a mean score of 4.18±0.83, followed by repetitive systems for ordering, processing, and authorization, with a mean score of 4.15±0.80.

It was found that lack of accuracy of patient records was the highest factor associated with computerized information systems, with a mean score of 4.21±0.84, followed by inadequate design that allows for human error with a mean score of 4.13±0.87. In contrast, the lowest responses were related to the generation of initial prescriptions, and the generation of accurate repeated prescriptions can be challenging, with mean scores of 4.10±0.89 and 4.10±0.83, respectively.

Figure 1 shows the nurses' perception regarding the most critical stage of the medication process leading to medication error. It was found that 42.4% of nurses perceived medication administration as the most critical stage that led to medication errors, followed by the prescribing and ordering stage (21.8%). Transcribing and verifying stages were found to be the least critical stage of the medication process, with 8.4% leading to a medication error, followed by monitoring, and reporting 12.6% as perceived by studied nurses. While dispensing and delivering are seen as critical by 14.9% of nurses.

Table 4 illustrates no relationship between nurses' demographic characteristics and contributing factors to medication errors from their point of view except for gender.

Table (1): Frequency and percentage distribution of nurses' Demographic characteristics (n=262).

Variables	N	%
Age years		
20-29	65	24.8
30-39	170	64.9
40-49	23	8.8
Above 50	4	1.5
Gender		
Male	88	33.6
Female	174	66.4
Nationality		
Saudi	67	25.6
Non-Saudi	195	74.4
Work Experience in KAMC		
1-4 years	65	24.8
4-8 years	105	40.1
8-12 years	61	23.3
More than 12 years	31	11.8
Educational Level		
Diploma	22	8.4
Bachelor	211	80.5
Master	23	8.8
Technician	6	2.3

Table (2): Nurses' perspectives of medication errors' contribution factors associated with healthcare professionals, patients, and work environment (n=262).

Variables	Mean±SD	Rank
Factors associated with health care professionals (Mean±SD)	51.97±7.52	
Overworked or exhausted healthcare professionals	4.46±0.78	1
Insufficient staffing	4.43±0.88	2
Nurses' failure to comply with the eight rights of medication administration	4.42±0.75	3
Inadequate drug knowledge and experience	4.41±0.76	4
The failure of nurses to document the administration of medication on the patient's medical record.	4.39±0.81	5
Poor communication between the health care professionals and patients	4.36±0.87	6
Having poor mathematical skills in drug dose calculation	4.31±0.84	7
Inadequate knowledge of the patient	4.31±0.83	7
Inadequate perception of risk	4.28±0.82	8
Physical and psychological challenges	4.26±0.84	9
Personal neglect	4.18±0.90	10
Lack of therapeutic training	4.16±0.91	11
Factors associated with patients (Mean±SD)	8.24±1.64	
The complexity of clinical cases due to many health problems, the use of multiple medications, and the use of high-risk drugs	4.20±0.83	1
Personality, language skills, and literacy levels of the patient	4.05±0.97	2
Factors associated with the work environment (Mean±SD)	21.44±3.36	
Workload and time pressures	4.50±0.71	1
Lack of standardized protocols and procedures	4.30±0.84	2
Insufficient resources	4.29±0.84	3
Interruptions and diversions (from patients and primary care providers alike).	4.26±0.82	4
Physical problems with the workplace, such as those with the lighting, temperature, and ventilation	4.10±0.69	5

Table (3): Nurses' perspectives of medication errors' contribution factors associated with medicines, tasks, and computerized information systems (n=262).

Statements	Mean±SD	Rank
Factors associated with medicines (Mean±SD)	8.53±1.7	
Pharmaceutical similarities in terms of form, name	4.28±0.92	1
Inappropriate forms and naming of drugs	4.26±0.95	2
Factors associated with tasks (Mean±SD)	8.33±1.52	
The monitoring of patients is contingent upon various factors, such as the specific medical practice, the individual patient, other healthcare environments, and the prescriber involved.	4.18±0.83	1
Repetitive systems for ordering, processing, and authorization	4.15±0.80	2
Factors associated with computerized information systems (Mean±SD)	16.54±3.08	
Lack of accuracy of patient records	4.21±0.84	1
Inadequate design that allows for human error	4.13±0.87	2
The generation of initial prescriptions can be a challenging process, which may involve the use of drug pick lists, default dose regimens, and missed alerts.	4.10±0.89	3
Difficult processes for generating correct repeated prescriptions	4.10±0.83	3

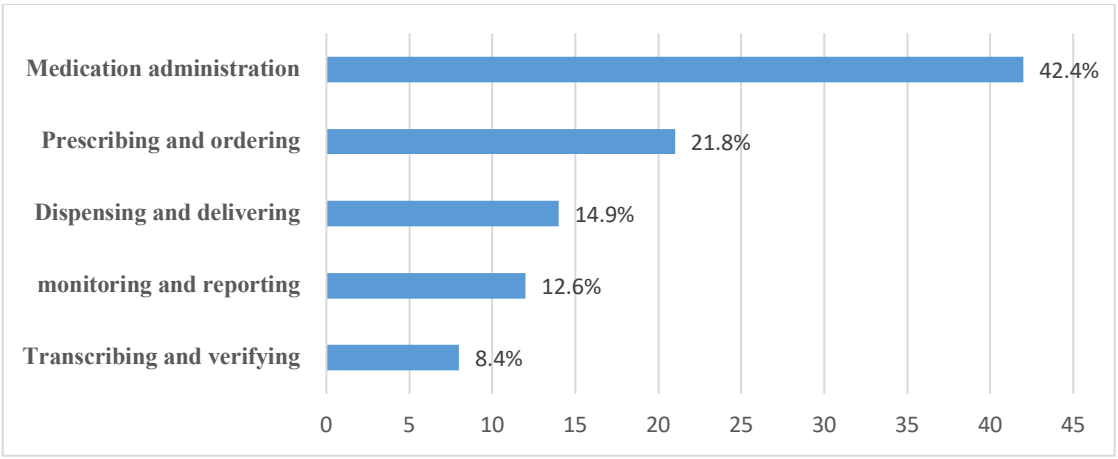

Figure (1): Percentage distribution of staff perception of the most critical stage of the medication process leading to medication error.

Table (4): Association between nurses' perception of contributing factors to medication errors and demographic characteristics.

Characteristics	Total nurses' perception of contributing factors Mean±SD	t or f	p-value
Age years			
20-29	112.47± 14.99		
30-39	116.11± 16.64	0.96	0.41
40-49	113.82± 19.07		
Above 50	120.75± 16.50		
Gender			
Male	111.92± 18.50	2.22	0.02
Female	116.67± 15.15		
Nationality			
Saudi	112.22± 16.26	1.65	0.10
Non-Saudi	116.06± 16.47		
Educational level			
Diploma	109.40± 18.49		
Bachelor	115.92± 15.87	1.60	0.19
Master	111.47± 19.72		
Technician	119.83± 13.15		
Work Experience in KAMC			
1-4 years	115.13± 13.62		
4-8 years	112.84± 18.67	1.39	0.24
8-12 years	117.95± 16.34		
More than 12 years	116.90± 13.59		

6. Discussion

Medication errors have long been associated with poor medical care quality, prolonged hospital stays, significantly higher medical costs, and decreased patient confidence in the hospital's ability to provide quality treatment. Identifying the factors contributing to medication errors is critical in enhancing patient safety and lowering the frequency of such errors *(Tariq et al., 2023).*

The current study's findings show that overworked or exhausted healthcare professionals' factors, insufficient staffing, and nurses not following the eight medication rights are the three most listed healthcare professionals factors that lead to medication errors. This finding may result from overworked nurses needing to pay more attention to patient safety principles when administering medication, which raises the risk of medication error. These results agreed with *Alemu et al. (2017), Karavasiliadou and Athanasakis (2014), and Shahrokhi et al. (2013),* who reported that inadequate staffing is among the most listed factors for medication errors. Moreover, *Abdi et al. (2018)* revealed that most medication errors were related to non-compliance with the eight rights of medication administration. *Alshammari et al. (2022)* also reported that most factors that contribute to medication errors are associated with human behavior, including but not limited to elevated workload and non-adherence to established policies and procedures.

The present study's findings reveal that the lowest responses of healthcare professionals' factors were related to a lack of therapeutic training factor. This finding might be attributed to the discovery of new diseases, medications, and novel administration methods that make training essential for reducing medication errors. This result is contradicted by *Alemu et al. (2017) and Kim et al. (2011),* who reported that insufficient training is among the most listed factors in medication errors.

Regarding factors associated with patients and the work environment, the present investigation demonstrates that patient factors elicited the highest responses in clinical complexity cases characterized by multiple health conditions, polypharmacy, and high-risk medications. This finding may be due to the increased demands, risks, and quality concerns associated with managing patients with multiple health conditions, polypharmacy, and high-risk medications. This result is matched with *Tang et al. (2007)*, who addressed that medication administration errors result from the complicated conditions of patients.

Nurses are frequently expected to do various tasks throughout their shifts, which increases the risk of medication errors, especially when there is a shortage of nursing staff. Regarding the work environment contributing factors, it was noted that workload, time pressures, and lack of standardized protocols and procedures are the highly contributory factors that lead to medication errors. This finding may be related to the fact that these factors create a challenging work environment where healthcare providers struggle to ensure the safe and accurate administration of medications, ultimately putting patient safety at risk. In the same context, the study of *Shahrokhi et al. (2013), Wondmieneh et al. (2020), and Fathi et al. (2017)* addressed that the most significant contributors to medication errors are the burden of a heavy workload and the absence of a guideline for medication administration.

The present study's results indicate that the physical work environment factor had the lowest ratings among the contributing factors to the work environment. This finding may be due to the superior quality and type of lighting and the structure of the medication room at King Abdullah

Medical City. These findings are supported by *Bijani et al. (2013) and Farzi et al. (2017)*, who reported that poor lighting was the least significant contributing factor to medication errors. In contrast, *Kaboodmehri et al. (2019)* demonstrated that the most notable environmental factors associated with medication errors were inadequate lighting, elevated noise levels, and unsuitable room temperature.

You et al. (2015) and Unver et al. (2012) conducted a study to evaluate registered nurses' perceptions regarding the underlying causes of medication administration errors. They reported that distractions were an important cause of medication administration errors. This result contrasts with our study results, revealing that physical work environment, distractions, and interruptions factors had a lower response of the important factors that led to medication errors from nurses' perspective. Moreover, *Berdot et al. (2012)* reported that interruptions were not significantly related to a medication administration error.

Regarding factors associated with computerized information systems, tasks, and medicines, the present study shows that pharmaceutical similarities in form and name had the highest responses, followed by inappropriate forms and naming of drugs. This finding may be due to the high potential for patient harm, legal repercussions, and their commitment to maintaining high patient safety standards. This result matches *Alemu et al. (2017)*, who reported that the looking-like drugs factor contributed significantly to the MEs. It would be more beneficial to create a system to verify drug similarity before the drug administration issues a license based on the probability of an error caused by verbal and physical medication similarities.

The monitoring of patients is contingent upon various factors, such as the specific medical practice, the individual patient, other healthcare environments, and the prescriber involved, which was found to be the highest response related to tasks contributing factors. This finding may be related to communication breakdowns, inconsistencies in prescribing practices, and lack of standardization. *Hammoudi et al. (2018)* showed similar findings that medication packaging, nurse-physician communication, pharmacy procedures, nurse staffing, and transcription difficulties were the leading causes of nursing medication errors. Also, *Allehebi et al. (2023)* reported a similar finding.

About computerized information systems contributing risk factors, it was observed that lack of accuracy of patient records is the most contributing factor to medication errors. This finding may be due to manual data entry errors, missing or incomplete patient information, delayed documentation, and technological issues such as system failures, software bugs, or data corruption. This finding was similar to a systematic review of thirty-four studies revealing that clinical medication errors were well characterized. Issues with system functionality, including poor user interfaces and fragmented displays, and issues with system access, system configuration, and software updates were common information technology risks *(Kim et al., 2017)*. Illegible medical records were mentioned in a study conducted by *Brabcova et al. (2023).*

The present study findings reveal that medication administration is the most critical stage that leads to medication error from a nurse's perspective. This finding may be because of the direct impact on patient safety, the complexity of the tasks involved, the potential for harm with high-risk medications, and the inherent accountability and responsibility nurses bear in this phase of care. This result is in line with *Kim et al. (2018)*, who examined the errors commonly associated with medication administration rights in hospital settings and reported that over 50% of medication errors took place during medication administration. Moreover, *Abdi et al. (2018), Joolaee et al. (2016), and Güneş et al. (2014)* also concluded that the most frequently occurring error type was medication administration. These results contradict *Alshammari et al. (2022),* who reported that most errors were detected at the prescribing stage.

There is no relationship between nurses' demographic characteristics and contributing factors to medication errors from their point of view except for gender. This finding can be attributed to a complex interplay of gender-related communication styles, cultural norms, role expectations, sample variations, sensitivity, and workplace culture.

One of the basic areas in which mistakes can be avoided is the factors leading to medication errors. When examining how frequently nurses encountered potential contributing factors to medication errors, it was found that the nurses perceived that all the factors are very important and can lead to medication errors. Healthcare professionals and factors associated with the work environment contribute to medication errors.

7. Conclusion

Understanding the contributing factors to medication errors can help healthcare organizations develop strategies for improving patient safety and quality of care. Based on the result of this study, the highly contributory factors to medication errors are workload and time pressures, overworked or exhausted healthcare professionals, insufficient staffing, failure of nurses to adhere to the eight rights of medication administration, inadequate drug knowledge and experience, failure to record the administered drug in the patient's record, poor communication between the health care professionals and the patients. Complexity of clinical cases, pharmaceutical similarities in terms of form, name, and lack of accuracy of patient records

8. Recommendations

It is recommended that legal adjustments be implemented, and adequate staffing levels be maintained to ensure that knowledge, skills, and clinical practices are up-to-date and to foster the development and maintenance of competence in all aspects of medication management. Develop and implement standardized protocols for medication administration, including guidelines for prescribing, dispensing, and administering medications. Provide ongoing education and training for healthcare providers on medication safety, including best practices for preventing medication errors. Implement technology

solutions for medication safety, such as electronic prescribing systems and barcode scanning technology.

Establish a culture of transparency and accountability around medication errors, including reporting mechanisms and regular incident reviews to identify improvement opportunities. Conduct regular audits of medication processes to identify areas where improvements can be made, such as reducing reliance on manual processes or improving communication between healthcare providers. Foster collaboration between healthcare providers across different departments or specialties to ensure consistent approaches to medication administration and reduce the risk of errors due to miscommunication or lack of coordination. Continuously evaluate and update policies and procedures related to medication safety based on new research findings or changes in best practices within the field.

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