

RESEARCH ARTICLE

Nurses' attitudes and perceived barriers toward medication error reporting: A cross-sectional study**Munirah Saleh Aldawsari***King Saud Medical City, KSA***Corresponding Author:** Munirah Aldawsari, **E-mail:** moni21333@hotmail.com

ABSTRACT

Medication errors are one of the leading threats to patient safety worldwide. Nurses play a key role in administering medications and reporting medication errors. Despite systems being put in place for the reporting of medication errors, such cultural, organizational and managerial barriers within hospital settings inhibit the full reporting of medication errors. The main aim of the study was to assess the prevalence of medication errors among nurses and examine their attitudes and perceived barriers toward medication error reporting. A cross-sectional study was conducted among 377 registered nurses working in a public tertiary hospital, Riyadh, Saudi Arabia. The self-administered questionnaire comprised sections on sociodemographic characteristics and other variables of the study such as prevalence of medication errors, perceived barriers to reporting of medication errors and attitude towards reporting of medication errors. Descriptive statistics were used to summarize the data. Chi-square test and binary logistic regression analysis were performed using SPSS. A p-value less than 0.05 has been considered for statistical significance. Medication errors were reported by 15.6% of nurses, with 67.2% of these errors being formally reported. Management-related barriers demonstrated the highest perceived impact on reporting. Significant associations were found between medication error occurrence and several demographic and professional variables; however, no factors were significantly associated with reporting behavior. Working in surgical wards and having 11–19 years of experience predicted more positive attitudes toward error reporting. Factors that are more organizational and managerial, rather than individual characteristics of nurses themselves, influence medication error reporting among nurses. Non-punitive cultures at all levels must be strengthened besides improving leaders' support and establishing a functional system for sustaining enhanced medication safety through transparent reporting.

KEYWORDS

Medication errors; Error reporting; Nurses; Patient safety

ARTICLE INFORMATION

ACCEPTED: 3 September 2026**PUBLISHED:** 3 October 2026**DOI:** 10.32996/bjns.2026.6.3.2

1. Introduction

Medical errors are among the biggest threats to patient safety that hospitals and healthcare organizations currently face. Many studies have revealed the extent and impact of medical errors particularly within hospital medicine in response to the Institute of Medicine (IOM) report, "To Err is Human," published in 1999 (Aljabari & Kadhim, 2021). The global prevalence rate for medication administration errors stands at 13.7% with omission and wrong handling being the most common types Jessurun et al. (2023). Also, Jessurun et al. (2023), found out that about 11.8% of these could potentially result into negative effect or harm towards patients. A systematic review found a prevalence rate for medication administration errors standing at 34.5% within Saudi Arabia (Almalki et al., 2021).

The World Health Organization (WHO), in 2019, announced medication safety to be the third global patient safety challenge because of a tentative estimate regarding an annual healthcare cost expenditure on medication errors of about \$42 billion globally (Naserallah et al., 2023). Berdot et al. (2021) found that the prevalence of medication administration errors varied between 1.5 and 31.9%, based on different studies conducted by researchers worldwide. In Saudi Arabia, among nurses, the prevalence rate was high at 72.1% but only 41.2% reported such incidents (Alandajani et al., 2022). None of the studies have ever reported what hinders them from reporting these mistakes.

Nurses are accountable to ensure that the correct drug is given to the correct patient at the right time and in the right form. However, according to Jessurun et al. (2022), many factors can be responsible for errors in medication administration. Most often, it is a combination of human, organizational, material and/or technical failures which harm the patient (Prokešová et al., 2022). The number of adverse events as well as medication administration errors reported by nurses to different hospital information structures is far less than the real quantity of errors detected by healthcare professionals (Brabcová et al., 2023). Other factors include organizational barriers (for example, insufficient reporting systems, management behavior, unclear definition of medication error), both personal and professional obstacles (such as fear from the management or colleagues or lawsuit), individual reasons, and lack awareness of mistakes (Afaya et al., 2021). In many healthcare organizations, Medication Administration Error reporting systems are a key component in the retrospective analysis-based risk management process of medication safety because these systems provide information on events that have occurred during administration processes (Afaya et al., 2021). The methods will be even less effective without proper efforts to ensure an environment is created which is conducive towards reporting errors in medication administration (Afaya et al., 2021).

Safety is only one consideration in broader endeavors, whether in healthcare or any other field. As an independent profession with its own regulations, nursing may use experiences from other industries and disciplines to improve practices, such as managing errors and safety; this can be described as organizational learning (Berry et al., 2020). Understanding nurses' beliefs, values, and attitudes regarding safety culture is essential and may help organizations identify the factors that threaten patient safety, determine the willingness of employees to report errors, and recognize the importance of such reporting, thus improving safety (Woo et al., 2021). Regrettably, inadequate understanding of incident reporting policies among nurses, heavy workload and long working hours, unavailability ward error reporting forms are some barriers that prevent nurses from reporting such errors (Abdel-Latif 2016). Underreporting by nursing professionals also prevents them from being blamed, being labelled incompetent or receiving counselling (Yang et al., 2021).

Medication errors largely go unreported. Underreporting of medication errors could be interpreted as a problem in healthcare provision because, particularly for developing countries, most medication errors are grossly underreported worldwide. Between 4 and 50% of errors are reported in the USA (Barach & Small, 2000; Kingston et al., 2004), between 22 and 39% in the UK Public Accounts Committee (2006), and between 30 and 47.6% in Taiwan (TJCHA, 2009). A study conducted recently found that only 41.2% nurses working in Jeddah Saudi Arabia reported medication errors (Alandajani et al., 2022). Nurses themselves admit this fact: just 3.5% believe all medication errors reported (Yang et al., 2021). If nurses believe that realistic is to avoid making any errors the nurse will consider that as normal practice. Medication definition disagreement was found with a small percentage of nurses in another study (Tsegaye et al., 2020). This means that a nurse can make a mistake without even realizing that what they have done is inappropriate. Sheikhtaheri et al., 2018 and Woo et al., 2021 found and discussed in their studies the fact that nurses get distracted by patients, colleagues, supervisors or any other visitors while reporting medication errors therefore such errors are mainly unintentional and go unreported (Sheikhtaheri et al., 2018). Other cultural related factors include lack of trust on how medication error reports are utilized within the institution as well as power hierarchy. The same institution staff's cultures of origin can also be a barrier to reporting medication errors. At a national level, organizational cultures within national healthcare systems can also hinder the reporting of medication errors, especially when such incidents are due to the actions of a colleague. This is mainly due to the fear of being labelled a troublemaker, bullied or disciplined - all of which are strong disincentives to reporting errors (Albalawi et al., 2020).

Nurses compose the largest segment of the healthcare workforce and often become frontline caregivers while playing significant roles in preventing and detecting adverse patient events. Therefore, their participation in reporting medication administration errors is indispensable because they directly participate in most medications administered within hospitals (Afaya et al., 2021). Not all nurses report every single error they make during medication administration; among several reasons identified as explanations for such non-reporting were a fear that blames will be placed on them if there should be any deterioration noticed in a patient's health condition, negative feelings from either patients or family members towards the nurse or legal liability and repressive response by hospital management (Brabcová et al., 2023). The main aim of the study was to assess the prevalence of medication errors among nurses and examine their attitudes and perceived barriers toward medication error reporting.

2. Materials and Methods

2.1 Study Design, Setting

This study utilized a cross-sectional research design. Cross-sectional designs are most frequently applied in population-based surveys to obtain information reflecting circumstances at one particular point in time. Therefore, this makes it suitable for determining the proportion of nurses who have committed medication errors as well as other associative variables and provides justification for its use in this study. This study was carried out at one large public tertiary hospital located within Riyadh, Saudi Arabia. The hospital was founded back in 1956 with an approximate bed capacity standing now at about 1,500 beds inclusive of 100 intensive care unit (ICU) beds thus ranking among the largest tertiary healthcare centers nationwide. Riyadh is the capital and biggest city in Saudi Arabia. More than 7.6 million people live there. Apart from being a prime healthcare destination, it is also

known as the financial and administrative hub of all major activities that run through different sectors within the country. The hospital offers diversified specialized services with an average large number of nurses employed hence making it suitable to study medication error reporting practice among nurses.

2.2 Study Population, Sampling and Eligibility Criteria

The target population was defined as all registered nurses who have completed at least one year of clinical experience and are registered with the Saudi Commission for Health Specialties, employed in a selected public hospital in Riyadh. There were no restrictions based on gender, age, nationality, educational level or ethnicity. Nurses from different departments and units within the same hospital reflected various clinical contexts and professional roles to ensure maximum representation among participants related to their working context. The sample size has been calculated by using an online Raosoft sample size calculator at a 95% confidence level with a 5% margin of error which comes out to be 377 respondents as the minimum required sample size for this study. Registered nurses who were licensed by the Saudi Commission for Health Specialties and had at least one year of work experience in the selected hospital, available during the period of data collection, and willing to participate comprised the sample. Nurses with less than one year of experience who were not willing to participate or unavailable during the period of data collection due to any reason such as maternity leave-internship-student nurse status were excluded from participating in this study.

2.3 Data Collection Instruments

Data were collected using a structured, self-administered questionnaire adapted from previously validated instruments and distributed electronically via Google Forms. The main sections of the questionnaire included sociodemographic characteristics, prevalence of medication errors, perceived barriers toward medication error reporting, and attitudes toward medication error reporting. All tools were originally developed in English and used previously with acceptable validity and reliability. For this study, the questionnaire was made available in both English and Arabic languages. A professional forward translation was conducted to ensure semantic and conceptual equivalence with the original versions.

Sociodemographic characteristics were adapted from tools used by Yung et al. (2016) and Alandajani et al. (2022). Items in this section include age, gender, nationality, marital status, educational attainment or highest degree obtained, job title or position, clinical department or unit/ward assignment, years of experience, average number of working hours per week training on medication error reporting and monthly income. These variables/items were added to test their association with the occurrence of medication errors and reporting behaviors.

The tool to measure the prevalence of medication errors was adopted from Alandajani et al. (2022). It contains three items intended to capture and describe nurses' experiences with medication errors over the past twelve months, in terms of frequency and reporting or non-reporting, as well as types of medication error recorded. The categorization for type of medication error is based on the six rights wrong patient, wrong dose, wrong infusion rate, wrong route, wrong time, and wrong drug. Descriptive analysis in response to this item will reveal both reported and unreported instances of medication errors.

A questionnaire was used to assess perceived barriers toward medication error reporting, adapted from Yung et al. (2016), containing 22 items under domains of organizational barriers, fear of consequence, reporting system limitations, and workload-related factors. It was rated on a four-point Likert scale from 1=strongly disagree to 4=strongly agree. Higher total scores represented greater perceived barriers in reporting medication errors. The tool exhibited good internal consistency reliability and construct validity. This same tool or slightly modified versions appear very frequently in studies among nurses investigating perceived barriers to medication error reporting.

Attitudes toward medication error reporting were measured using a tool adapted from Alandajani et al. (2022). The instrument comprises 23 items intended to elicit nurses' perceptions and attitudes toward medication error reporting, responsibility perception, importance of reporting, organizational culture, and learning from errors. A five-point Likert scale was used ranging from 1=strongly disagree to 5=strongly agree with total scores possible between 23-115 where higher scores reflect more positive attitudes toward medication error reporting. Attitude levels have been classified as either positive or negative based on the median total score in line with recommendations by the original authors. The instrument has displayed satisfactory validity and reliability results in previous studies.

2.4 Ethical Considerations

Approval was obtained from the Research and Studies Department, Riyadh Health Affairs, Ministry of Health, Saudi Arabia, and the hospital Institutional Review Board. Ethical considerations to keep the participants safe were considered by maintaining confidentiality and making sure that participation is voluntary. The participants were made aware of the objectives of this study in detail about procedures involved, potential risks or harm, and benefits. Written informed consent was obtained before data collection commenced, with an explanation that they are free to withdraw from the study at any point in time without any penalty. All information collected has been kept confidential and used for research purposes only.

2.5 Procedure

After getting the needed approvals, we informed hospital administrators, nursing directors and head nurses to help us access participants. We then emailed eligible nurses an information sheet about the study and consent forms. A simple random sample

was carried out from lists provided by human resources using Microsoft Excel. Data collection started in July 2024 until December 2024. Participants filled out self-administered questionnaires on their own; however, contact details of the researcher were provided for any questions or clarifications needed. Data collection continued until the required sample size was achieved

2.6 Data Analysis

Analysis of the data was carried out using SPSS version 26. Descriptive statistics in the form of means, medians, standard deviations, frequencies, and percentages were used to summarize the data. The chi-square test was used to check associations between categorical variables. Variables that showed statistically significant results in univariate analysis were entered into multivariate analysis models. A p-value <0.05 was considered as the level at which results would be termed statistically significant. Appropriate tables and graphical representation have been used to display the results.

3. Results

A total of 377 nurses participated in the study. As shown in Table 1, most participants were aged 31–39 years (45.9%), followed by 24–30 years (31.3%). The majority were female (86.5%), and 65.8% were non-Saudi nationals. More than half of the participants were married (53.6%), and most held a bachelor's degree (77.2%). Regarding monthly income, 61% earned between 5,000 and 10,000 Saudi Riyals.

Table 1. Demographic Characteristics of Participants (N = 377)

Characteristic	n	%
Age		
24–30 years	118	31.3
31–39 years	173	45.9
40–49 years	64	17.0
≥50 years	22	5.8
Gender		
Male	51	13.5
Female	326	86.5
Nationality		
Saudi	129	34.2
Non-Saudi	248	65.8
Marital status		
Single	137	36.3
Married	202	53.6
Divorced	26	6.9
Widowed	12	3.2
Education		
Diploma or below	57	15.1
Bachelor's	291	77.2
Master's	27	7.2
Doctoral	2	0.5
Monthly income (SR)		
<5,000	14	3.7
5,000–10,000	230	61.0
10,001–15,000	104	27.6
>15,000	29	7.7

As presented in Table 2, 50.7% of participants were specialist nurses, followed by general nurses (29.7%). The largest proportion worked in the Pediatric Ward (21.5%), followed by the Maternity Ward (19.9%) and ICU (18.6%). Nearly half of the nurses had 1–10 years of experience (49.9%), and 69.8% reported attending training courses on medication error reporting.

Table 2. Professional Characteristics of Participants (N = 377)

Variables and Category	n	%
Profession		
General nurse	112	29.7
Assistant nurse	8	2.1
Critical care nurse	66	17.5
Specialist nurse	191	50.7
Department		
Emergency room	66	17.5
Surgical ward	19	5.0
Medical ward	66	17.5
Maternity ward	75	19.9
Pediatric ward	81	21.5
ICU	70	18.6
Experience		
1–10 years	188	49.9
11–19 years	136	36.1
20–29 years	42	11.1
≥30 years	11	2.9
Weekly hours		
8 hours	152	40.3
9 hours	130	34.5
12 hours	95	25.2
Training		
Yes	263	69.8
No	114	30.2

As shown in Table 3, 15.6% (n = 59) of nurses reported committing at least one medication error during their career. The most frequently reported types were wrong dose (27.9%) and wrong time (27.9%), followed by wrong medication (21.3%). Among those who committed medication errors, 67.2% reported the error, while 32.8% did not.

Table 3. Prevalence and Reporting of Medication Errors (N = 377)

Category	n	%
Medication error committed		
Yes	59	15.6
No	318	84.4
Type of error (n = 59)		
Wrong patient	5	8.2
Wrong dose	17	27.9
Wrong route	9	14.8
Wrong time	17	27.9
Wrong medication	13	21.3
Error reported (n = 59)		
Yes	41	67.2
No	20	32.8

Overall, nurses reported a low to moderate level of perceived barriers to medication error reporting. Management-related barriers demonstrated the highest mean score (mean = 2.98 ± 0.90), indicating moderate concern related to managerial reactions and practices. System-related, culture-related, and nurse-related barriers were all perceived at a low level, with mean scores of 2.34 ± 0.90 , 2.27 ± 0.97 , and 2.29 ± 0.97 , respectively.

Table 4. Total Mean Scores of Perceived Barriers to Medication Error Reporting by Subdomain (N = 377)

Subdomain	Number of Items	Mean	SD	Level
Management-related barriers	7	2.98	0.90	Moderate
System-related barriers	8	2.34	0.90	Low
Culture-related barriers	8	2.27	0.97	Low
Nurse-related barriers	8	2.29	0.97	Low
Overall perceived barriers	31	2.47	0.94	Low-Moderate

Chi-square analysis demonstrated statistically significant associations between the occurrence of medication errors and several demographic and professional characteristics, including age, gender, nationality, marital status, education level, monthly income, profession, years of experience, and weekly working hours ($p < 0.05$). Younger nurses aged 24–39 years accounted for the largest proportion of medication errors, while nurses aged 50 years or above reported the lowest occurrence. Female and Saudi nurses reported significantly higher proportions of medication errors compared with male and non-Saudi nurses. Higher rates of medication errors were also observed among nurses holding bachelor's degrees, those earning middle-range monthly incomes, and those working longer weekly hours. In contrast, no statistically significant associations were found between demographic or professional characteristics and medication error reporting behavior ($p > 0.05$), indicating that while multiple factors were associated with the occurrence of errors, they did not significantly influence whether errors were reported.

Table 5. Association of Demographic and Professional Characteristics with Medication Errors and Error Reporting (N = 377)

Category	Medication error n (%)	χ^2	p-value	Error reported n (%)	χ^2	p-value
Age (years)						
24–30	20 (33.9)	8.83	0.032*	16 (72.7)	0.67	0.881
31–39	20 (33.9)			13 (65.0)		
40–49	17 (28.8)			11 (64.7)		
≥50	2 (3.4)			1 (50.0)		
Gender						
Male	26 (44.1)	55.77	<0.001*	17 (65.4)	0.07	0.793
Female	33 (55.9)			24 (68.6)		
Nationality						
Saudi	38 (64.4)	28.32	<0.001*	25 (62.5)	1.17	0.279
Non-Saudi	21 (35.6)			16 (76.2)		
Marital status						
Single	19 (32.2)	37.70	<0.001*	15 (75.0)	3.92	0.271
Married	22 (37.3)			15 (68.2)		
Divorced	10 (16.9)			8 (72.7)		
Widowed	8 (13.6)			3 (37.5)		
Education level						
Diploma or below	10 (16.9)	21.27	<0.001*	8 (80.0)	2.18	0.537
Bachelor's	36 (61.0)			22 (61.1)		
Master's	12 (20.3)			10 (76.9)		
Doctoral	1 (1.7)			1 (50.0)		
Monthly income (SR)						
<5,000	5 (8.5)	45.15	<0.001*	3 (60.0)	3.48	0.323
5,000–10,000	18 (30.5)			13 (72.2)		
10,001–15,000	21 (35.6)			17 (77.3)		
>15,000	15 (25.4)			8 (50.0)		
Profession						
General nurse	20 (33.9)	10.90	0.012*	18 (85.7)	5.16	0.161
Assistant nurse	3 (5.1)			2 (66.7)		
Critical care nurse	16 (27.1)			10 (58.8)		

Category	Medication error n (%)	χ^2	p-value	Error reported n (%)	χ^2	p-value
Specialist nurse	20 (33.9)			11 (55.0)		
Department						
ER	12 (20.3)	2.51	0.775	11 (84.6)	7.46	0.188
Surgical ward	4 (6.4)			1 (25.0)		
Medical ward	10 (16.9)			7 (70.0)		
Maternity ward	10 (16.9)			7 (70.0)		
Pediatric ward	15 (25.4)			11 (73.3)		
ICU	8 (13.6)			4 (44.4)		
Experience (years)						
1–10	21 (35.6)	27.65	<0.001*	16 (72.7)	2.04	0.564
11–19	19 (32.2)			14 (73.7)		
20–29	12 (20.3)			7 (53.8)		
≥30	7 (11.9)			4 (57.1)		
Weekly hours						
8	16 (27.1)	7.45	0.024*	12 (70.6)	0.15	0.929
9	29 (49.2)			20 (66.7)		
12	14 (23.7)			9 (64.3)		
Training						
Yes	40 (67.8)	0.13	0.721	30 (75.0)	3.20	0.074
No	19 (32.2)			11 (52.4)		

Binary logistic regression analysis revealed that the model was statistically significant ($\chi^2 = 32.31$, $p = 0.029$), explaining approximately 11% of the variance in attitudes toward medication error reporting. Working in the surgical ward was a significant predictor of a positive attitude toward medication error reporting, with nurses in this department being more than six times as likely to report positive attitudes compared with those working in the ICU. Additionally, nurses with 11–19 years of experience were significantly more likely to demonstrate positive attitudes toward medication error reporting compared with those having 30 years or more of experience.

Table 6. Binary Logistic Regression Analysis of Predictors of Attitude Toward Medication Error Reporting (N = 377)

Predictor	Wald	OR	p-value
Gender	0.042	1.08	0.837
Training	0.641	0.83	0.424
Department (ref: ICU)			
- Emergency room	0.681	1.42	0.409
- Surgical ward	7.137	6.47	0.008*
- Medical ward	0.003	1.02	0.958
- Maternity ward	0.163	1.18	0.687
- Pediatric ward	2.769	2.01	0.096
Experience (ref: ≥30 years)			
- 1–10 years	3.768	5.51	0.052
- 11–19 years	4.802	6.25	0.028*
- 20–29 years	0.577	1.83	0.447

Model fit: $\chi^2 = 32.31$, $p = 0.029$

Nagelkerke $R^2 = 0.11$

* $p < 0.05$

4. Discussion

Medication errors remain a critical challenge to patient safety worldwide, and nurses play a central role in both medication administration and the detection and reporting of such errors. The present study examined the prevalence of medication errors, perceived barriers to medication error reporting, and nurses' attitudes toward reporting in Saudi Arabia. The findings provide

important insights into how individual, organizational, and systemic factors interact to influence medication error reporting practices and contribute to the existing body of evidence in the Saudi healthcare context. In the current study, 15.6% of nurses reported having committed at least one medication error, with approximately two-thirds of these errors being reported. This prevalence is lower than that reported in several Saudi studies, such as Alandajani et al. (2022), who found a medication error prevalence of 72.1%, and Alyami et al. (2022), who documented a high number of errors across multiple years. The result can be due to different methods of measuring, a culture on reporting and learning from incidences at this institution or simply very pragmatic underreporting because of fear on the consequences a phenomenon widely acknowledged in medication safety research (WHO, 2018).

Even though fewer nurses admitted to having committed medication errors, more than half of them reported their mistakes. This is higher compared with other regional studies which found that less than fifty percent of medication errors were reported (Alandajani et al., 2022; Al-Harkan et al., 2020). Nurses are aware and willing to participate in reporting but still a large number remains unreported. Underreporting masks the opportunities for learning at a systems level and thus emphasizes breaking the hindering barriers beneath. Most nurses reported wrong dose and wrong time errors as reflected by both Saudi and international literature (Alandajani et al., 2022; Alyami et al., 2022; Di Simone et al., 2018). They associate very closely with workload, interruptions and complexity of medication regimen in high acuity areas such as pediatric and intensive care units. This therefore underlines the need for system level protection which includes standardized medication administration policies at all levels accompanied by technological supports in reducing the occurrence of errors.

More female nurses than male nurses reported medication errors. This reflects the gender distribution among nurses in Saudi Arabia. Females comprise the large proportion of practicing nurses (Alsadaan et al., 2021). The association is more likely with workforce composition and not a competence difference by gender. More Saudi nurses than non-Saudi nurses reported errors. This may be related to differences in clinical roles and workloads or willingness to report, which has been suggested to be influenced by job security and organizational expectations.

There was a large proportion of medication errors among respondents with a bachelor's degree. This slightly deviates from the notion that higher educational attainment drastically reduces the possibility of error but is in agreement with Alluhidan et al. (2020), who state that competency on medication safety requires continuing professional development and postgraduate education, and bachelor nurses are frontline staff directly responsible for administering medications thus more exposed to such errors. Demographic and professional characteristics have been associated with the occurrence of medication errors; however, none was significantly associated with medication error reporting which firmly proves that factors related to organizational culture and management practices accompanied by perceived consequences play a stronger role in fostering or hindering an individual's characteristic way of behaving as reported also by Hamoudi et al. (2018) and Mohammad et al. (2016).

Management-related barriers were perceived at a moderate level, yet they ranked as the leading barrier to medication error reporting in this study. Nurses are worried about punitive managerial reaction, intense focus on individual blame, and using medication errors as indicators of care quality instead of opportunities for system improvement. Similar results have come out from Saudi Arabia and other parts of the world that fear punishment together with negative managerial response acts as main deterrents to reporting (Aboshaiqah 2013; Abdel-Latif 2016; Yung et al., 2016). From an analysis based on bureaucratic caring theory management behaviors display misalignment between organizational structures and caring values. Administrative systems develop accountability more than learning or supporting then nurse will see reporting as threat not professional responsibility. This is worsened by the lack of positive and constructive feedback that would show nurses the benefits of reporting errors. Therefore, there should be a trend in leadership behavior toward implementing ethical, educational, and socio-cultural aspects of caring within bureaucratic systems.

They perceived low levels of barriers at the system, however specific such as paperwork documentation, time constraints and workload were noted frequently. This finding is in line with that complex reporting systems discourage nurses from engaging in formal reporting processes by Mohammed et al. (2025) and Alshammari et al. (2021) even a reporting system exists its usability and efficiency play a key role to determine either will use or not used by nurses hence within Bureaucratic Caring framework technological-economic dimensions most applicable ineffective reporting systems are technological barriers caring practice while staff shortages workload pressures are economic constraints caring practice engage non-immediate clinical tasks address require organization invest streamlined user friendly report platform adequate staff support safe medication practices.

Culture-related barriers were perceived at a low level. Important insights into the nature of relations and hierarchy within the hospital were provided by dynamics that are relational and hierarchical, and which include poor interprofessional relationships, lack of trust in how reports are used, and rigid power hierarchies as factors inhibiting open reporting. Jang et al. (2021) found similar results; they determined patient safety culture to be a significant factor in medication error reporting among mostly new nurses. The Theory of Bureaucratic Caring explains social-cultural and political influences on caring behavior: A hierarchical culture was questioning authority or challenging established practices is discouraged silences nurses and normalizes underreporting. Building psychological safety such that nurse feel respect irrespective rank is key transparent reporting behavior

Nurse-related barriers were perceived at a low level. The most potent factors included reluctance to punish colleagues and fear due to previous negative experiences. The findings are in line with Volkerding (2016), who found generally low personal barriers among nurses but emphasized that emotional and interpersonal considerations can still act as inhibiting forces against reporting. Lack of knowledge about the reporting procedures or whether the error is significant enough for reporting also forms part of underreporting, which this study elucidates. This brings out both ethical and spiritual dimensions of caring as described from a Bureaucratic Caring theory perspective. Reluctance by nurses to report errors committed by their colleagues shows compassion- and loyalty-based nurse behavior yet could inadvertently work against patient safety.

Nurses overall had a slightly positive attitude toward medication error reporting. 51.7% were classified as having positive attitudes. This result supports the findings of Di Simone et al. (2018) and Alandajani et al. (2022), who both found generally favorable attitudes among nurses, but that gaps between attitudes and actual reporting behavior persist. The near-equal distribution of positive and negative attitudes found in this study provides further evidence for the fragility of reporting culture and thus, educational as well as organizational interventions, remain warranted. Significant predictors for developing a positively inclined attitude towards medication error reporting included working in surgical wards and work experience ranging from 11 to 19 years; according to logistic regression analysis conducted on survey data responses provided by participants from different hospital departments.

5. Conclusion

Medication errors remain a serious patient safety problem. Nurses are key participants in medication administration and error reporting. The present study found that even though the incidence of medication errors was quite low, underreporting exists profoundly-and is determined by several individual and organizational factors. Most nurses have developed positive attitudes toward developing reports on medication errors; however, managerial barriers appear to be most prominent-of which punitive reaction is feared together with lack of constructive feedback as significant obstacles. Demographic and professional characteristics were related both to the occurrence of medication errors as well as reporting behavior-thus emphasizing a dominant role for organizational culture-. This paper discusses an intervention aimed at strengthening non-punitive reporting environments through supportive leadership accompanied by system-based learning approach.

6. Implications for Future Research

Future research should involve other healthcare institutions from different regions of Saudi Arabia to make the findings more generalizable. A mixed-method, longitudinal study is suggested to determine a causal relationship and capture nurses' experiences in reporting medication errors. The study would also have to include pharmacists and physicians for better interdisciplinary conceptualization toward medication safety. Studies shall be conducted in the future on the effects of organization-level interventions-implementation of non-punitive policies, leadership training, electronic systems for reporting-on-reporting behavior across time spans. Another prospective area could be cultural, ethical, and psychological dimensions based on some theoretical framework like Theory of Bureaucratic Caring that envisages how strongly organizational values shape nurse's practice regarding reports.

7. Implications for Nursing Practice

Healthcare organizations must develop a non-punitive culture which perceives the reporting of medication errors as opportunities for learning instead of imposing disciplinary actions. Nursing leaders should give timely and constructive feedback to their subordinates on how well they have performed specific tasks about nursing practice and encourage open communication lines regarding medication errors committed by nurses. Training programs that will regularly educate both senior and junior staff members within healthcare institutions about recognizing, preventing, and reporting malpractice are necessary because most young practitioners may not be aware due to inexperience or lack thereof training earlier provided them during entry-level employment stages at hospitals/clinics etc., Simplified reporting systems with less paperwork involved shall also motivate more people into complying fully through making reports whenever required too! A multi-disciplinary committee comprising different professionals dealing specifically with safe use could continuously monitor.

Funding: Funding information was not supplied in the manuscript.

Conflicts of Interest: A conflict-of-interest declaration was not supplied in the manuscript.

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