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Examining Barriers and Perceptions in Reporting Medication Administration Errors among Nurses at the Tertiary Care Hospitals in Peshawar Pakistan

Muhammad Anwar[1*], Dildar Muhammad[2], Bakhtayar Ali Shah[2], Sumayya Shah[3], Asad Ullah[1] and Sumaira Bibi[1]

[1]Medtec College of Nursing and Allied Health Sciences, Upper Dir, Pakistan
[2]Institute of Nursing Sciences, Khyber Medical University, Peshawar, Pakistan
[3]Khyber Teaching Hospital, Peshawar, Pakistan

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***Corresponding Author:**
Muhammad Anwar
Medtec College of Nursing and Allied Health Sciences, Upper Dir, Pakistan
m.anwar.ma528@gmail.com

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ABSTRACT

Medication administration is vital for patient safety, yet medication errors can lead to life-threatening situations and increased mortality rates. Nurses, being essential members of the healthcare team, are constantly present with patients and regularly tasked with drug administration, facing a significant burden of medication errors compared to other healthcare providers. **Objectives:** To explore the barriers and perceptions of nurses' regarding medication errors reporting in public sector tertiary care hospitals. **Methods:** A convenient sample of 209 staff nurses participated in this cross-sectional survey from June to October 2022. A three-part questionnaire was used to gather information on the general characteristics of nurses, the causes of medication errors, and the justifications for not reporting them. **Results:** The Pharmacy supplies inappropriate doses to this unit with a mean of (2.53 ± 1.28) and an insufficient number of staff nurses in each working shift (4.23 ± 0.76) were the two least and most significant contributing factors to medication errors. Additionally, the two most and least significant factors for not reporting medication errors were that nurses may be held accountable if the patient suffered harm (3.94 ± 1.16) and that nurses did not agree with the hospital's definition of a medication error (2.33 ± 1.26) on average. **Conclusions:** The main causes of drug mistakes and failure to reveal them were nursing and management issues. Moreover, attempt to establish a blame-free culture to motivate reporting errors.

INTRODUCTION

One of the most important nursing tasks is giving a patient their medication. Nurses spend roughly 40% of their working hours giving patients their medications and the most important duty of nurses is to carry them out safely [1]. The cost of medication errors is estimated to be around 42 billion US dollars annually globally, in line with a 2017 World Health Organization (WHO) report [2], and hospitalized patients who experience medication administration errors may extend their stay by up to two days, increasing it expenses up to 2000–2500 US dollars [3]. An estimated 1.5 million Americans are impacted by MAEs each year, according to statistics. Every year, MAEs cause the deaths of 7.6 outpatients and 1.2 inpatients per 1,000 patients [4]. Medication errors are the most frequent type of medical errors in hospitals and rank as the eighth leading cause of mortality in the USA, surpassing vehicle accidents, carcinoma, and HIV combined [5]. They are also the most common avoidable factor contributing to adverse events for hospitalized patients. Multiple factors, such as inadequate verbal communication, distractibility, high client-to-nurse ratios, unclear writing, staffing shortages, insufficient training, nursing incompetence, and excessive workloads, can contribute to these errors. Medication errors have far-reaching consequences affecting various parties' health and well-being. They significantly increase the risk of patient harm, leading to prolonged hospital

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stays, disabilities, or even death [6]. Medication errors could sometimes result from nurses being dissatisfied with their jobs. Job dissatisfaction has a variety of basic reasons. Previous studies showed that a shortage of nurses, severe exhaustion brought on by a hard workload, and job demands not only hurt nurses' job satisfaction but also raised the likelihood that medicine dosage estimates would be incorrect [7]. Medication mistakes also harm organizations, a fall in the standard of care services, frustration and ethical issues for nurses, and patients' mistrust and unhappiness with healthcare delivery systems [8]. Although any member of a healthcare team can make a medication error, nurses make the most frequent and common errors. It might be because, in hospitals, nurses spend 40% of their time giving medication and carrying out a significant portion of doctor's orders. Nurses were in charge of 54% of medication errors, which most frequently occurred during the drug administration phase. More than 60% of the participating nurses were found to have made medication mistakes, and 31% of them had been on the verge of making medical mistakes [9]. On the other side, other studies say that these potential causes are the use of shortened names rather than full names, drug name similarity, carelessness, and distraction on the part of nurses, emergencies, increased workload, fatigue brought on by a heavy workload, low nurse to patient ratio, psychological issues with nurses, a lack of pharmacological knowledge, lack of work experience for nurses, and incorrect use of the medication administration procedure. Zarea *et al.*, found that 54% of medication errors were the responsibility of nurses and that they most frequently happened during the medication administration phase [8]. Error detection is viewed as a crucial strategy to prevent medication administration errors, which occur when professionals provide the wrong medications to patients. Professionals must be able to identify MAE when it occurs and then report it through authorized methods. Obstacles that prevent nurses from reporting MAE include system design, administration, and individual own knowledge and attitudes toward MAEs [10]. Finding accurate statistics on drug errors in developing and underdeveloped countries is often highly challenging. This problem arises from the lack of suitable recordkeeping, reporting, and data registration methods [11]. How practical a reporting system is for nurses to utilize is reflected in system design factors. The rates of MAE reporting have been seen to decline under complex reporting methods and handwritten reporting forms. In a centralized setting, nurses may be afraid of being held accountable, facing punishment, or suffering negative outcomes. In an unpleasant setting, nurses could worry that their peers will view them as incompetent or troublemakers [12].

In Pakistan, nurses are scared of reporting medication errors, leading to underreporting and making medication errors the eighth leading cause of death. This study in Peshawar aimed to investigate barriers to medication error reporting among nurses, which could assist policymakers and hospital administrators in creating an environment free of fear to eradicate reporting barriers.

METHODS

A descriptive cross-sectional study was conducted in two public sector tertiary care hospitals in Peshawar, Khyber Pakhtunkhwa. The study lasted six months, collecting data from 209 staff nurses using consecutive sampling. Only nurses directly involved in patient care were included, excluding those in management or administration roles. Data were gathered using a self-reported questionnaire by Wakefield *et al.*, (1999) and Wakefield *et al.*, (2001) focusing on medication administration errors (MAEs) and nurses' perceptions of reporting obstacles [13, 14]. The questionnaire comprised three sections: general participant characteristics, causes of MAEs, and factors for unreported MAEs, utilizing a 5-point Likert scale. Cronbach's alpha for questionnaire reliability was 0.899. Permission for data collection was obtained from hospital administration, and informed consent was secured from participating nurses. Ethical Approval was also granted from INS KMU No: KMU-INS/14-10/5792 dated 18/08/2022. Data analysis was performed using SPSS version 22.0, calculating means and standard deviations for quantitative variables, and frequencies and percentages for qualitative data like demographics.

RESULTS

Table 1 presents the general characteristics of nurses participating in the study. It outlines demographic variables such as sex, age distribution, education level, working unit type, nursing experience in the current unit, total clinical career, average patients care, experience with Medication Administration Errors (MAEs), and routes of Medication Administration Errors. The counts and percentages are provided for each category, with a total sample size of 209 nurses. The majority of nurses were female (79.9%), with only 20.1% being male. The largest age group among nurses was 26-30 years old (48.8%). Most nurses had a Bachelor of Science in Nursing (BSN) or Post RN qualification (63.2%). The highest proportion of nurses worked in medical units (28.2%), followed closely by ICU/CCU/ER units (27.8%). Nearly half of the nurses (45.0%) took care for more than 15 patients on average. A significant majority of nurses (67.9%) had experienced Medication Administration Errors (MAEs), with the most common route being intravenous (55.0%).

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Table 1: General Characteristics of the Nurses

Demographic Variables	Category	N (%)
Gender	Male	42 (20.1)
	Female	167 (79.9)
Age	20-25 years	79 (37.8)
	26-30 years	102 (48.8)
	31-35 years	24 (11.5)
	36-40 years	2 (1.0)
	41 and above	2 (1.0)
Education Level	Diploma	77 (36.8)
	BSN/Post RN	132 (63.2)
	MSN	0 (0.0)
Working Unit Type	Medical	59 (28.2)
	Surgical	50 (23.9)
	ICU/CCU/ER	58 (27.8)
	Pediatric	31 (14.8)
	Oncology	11 (5.3)
Nursing Experience in the Current Unit	1-2 years	96 (45.9)
	3-4 years	63 (30.1)
	greater than 5 years	50 (23.9)
Total Clinical Career	1-2 years	47 (22.5)
	3-4 years	72 (34.4)
	greater than 5 years	90 (43.1)
Average Patients Care	1-5 patients	35 (16.7)
	6-10 patients	37 (17.7)
	11-15 patients	43 (20.6)
	>15 patients	94 (45.0)
Experience with Medication Administration Errors (MAEs)	Yes	142 (67.9)
	No	67 (32.1)
Routes of Medication Administration Errors	Intravenous	115 (55.0)
	Oral	3 (1.4)
	Subcutaneous	9 (4.3)
	Intramuscular	15 (7.2)
	None	67 (32.0)

Table 2 presents the causes for the occurrence of medication administration errors, along with respondents' ratings ranging from "Strongly Disagree" to "Strongly Agree." Each cause is numbered, and the table includes counts and percentages for each rating category, as well as the mean and standard deviation of the ratings.

"Heavy workload in the ward" and "Inadequate number of staff in each working shift" are the highest-rated causes, with mean ratings of 3.94 and 4.23, respectively, indicating strong agreement that these factors contribute to medication administration errors."Similar drug names or labels" and "Different medications look alike" also received high mean ratings of 3.74 each, suggesting agreement on their impact on errors. Conversely, "Nurse is unaware of a known allergy" received a relatively low mean rating of 2.56, indicating less agreement on its contribution to errors compared to other factors."

Table 2: Causes for the Occurrence of Medication Administration Errors

Causes for the Occurrence of Medication Administration Errors	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean ± SD
	N (%)	N (%)	N (%)	N (%)	N (%)	
Similar drug names or labels	22 (10.5)	15 (7.2)	26 (12.4)	78 (37.3)	68 (32.5)	3.74 ± 1.27
Different, medications look alike	22 (10.5)	17 (8.1)	26 (12.4)	73 (34.9)	71 (34.0)	3.74 ± 1.29
Similar drug packing	24 (11.5)	22 (10.5)	35 (16.7)	86 (41.1)	42 (20.1)	3.48 ± 1.25
Physicians' medication orders are not clear	33 (15.8)	41 (19.6)	36 (17.2)	68 (32.5)	31 (14.8)	3.11 ± 1.32
Physicians change orders frequently	24 (11.5)	43 (20.6)	64 (30.6)	58 (27.8)	20 (9.6)	3.03 ± 1.15
Verbal orders are used instead of written orders	44 (21.1)	37 (17.7)	40 (19.1)	53 (25.4)	35 (16.7)	2.99 ± 1.40
Abbreviations are used instead of writing the orders out completely	35 (16.7)	39 (18.7)	43 (20.6)	63 (30.1)	29 (13.9)	3.06 ± 1.31
Pharmacy delivers incorrect doses to this unit	59 (28.2)	50 (23.9)	47 (22.5)	37 (17.7)	16 (7.7)	2.53 ± 1.28
Frequent substitution of drugs (i.e., cheaper, generic for brand names)	41 (19.6)	40 (19.1)	40 (19.1)	60 (28.7)	28 (13.4)	2.97 ± 1.34
Many medications on multiple patients	25 (12.0)	22 (10.5)	32 (15.3)	88 (42.1)	42 (20.1)	3.48 ± 1.26
Insufficient knowledge and information on new medication	30 (14.4)	29 (13.9)	47 (22.5)	79 (37.8)	24 (11.5)	3.18 ± 1.23
Poor communication between nurses and physicians	41 (19.6)	36 (17.2)	42 (20.1)	59 (28.2)	31 (14.8)	3.01 ± 1.36
On this unit, there is noeasy way to look up information on new medications	40 (19.1)	37 (17.7)	66 (31.6)	45 (21.5)	21 (10.0)	2.86 ± 1.24
Distractions by other patients, co- workers, or events on the unit	21 (10.0)	40 (19.1)	53 (25.4)	67 (32.1)	28 (13.4)	3.20 ± 1.19
Heavy workload in the ward	11 (5.3)	16 (7.7)	30 (14.4)	70 (33.5)	82 (39.2)	3.94 ± 1.15
Inadequate number of staff in each working shift	2 (1.0)	5 (2.4)	14 (6.7)	110 (52.6)	78 (37.3)	4.23 ± .76
Equipment malfunctions or is not set correctly (e.g., IV pump)	33 (15.8)	35 (16.7)	44 (21.1)	61 (29.2)	36 (17.2)	3.15 ± 1.33
Nurse is unaware of a known allergy	52 (24.9)	58 (27.8)	46 (22.0)	36 (17.2)	17 (8.1)	2.56 ± 1.26
Nurses on this unit have limited knowledge about medications	38 (18.2)	54 (25.8)	48 (23.0)	38 (18.2)	31 (14.8)	2.86 ± 1.32
When scheduledmedications are delayed nurses do not communicate the time when the next dose is due	54 (25.8)	57 (27.3)	40 (19.1)	37 (17.7)	21 (10.0)	2.59 ± 1.31
Failure to adhere to policy and procedure documents	53 (25.4)	48 (23.0)	51 (24.4)	44 (21.1)	13 (6.2)	2.60 ± 1.24
Patients are off the ward for other care	42 (20.1)	41 (19.6)	53 (25.4)	51 (24.4)	22 (10.5)	2.86 ± 1.29

Table 3 outlines reasons why nurses might not report medication administration errors, along with distribution and mean scores. Notable findings include high agreement that nurses fear blame for patient outcomes which has the highest mean score of 3.94, excessive emphasis on medication errors in assessing nursing care quality with mean ratings of 3.51 potential negative attitudes from patients or families, and fear of adverse consequences from reporting errors also have relatively high mean scores of 3.19 and 3.24, respectively. The reason that nurses believe other nurses will think they are incompetent has a mean score of 3.00, reflecting moderate agreement with the fear of being perceived as incompetent by colleagues.

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Table 3: Reasons for Unreported Medication Administration Errors

Reasons for Unreported Medication Administration Errors	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean ± SD
	N (%)	N (%)	N (%)	N (%)	N (%)	
Nurses do not agree with the hospital's definition of a medication error	64 (30.6)	71 (34.0)	33 (15.8)	23 (11.0)	18 (8.6)	2.33 ± 1.26
Nurses do not recognize an error occurred	51 (24.4)	70 (33.5)	40 (19.1)	29 (13.9)	19 (9.1)	2.50 ± 1.25
Filling out an incident report for a medication error takes too much time	31 (14.8)	55 (26.3)	40 (19.1)	62 (29.7)	21 (10.0)	2.94 ± 1.25
Medication error is not clearly defined	45 (21.5)	46 (22.0)	37 (17.7)	55 (26.3)	26 (12.4)	2.86 ± 1.35
No need to report if no patient is harmed	61 (29.2)	59 (28.2)	26 (12.4)	38 (18.2)	25 (12.0)	2.56 ± 1.39
Nurses believe other nurses will think they are incompetent	39 (18.7)	34 (16.3)	52 (24.9)	57 (27.3)	27 (12.9)	3.00 ± 1.31
Patient or family might develop a negative attitude	24 (11.5)	46 (22.0)	39 (18.7)	67 (32.1)	33 (15.8)	3.19 ± 1.27
Nurses fear adverse consequences from reporting medication errors	25 (12.0)	38 (18.2)	33 (15.8)	87 (41.6)	26 (12.4)	3.24 ± 1.23
The response by the nursing administration does not match the severity of the error	34 (16.3)	42 (20.1)	46 (22.0)	74 (35.4)	13 (6.2)	2.95 ± 1.21
Nurses fear reprimand from doctor	53 (25.4)	59 (28.2)	32 (15.3)	40 (19.1)	25 (12.0)	2.64 ± 1.36
Nurses could be blamed if something happens to the patient	13 (6.2)	18 (8.6)	15 (7.2)	85 (40.7)	78 (37.3)	3.94 ± 1.16
Too much emphasis is placed on medication errors as a measure of the quality of nursing care provided	13 (6.2)	32 (15.3)	41 (19.6)	82 (39.2)	41 (19.6)	3.51 ± 1.15
Nursing administration focuses on the personal rather than looking at the hospitals	26 (12.4)	30 (14.4)	40 (19.1)	69 (33.0)	44 (21.1)	3.36 ± 1.30

DISCUSSION

In the current study, nurses' severe workloads and the insufficient number of nurses working each shift were the most often cited reasons for errors. The system was judged to be mostly responsible for these problems. Supporting the findings of the current study, another study reported that the lack of nurses and the heavy workload of nurses are among the factors that contribute to medication administration errors (MAEs) across surveys [15,16]. Furthermore, another study also supported the findings of the current study and reported that increased nurse workload was found to increase mortality risk by 7%. [17]. In the current study, one of the significant obstacles to revealing MAEs, according to the nurses starts blaming nurses, an overemphasis on MAEs as an indicator of the quality of nursing care provided, an emphasis by nursing leadership on the individual as a possible source for a mistake, and fear of unfavorable outcomes for reporting MAEs. Supporting the findings of the current study a study reported that the senior nursing staff treated the nurses fairly and with the respect that's why they reported the medication error [18]. In this study the administrative response is the main reason among the nurses that medication error is under-reported. Similar to these findings, studies reported that the Fear was considered the second most influential factor underlying the failure of nurses to report MAEs. Many studies suggest that fear is the main barriers reporting of medication errors [19,20].

CONCLUSIONS

In the current study, MAEs occur frequently Due to a lack of staff, a high workload, similar- sounding medications, distracting substances, and looking-alike drugs. The majority of MAEs were not reported because nurses might be held accountable if the patient suffers harm, too much focus is placed on MAEs, and fear of negative outcomes also played a key role in the low rate of reporting MAEs. Consideration must be given to investing in human capital to keep patients secure. Giving drugs to hospitalized patients is a difficult process that necessitates an in-depth understanding of each drug prescribed.

Authors Contribution

Conceptualization: MA
Methodology: DM, SB
Formal analysis: MA, BAS
Writing-review and editing: BAS, SS, AU

All authors have read and agreed to the published version of the manuscript.

Conflicts of Interest

The authors declare no conflict of interest.

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