



THE PERSPECTIVE OF NURSING STAFF- FACTORS AFFECTING MEDICATION ERROR

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ABSTRACT

One of the most frequent mistakes is medication administration error, which happens when the medication given to the patient differs from the medication that was prescribed and administered by the staff nurses. The goal of this study was to evaluate the variables that affect medication error. In this study, the factors associated with medication error were described using a cross-sectional descriptive study methodology. The study was carried out in a chosen hospital in Coimbatore. The 150 staff nurses working in private hospitals in Coimbatore were the study's target population. The participants were chosen using a practical sampling technique. 123 nurses who work in the chosen hospitals made up the sample. The questionnaire used for the study had two sections. Section B includes nurse-related factors, ward environments, management-related factors, and patient-related factors using a scale of Strongly Disagree=1 to Strongly Agree=5. Section A contains demographic data (Age, Gender, Income, Working experience, Educational level, and Working area). Data was gathered using a Google form and provided to the staff nurse by the nursing in-charge individual. According to the results, the management and patient-related component had the greatest Grand Mean Value (3.87), followed by the ward-related factor (3.81), and the nurse-related factor (3.57). These drug mistakes endangered the patient's health and put them at risk. To prevent medication errors, management should take action to address the issue and maintain an appropriate nurse-to-patient ratio. This guarantees the patient's safety when seeking medical attention.

KEYWORDS : factors, medication error, perceptive, staff nurse

INTRODUCTION

Drug mistakes are frequently observed in the healthcare system¹. A high and unacceptable number of patient injuries and deaths occur in hospitals as a result of errors, which must be avoided by adopting efficient management systems². The National Coordinating Council for Medication Error Reporting and Prevention defines a medication error as; any preventable incident that may cause or contribute to inappropriate drug usage or patient harm, while medicine is in the hands of a healthcare provider, patient, or consumer³. Mistakes can happen throughout the process, including when prescribing, typing the order, sending it to the pharmacy, dispensing, administering, recording the drug delivered, and determining the medication's impact on the patient. Additional considerations include age, diminished renal function, drug allergy, dose calculation, drug formulation, inaccurate diagnosis, drug-related response, inappropriate drug administration, and drug name prescribed for the given diagnosis. The misinterpretation of a medicine order owing to poor handwriting, missing information, a heavy workload, stress, and improper training are other causes⁴.

Because of the negative side effects they might produce, medication errors are one of the severe issues that can increase morbidity and death⁴. One of the markers of a hospital's quality is how often drug errors occur. Because of this, it can be avoided with the right precautions⁵. Among the most frequent medical mistakes that endanger health and cause problems during treatment are medication errors. Medication errors have recently drawn more attention because of the potential or actual patient risk of harm, the greater mortality rate, and the cost of medical care⁶. 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, is how the National Coordinating Council for Medication Error Reporting and Prevention defines medication errors⁷.

Medication errors can happen at any stage of the complicated and multi-layered medicine process, from the manufacturer to the patient, including during the prescribing, transcribing, dispensing, and administration of medications as well as patient response monitoring. Giving the proper dosage of medication to the intended patient involves a number of steps and a wide range of persons. Each action or individual has the capacity to either cause or avoid a pharmaceutical error⁸. Medication errors result in higher healthcare expenses, higher rates of morbidity and mortality, and more serious legal repercussions⁹. It's crucial to comprehend the causes of drug errors in order to ensure prevention. Human error and system error are the two main factors that contribute to medical errors, according to the

research, which also highlights the need for more focus on system faults¹⁰. In an effort to protect patients from injury and lower the frequency of errors, reporting and error analysis are the most efficient techniques for finding errors in healthcare services¹¹.

By identifying errors, preventing their repetition, and defining methods of problem-solving, as well as by using notification systems, it is possible to prevent errors before they have a major and detrimental impact^{12,13}. The care that patients receive is largely the responsibility of health care providers. These experts include doctors, pharmacists, and nurses. Nurses administer the medication, pharmacists dispense it, and doctors prescribe it. Nursing practice includes administering medications because nurses spend most of their time at work on tasks relating to patients¹⁴. In medication therapy, pharmacists, doctors, and nurses work together in a system of checks and balances to maximize positive benefits and minimize negative ones. In this system, nurses play a crucial role because they are the ones who regularly monitor patients' conditions. In order to identify and defend the patient against drug errors perpetrated by other members of the healthcare team, nurses play a crucial role as patient advocates. They are accountable for the proper administration of medications both legally and ethically. Even though the prescription has been recommended by a registered physician and dispensed by a licensed pharmacist, it is unethical for a nurse to provide a substance that harms the patient⁴. Because nurses are responsible for administering the majority of prescriptions and spend 40% of their time handling hospital pharmaceuticals, they are frequently held more accountable when medication errors occur than any other healthcare providers⁸.

METHODS

In this study, the factors associated with medication error were described using a cross-sectional descriptive study methodology. The study was carried out in a chosen hospital in Coimbatore. The 150 staff nurses working in private hospitals in Coimbatore were the study's target population. The participants were chosen using a practical sampling technique. 123 nurses who work in the chosen hospitals made up the sample.

Data collection tool

The questionnaire used for the study had two sections. Section B includes nurse-related factors, ward environments, management-related factors, and patient-related factors using a scale of Strongly Disagree=1, Disagree=2, Neutral=3, Agree=4, and Strongly Agree=5. Section A contains demographic data (Age, Gender, Income, Working experience, Educational level, and Working area). Data was gathered via a google form, and the nursing in-charge person forwarded it to the

staff nurse. Those who were willing to participate completed the questionnaire before the data were collected, and the nature and goal of the study were explained to them. The participants were assured that their information would be kept private, utilized only for the purpose of the research, and kept anonymous.

RESULTS

TABLE - 1 DEMOGRAPHIC DATA OF THE STAFF NURSES

Variables		Frequency (%)
Age	22-30	18 (14.6)
	31-40	73 (59.3)
	41-50	20 (16.3)
	Above 51	12 (9.8)
Gender	Male	6 (4.9)
	Female	117 (95.1)
Working Experience	Less than 5 Years	24 (19.5)
	5-10 Years	13 (10.6)
	11-20 Years	54 (43.9)
	Above 21 Years	32 (26)
Education Status	Undergraduate	66 (53.7)
	Postgraduate	48 (39)
	Doctorate	9 (7.3)
Income in Rupee	Less than 10000	6 (4.9)
	10001-20000	6 (4.9)
	Above 20000	111 (90.2)
Working area	Emergency & ICU	31 (25.2)
	Medical ward	25 (20.3)
	Mental Health	12 (9.8)
	OBG	18 (14.6)
	Paediatric	13 (10.6)
	Surgical ward	24 (19.5)

Table 1 above demonstrates that the majority of participants (n=117; 95% female; n=6; 6% male) were female. The respondents' ages were 22–30 (n=18) 14%, 31–40 (n=73) 59%, 41–50 (n=20) 16%, and over 51 (n=12) 9%, as indicated in the above table. This demonstrates that the majority of participants were between the ages of 31 and 40. Less than five years of experience was represented by 24 participants (19%), five to ten years by 13 participants (10%), eleven to twenty years by 54 participants (43%), and twenty one years or more by 32 people (26%). The majority of the study's nurses had between 11 and 20 years of experience. The majority of nurses (n=66) had undergraduate degrees (53%) followed by postgraduate degrees (n=48) and doctoral degrees (n=7). The bulk of participants were earning 20,000 or more per year or more. The bulk of the participants' areas of employment are emergency and intensive care units (n=31), with 25% of them, followed by medical wards (20%), mental wards (9%), and OBG (14%). Children's ward 10% and surgical ward 24%.

TABLE - 2 MEAN AND STANDARD DEVIATION OF FACTORS AFFECTING MEDICATION ERROR

	Mean	SD
Nurses related factor 3.57±1.025		
Inadequate attention	3.52	1.283
Tiredness due to excessive overtime workload	3.02	1.614
Lack of awareness of drug	3.55	1.450
Fatigue related to work	3.37	1.387
Inadequate experience	3.65	1.056
Psychological problem	3.24	1.337
Personal problem	3.54	1.404
Lack of time	3.58	1.287
Poor documentation	3.82	1.361
Interruption during drug administration	4.26	.766
Ward environment 3.81±0.872		
Heavy workload in the ward	4.16	1.059
Lack of required equipment	3.72	1.269
Similar drug name & label	3.88	1.353
Similar drug package	3.55	1.362

Drug arrangement on shelves	3.55	1.168
Ward medication protocol	3.42	1.071
Noisy environment	2.97	1.487
Complication or failure with medical device	3.77	.895
Drug administration route	3.87	1.152
Overcrowding of the treatment room	4.07	1.281
Instability of the patient physiological condition	3.23	1.298
Management related factor 3.87±0.859		
Lack of appropriate communication of test result	3.92	1.045
Incorrect transfer of medication order from carded to medical card	4.16	.729
Illegibility of physician order in patient file	4.14	1.074
Poor co-ordination medication order for transfer patient	3.91	1.086
Inadequate staff in each working shift	3.83	1.291
Leadership style in the ward	3.33	1.278
Working in night shift	3.10	1.612
Working in the morning shift	2.48	1.263
Lack of in-service education on recent changes in medication policy	4.26	.939
Patient related factor 3.87±1.152		
Lack of access to drug formula for reference	4.41	.914
1. Inappropriate patient identification	4.07	1.317
2. Inadequate patient assessment	4.01	1.134
3. Failure to obtain consent	3.33	1.424
4. Insufficient patient education	3.78	1.184

Nurses, the ward environment, management, and the patient are four elements that have been identified as influencing medication errors. The results showed that the component connected to management and patients had the greatest Grand Mean Value, 3.87, followed by the factors relating to items in wards, which had Grand Mean Values of 3.81 and 3.57, respectively. This demonstrates how patient- and management-related factors might affect drug errors (Table 2).

TABLE - 3 RELIABILITY OF THE FACTORS USED TO ASSESS THE MEDICATION ERROR

	Cronbach's Alpha	Items
Nurses related factor	0.858	10
Ward environment	0.899	13
Management related factor	0.878	10
Patient related factor	0.854	4
Overall	0.960	37

The items that are used to evaluate factors relating to nurses, wards, management, and patients are shown in Table 3. The findings demonstrate that the statement that was utilized to evaluate was accurate in evaluating the components.

TABLE - 4 CORRELATION BETWEEN THE FACTORS LEADS TO MEDICATION ERROR

	Nurses related factor	Ward environment	Management related factor
Ward environment	0.702*		
Management related factor	0.583*	0.776*	
Patient related factor	0.742*	0.727*	0.585*

Significant at 0.01 level (2-tailed)

There was a positive link between the factors connected to nurses and the ward environment (r=0.702, p=0.01), between the factors associated to nurses and the management of patients (r=0.583, p=0.01), and between the components related to nurses and the patient-related factors (r=0.742, p=0.01). This suggests that aspects relating to nurses, the ward environment, management, and patients are interrelated, and that if any of these factors are compromised, drug administration will be affected (Table 4).

TABLE 5 ASSOCIATION BETWEEN WORKING EXPERIENCE AND OTHER FACTORS AFFECTING THE MEDICATION ERROR

Factors		Less than 5 Years	5-10 Years	11-20 Years	Above 21 years	Chi square p-value
Nurses related factor	SA	-	-	6 (31.6)	13 (68.4)	52.290 0.000*
	A	12 (21.4)	7 (12.5)	24 (42.9)	13 (23.2)	
	N	12 (40)	6 (20)	6 (20)	6 (20)	
	D	-	-	12 (100)	-	
	SD	-	-	6 (100)	-	
Ward environment	SA	-	-	12 (48)	13 (52)	40.398 0.000*
	A	18 (29)	7 (11.3)	24 (38.7)	13 (21)	
	N	6 (25)	6 (25)	6 (25)	6 (25)	
	D	-	-	12 (100)	-	
	SD	-	-	-	-	
Management related factor	SA	-	-	6 (23.1)	20 (76.9)	70.912 0.000*
	A	18 (26.9)	7 (10.4)	30 (44.8)	12 (17.9)	
	N	6 (33.3)	6 (33.3)	6 (33.3)	-	
	D	-	-	12 (100)	-	
	SD	-	-	-	-	
Patient related factor	SA	6 (15.8)	-	12 (31.6)	20 (52.6)	59.388 0.000*
	A	18 (32.7)	13 (23.7)	18 (32.7)	6 (10.9)	
	N	-	-	12 (66.7)	6 (4.7)	
	D	-	-	-	-	
	SD	-	-	12 (100)	-	

The relationship between the factors impacting medication errors and the working experience of staff nurses working in the clinical area is shown in Table 5. The findings demonstrate a strong correlation between job experience and the nurse factor, ward environment, management, and patient factor.

TABLE - 6 ASSOCIATION BETWEEN EDUCATION STATUS AND OTHER FACTORS

		Under graduate	Post graduate	Doctorate	Chi square p-value
Nurses related factor	SA	16 (84.2)	-	3 (15.8)	40.582 0.000*
	A	26 (46.4)	24 (42.9)	6 (10.7)	
	N	18 (60)	12 (40)	-	
	D	-	12 (100)	-	
	SD	6 (100)	-	-	
Ward environment	SA	25 (100)	-	-	45.978 0.000*
	A	17 (27.4)	36 (58.1)	9 (14.5)	
	N	18 (75)	6 (25)	-	
	D	6 (50)	6 (50)	-	
	SD	-	-	-	
Management related factor	SA	24 (92.3)	-	2 (7.7)	29.286 0.000*
	A	24 (35.9)	36 (53.7)	7 (10.4)	
	N	12 (66.7)	6 (33.3)	-	
	D	6 (50)	6 (50)	-	
	SD	-	-	-	
Patient related factor	SA	33 (86.8)	-	5 (13.2)	37.755 0.000*
	A	21 (38.2)	30 (54.5)	4 (7.3)	
	N	6 (33.3)	12 (66.7)	-	
	D	-	-	-	
	SD	6 (50)	6 (50)	-	

The relationship between the factors impacting medication errors and the educational status of staff nurses working in the clinical area is shown in Table -6. The findings demonstrate a substantial relationship between nurse factor, ward environment, management, and patient factor and educational status.

DISCUSSION

The management and patient-related factors had the greatest Grand Mean Value of 3.87, followed by the item ward-related factors with a

Grand Mean Value of 3.81 and the nurse-related factors with a Grand Mean Value of 3.57, according to the results of the current study. This demonstrates how patient- and management-related factors affect drug errors. In the aspect of management Improper medication order transfer from carded to medical card mean of 4.16, Illegibility of physician order in patient file mean of 4.14, and Absence of in-service education on recent changes in medication policy mean of 4.26. The current analysis is supported by several studies carried out by other researchers addressing the contributing elements to medication mistake. One study from California that included doctors' unreadable handwriting as a significant contributing factor to prescription errors produced findings that were similar to ours¹⁵. Moreover 16 discovered that the readability of drug cards accounts for 42.5% of drug mistakes. Authors 17,18 attributed 28% and 42.5%, respectively, of drug errors to the doctor's handwriting being illegible. The usage of medical abbreviations, card readability issues, and medicine orders were also identified by 19 as the primary contributing contributors to these drug errors. The research' findings demonstrate that, despite the significance of the drug's readability, the nurse's accuracy in selecting and prescribing the medication is crucial for preventing a mistake.

According to the current study, the mean number of in-service training sessions on recent changes in medication policy is 4.26. This study's findings, which were corroborated by the researcher's earlier studies, showed that nurses who did not receive on-the-job training in medication administration had a higher risk of making drug administration mistakes. To enhance and update all nurses' knowledge and abilities, hospitals should implement routine or scheduled training. Training is frequently described as the teaching of particular skills and behaviours. Training is the process of enhancing nurses' knowledge and abilities to execute certain tasks, and when nurses acquire new routines, honed abilities, and practical information, their performance may improve²⁰⁻²².

The results of the current study indicated that the average number of medication orders that were incorrectly transferred from carded to medical cards were 4.16; the findings of the other study also indicated that the absence of medication administration guidelines in the wards was responsible for the higher prevalence of medication administration errors among nurses in the study area. This result is consistent with other research's findings^{8,23,24}. Guidelines for medication administration, care given in accordance with those standards, and a reliable reporting system could reduce harm to hospitalized patients by 75%. Guidelines for medicine administration are something that may help the quality²⁵.

The results of the current study demonstrate that, among all other factors, the nurses' component is significant. The highest mean score, 4.26, is when a drug administration interruption occurs. The findings that are backed by numerous additional research Medication administration errors were strongly associated with interruptions during medication delivery, according to a hospital-based cross-sectional study. According to earlier studies' findings, nurses who experienced interruptions while administering medication had a higher likelihood of making drug administration mistakes than nurses who did not. Work interruptions during drug administration rounds are reportedly regarded to be a significant cause in medication errors that account for up to 43% of pharmaceutical errors²⁶⁻²⁹. When performing tasks that call for concentration, nurses must stay alert and focused to prevent distractions and mistakes. Avoiding interruptions can enhance the standard of care and benefit patients as well as nurses. An interruption is a sudden disruption that breaks the continuity of care, diverts attention, lengthens the time needed to complete tasks, lowers productivity, and worsens neglect and human mistake. Patient safety and care quality are negatively impacted by this³⁰⁻³².

According to the current study, the ward had the highest mean score (4.16 in the wartime environment component) due to the heavy workload. This study, which was supported by another one that involved 119 nurses and was completed in Iran in 2016, found that fatigue brought on by excessive work and a lack of nurses in relation to patients are two contributing causes of medication errors. However, a high volume of work for department-related factors is the major contributor to medication errors³³. According to a 2016 study in Iran based on 225 nurses working in various hospitals, high load functions and fatigue brought on by more work were the most significant factors causing medication errors along with low nurse-to-patient ratio³⁴.

Medication errors may be taken into account during the entire process

of prescribing, preparing, and administering medications. As a result, managers of healthcare systems should concentrate on the elements that contribute to medication errors, such as the nursing staff's perspective on reducing medication errors and employing various techniques to ensure that they are properly trained. According to the capabilities and constraints, holding refresher courses on the fundamentals of medicine administration and encouraging nurses by nurse managers to inspire them are two ways that can significantly reduce medication errors in clinical settings. Giving a prescription card and a doctor's legible writing help to avoid medication errors.

LIMITATION

The self-report form and the nurse's weariness in responding to the questionnaire are the study's shortcomings. It is advised to obtain data through observation.

CONCLUSIONS

On the nursing front, it should be noted that the nurse's interruption during medication administration, the ward's heavy workload, the patient file's illegibility of the doctor's order, the lack of in-service training on the most recent changes to the medication policy, and the inability to access the drug formula for reference were the factors that most frequently resulted in medication errors. These mistakes endangered the patient's health by harming them. To prevent medication errors, management should take action to address the issue and maintain a proper nurse-to-patient ratio. This guarantees the patient's safety when seeking medical attention.

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