

Nurses' Perspectives on Causes and Barriers to Reporting Medication Administration Errors

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Abstract

Background: Improving patient safety is essential to protect patient rights, provide optimum quality of care, and enhance health care policy. Globally, there is increasing concern regarding medication administration errors, especially because they are underreported, and they have severe potential consequences for patients. A few studies focused on causes and barriers to reporting medication administration errors in health care settings, identifying workplace environment and blame culture as the main contributing factors to medication errors themselves and underreporting of such cases.

Purposes: To investigate barriers to medications administration errors reporting and to identify the reasons for medication administration errors among nurses in Saudi Arabia.

Methods: A prospective descriptive cross-sectional study was implemented in multiple settings in the Tabuk region of Saudi Arabia. A total number of 321 nurses participated in the study, filling in the Self-Administered Scale of Modified Medication Administration Error to identify the most frequent medication errors they experienced, and their perceived barriers to reporting medication administration errors.

Results: Nurses identified the top five reasons for medication administration errors occurring as: *Unit staffing levels are inadequate, Physicians' medication orders are not clear, Physicians' medication orders are not legible, Different medications look alike, and Nurses get pulled between teams and from other units.* Organizational, personal, and profession barriers were blamed for not reporting medication administration errors.

Conclusion/ implications for practice: Reporting comprehensive medication administration error data is crucial to address systemic flaws and avoid medication administration errors occurrence, in order to improve patient safety. Decision makers must foster a non-punitive environment in hospitals in Saudi Arabia. Further, there is a need for educational programs about medication administration errors for nurses. In addition, introducing a computerized physicians' order entry system to reduce medication administration errors in health care settings is highly recommended in Saudi Arabia.

Keywords: Medication administration; Errors; Health systems

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Citation: AAlblowi F, Alaidi H, Dakhilallah H, Alamrani A (2021) Nurses' Perspectives on Causes and Barriers to Reporting Medication Administration Errors in Saudi Arabia. Health Sci J. 15 No. 9: 884.

Received: March 10, 2020, **Accepted:** March 23, 2020, **Published:** March 27, 2020

Introduction

Poor patient safety in health systems is the third most common cause of death globally, behind cardiovascular diseases and cancer [1-24]. Medication administration errors (MAEs) are responsible

for at least one death every day and injure about 1.3 million people each year in the United States alone. It is estimated that more than 250,000 deaths per year are attributable to medication errors [25-42]. Globally, the estimated cost of MAEs is about US \$42 billion annually [43]. An MAE is operationally defined as:

“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. Such events may be related to professional practice, health care products, procedures, and systems, including prescribing, order communication, product labelling, packaging, and nomenclature, compounding, dispensing, distribution, administration, education, monitoring, and use” [26].

Medication errors can be grouped into three categories: prescribing, dispensing, and administration [12]. While the prevalence of these errors differs from one facility to another, the general trend is that most errors are related to medication administration [13].

Patient safety is a core skill promoted among all health professionals and in all healthcare organizations [20]. The intention of safety in health care organizations is not only to keep patients safe, but also to ensure the safety of staff as well. Medication errors constitute a critical safety concern for healthcare providers in the entire healthcare continuum [42]. Many studies have investigated the burden of MAEs in healthcare systems throughout the world [5]. MAEs increase treatment costs and hospitalization periods, aside from increasing patient rates of mortality and morbidity in some situations [42]. However, there is insufficient data about MAEs in Saudi Arabia, and in Middle Eastern countries generally. One report indicates that there were 1,356 cases reported in 2013, but the true prevalence is undoubtedly far higher than the number of reported instances [29].

Several studies have identified that the main barriers that prevent nurses from reporting are organizational ones concerning reporting systems, culture (i.e. ‘blame culture’), and management behaviour; and personal and professional factors, such as fear and accountability [39]. Interestingly, nurses unanimously believe that disclosing medication errors to the patients and the hospital management is the right thing to do [25], but in practice most nurses rarely report such mistakes when they occur [31]. Reasons cited by nurses for this theory-practice gap include their fear of legal liability, the possibility of their practice license being revoked, the possibility of distressing patients, and loss of privileges and reputation [18,41]. Force et al. [15] showed that the fear of retribution, professional humiliation, and other punitive actions are responsible for poor error reporting. A study conducted in US showed that a lack of time or the perception that reporting medication errors is too time-consuming and fear of repercussions prevented nurses from reporting medication errors [32].

In Malaysia a professional focus on the individual rather than on the system prevented some nurses from reporting medication errors, but the same study also showed that medication errors that were deemed serious were more likely to be reported compared to errors that were perceived as harmless [33]. Interestingly, some of the participants in the study admitted that they valued patient safety, and hence were not afraid of any punitive measures and punishments should they report medication administration errors, although this could be due to social desirability bias in nurses’ responses, as the study used personal, face-to-face interviews.

Previous studies conducted in the Middle East revealed that fear of punishment and reprimand and blaming of individuals instead of the system were major deterrents to nursing reports of medication errors [31,36]. In Saudi Arabia, previous studies revealed the following themes on barriers to reporting medication errors amongst nurses: fear of being blamed, fear of punishment, and administration response; potential publicity of the medication error; lack of time due to heavy workload, and complexity of work [2,9,28]. MAEs have significant and wide-ranging impacts on health care providers themselves as well as patients and hospitals in general.

It is essential to understand the difficulties associated with disclosing MAE mishaps in Saudi Arabia in order to avoid other potential errors and near misses that could adversely affect patients. This study helps filling this gap in knowledge and contributes towards professional discourse and policy decision-making to improve medication safety in Saudi Arabia. Therefore, the purpose of this research is: (1) To investigate the barriers to MAE reporting among nurses; and (2) To identify the reason for MAE occurrence.

Method

Design

The study is a prospective and descriptive cross-sectional design.

Setting

The study was conducted in the three biggest governmental hospitals in Tabuk Region in Saudi Arabia, which receive referrals from other public hospitals in Tabuk Region: King Fahd Hospital (KFH), with a capacity of 500 beds; King Kahld Hospital (KKH), with a capacity of 270 beds; and Al Amal Mental Health Complex (MHC), with a capacity of 200 beds. These hospitals were selected because they are the largest healthcare institutions in Tabuk Region that hire large numbers of Saudi and international registered nurses, so they are representative of the general nursing workforce in Saudi Arabia.

Study instrument

The Self-Administered Scale of Modified Medication Administration Error [40] was used to collect data for this study. It is reliable and valid, having been utilized in many studies and settings [12,13,28,40]. Permission was obtained from the author to use the modified MAE scale in this study.

Nurses’ perceptions of barriers to reporting MAEs were measured by indicating the reasons why MAEs were not disclosed in a survey, which along with aside from demographic and background questions probes two general content areas: perception of reporting medication errors, and potential barriers in reporting medication incidents. Nurses were required to indicate their agreement with the listed items in the questionnaire using a six-point Likert-type scale, with scores ranging from 1 = strongly disagree to 6 = strongly agree. The questionnaire contains 45 items, with four subscales used for reasons why MAEs are not reported: administrative response, disagreement over definition, fear, and reporting effort.

Sampling

A non-probability, purposive sampling technique was used. A sample size of 321 registered nurses were recruited working at the inpatient department at three hospitals in Tabuk Region. The sample size was determined for the study depending on sample size calculation, and a confidence level of 95%. Inclusion criteria included registered nurses working in inpatient wards, able to read English. Exclusion criteria comprised nurses with less than one year of clinical working experience.

Ethical consideration

Ethical approvals were obtained from the Institutional Review Board of the General Directorate of Health Affairs, Tabuk Region, Saudi Arabia (ethical approval number H-07-TU-077). All participants were asked to sign a written consent form before joining the study. All ethical considerations such as voluntary participation, right to withdraw, privacy, and confidentiality were respected and maintained throughout the study period. All data were kept secured in a locked filing cabinet.

Data collection

After obtaining ethical approval from the Institutional Review Boards of the three hospitals, collaboration with the nursing offices at each targeted hospital was undertaken before starting the data collection process. The research instruments were self-administered by the 321 recruited participants. The data collection procedure was applied from September to November, 2018, with weekly follow-up visits conducted at all hospitals during this time. After the nurses completed the questionnaires, the researchers checked all returned forms before collecting

them in order to ensure nurses' participation and promote the response rate.

Statistical analysis

Descriptive statistics are used to analyse the questionnaire data, which were ranked ordered from highest to lowest frequency.

Results

Nurses' demographic and clinical details

A total number of 321 registered nurses participated in the study, recruited from different nursing units. As shown in **Table 1**, the majority of nurses were female (n=275, 85.7%), were aged 40 years or less (n=291, 90.7%), had nursing experience from one to five years (n=158, 49.2%), held a bachelor's degree in nursing (n=248, 77.3%), were non-Arab (n=232, 72.3%), did not report any medication error in the previous year of their experience (n=234, 72.9%), and did not feel that there are barriers to reporting medication errors in Saudi Arabia (n=181, 56.4%).

Reasons MAEs occur

Table 2 shows the reasons medication errors occur according to participants, ordered from the reason with the highest mean score to that with the lowest. The mean scores for the 29 items ranged from 2.17 to 4.09. The results show that nurses consider the five top reasons for medication errors to be: Unit staffing levels are inadequate; Physicians' medication orders are not clear; Physicians' medication orders are not legible; Different medications look alike; and Nurses get pulled between teams and from other units.

Table 1 Participants demographical and clinical details.

Variable	Categories	Number	Percentage
Gender	Male	46	14.3
	Female	275	85.7
Age	Up to 40 years	291	90.7
	More than 40 years	30	9.3
Nursing experience	1-5 years	158	49.2
	6-10 years	108	33.6
	More than 10 years	55	17.1
Nursing degree	Nursing Diploma	62	19.3
	Bachelor in Nursing	248	77.3
	Postgraduate nursing	11	3.4
Ethnicity	Arabic	89	27.7
	Others	232	72.3
Nursing department	Medical	47	14.6
	Surgical	51	15.9
	Pediatric	12	3.7
	Intensive care	110	34.3
	Emergency	39	12.1
	Dialysis	15	4.7
	Other	47	14.6
History of reporting medication error	Yes	87	27.1
	No	234	72.9
Feel that there are barriers to report medication error in Saudi Arabia	Yes	140	43.6
	No	181	56.4

Table 2 Reasons Why Medication Errors Occur.

Questions	Rank	Mean (SD)
Unit staffing levels are inadequate.	1	4.09 (1.77)
Physicians' medication orders are not clear.	2	4.05 (1.50)
Physicians' medication orders are not legible.	3	4.00 (1.53)
Different medications look alike.	4	3.98 (1.46)
Nurses get pulled between teams and from other units.	5	3.95 (1.53)
Many patients are on the same or similar medications.	6	3.93 (1.68)
Physicians change orders frequently.	7	3.77 (1.44)
The names of many medications are similar.	8	3.75 (1.53)
The packaging of many medications is similar.	9	3.73 (1.45)
Frequent substitution of drugs (i.e., cheaper generic for brand names).	10	3.63 (1.43)
Abbreviations are used instead of writing the orders out completely.	11	3.57 (1.48)
Unit staff do not receive enough in services on new medications.	12	3.48 (1.55)
All medications for one team of patients cannot be passed within an accepted time frame.	13	3.42 (1.55)
Verbal orders are used instead of written orders.	14	3.33 (1.42)
Pharmacists are not available 24 hours a day.	15	3.29 (1.73)
Nurses are interrupted while administering medications to perform other duties.	16	3.26 (1.76)
Poor communication between nurses and physicians.	17	3.20 (1.51)
Pharmacy delivers incorrect doses to this unit.	18	3.14 (1.44)
Pharmacy does not label the med correctly.	19	3.0 (1.53)
Pharmacy does not prepare the med correctly.	20	3.0 (1.41)
Equipment malfunctions or is not set correctly (e.g., IV pump).	21	2.99 (1.55)
Medication orders are not transcribed to the Kardex correctly.	22	2.98 (1.46)
On this unit, there is no easy way to look up information on medications.	23	2.96 (1.51)
Errors are made in the Medication Kardex.	24	2.93 (1.49)
Patients are off the ward for other care.	25	2.80 (1.53)
Nurse is unaware of a known allergy.	26	2.61 (1.54)
When scheduled medications are delayed, nurses do not communicate the time when the next dose is due.	27	2.38 (1.48)
Nurses on this unit have limited knowledge about medications.	28	2.35 (1.45)
Nurses on this unit do not adhere to the approved medication administration procedure.	29	2.17 (1.36)

Table 3 Reasons Why Medication Administration Errors Are Not Reported.

Questions	Rank	Mean (SD)
When med errors occur, nursing administration focuses on the individual rather than looking at the systems as a potential cause of the error.	1	3.78 (1.68)
No positive feedback is given for passing medications correctly.	2	3.76 (1.69)
Nurses could be blamed if something happens to the patient as a result of the medication error.	3	3.68 (1.76)
Too much emphasis is placed on med errors as a measure of the quality of nursing care provided.	4	3.52 (1.50)
Nurses fear adverse consequences from reporting medication errors.	5	3.09 (1.66)
The patient or family might develop a negative attitude toward the nurse, or may sue the nurse if a medication error is reported.	6	3.07 (1.62)
The response by nursing administration does not match the severity of the error.	7	2.90 (1.61)
Contacting the physician about a medication error takes too much time.	8	2.85 (1.49)
Filling out an incident report for a medication error takes too much time.	9	2.76 (1.50)
Nurses believe that other nurses will think they are incompetent if they make medication errors.	10	2.66 (1.90)
Nurses are afraid the physician will reprimand them for the medication error.	11	2.66 (1.50)
The expectation that medications be given exactly as ordered is unrealistic.	12	2.65 (1.40)
Medication error is not clearly defined.	13	2.62 (1.40)
Nurses may not think the error is important enough to be reported.	14	2.29 (1.45)
Nurses do not agree with hospital's definition of a medication error.	15	2.29 (1.46)
Nurses do not recognize an error occurred.	16	2.22 (1.41)

The next five top reasons for medication errors were: Many patients are on the same or similar medications; Physicians change orders frequently; The names of many medications are similar; The packaging of many medications is similar; and

Frequent substitution of drugs (i.e., cheaper generic variants of famous brand names).

The least important five reasons for medication errors based on

nurses were: Patients are off the ward for other care; Nurse is unaware of a known allergy; When scheduled medications are delayed, nurses do not communicate the time when the next dose is due; Nurses on this unit have limited knowledge about medications; and Nurses on this unit do not adhere to the approved medication administration procedure.

Reasons MAEs are not reported

The mean scores for the 16 items ranged from 2.22 to 3.78. As shown in **Table 3**, nurses consider the five top reasons for medication error to be: When medication errors occur, nursing administration focuses on the individual rather than looking at the systems as a potential cause of the error; No positive feedback is given for passing medications correctly; Nurses could be blamed if something happens to the patient as a result of the medication error; Too much emphasis is placed on med errors as a measure of the quality of nursing care provided; and Nurses fear adverse consequences from reporting medication errors.

The lowest five reasons for medication error were: The expectation that medications be given exactly as ordered is unrealistic; Medication error is not clearly defined; Nurses may not think the error is important enough to be reported; Nurses do not agree with hospital's definition of a medication error; and Nurses do not recognize an error occurred.

Discussion

The study results exhibited anticipation of many factors in the occurrence of MAEs in Tabuk Region hospitals in Saudi Arabia and failing to report them. The overall result of the current study indicated that 27.1% of MAEs were attributed to nurses in Tabuk Region, but the extent of MAEs attributed to nurses in previous studies varied from 2% to 94% for prescription errors [6]. Therefore, the findings suggest there is under-reporting of MAEs in Saudi Arabia as a result of the culture of fear, blame, and punishment.

Almutary and Lewis [4] found that 56.4% of nurses in Saudi Arabia claimed never to have been involved in any MAEs throughout their career, while only 42.1% of nurses in Jordan reported making at least one medication error throughout their career [30]. In contrast, a study conducted in Iran showed that the mean rate of nursing MAEs was 19.5%, with a 1.3% reporting rate, which is lower than MAEs rate in the present study [19]. This inconsistency in the results is due to the differences in health care system, cultures, and questionnaires used.

The study revealed that 43.6% of MAEs attributed to nurses were never reported. Aboshaiqah [1] suggested that 79% of actual MAEs were not reported. Soydemir, SerenIntepeler, and Mert [36] confirmed that nurses preferred not to report any medical errors that they were involved in or observed. Consequently, the result of the present study join extensive literature in affirming that MAEs are undoubtedly significantly under-reported.

According to the nurses' perspectives in the present study, MAEs are attributable to numerous factors, including: Unit staffing levels are inadequate; Physicians' medication orders are not clear; Physicians' medication orders are not legible; Different

medications look alike; and Nurses get pulled between teams and from other units. The first and last of these issues are relating to staffing; similarly, in Iran, Ehsani et al. [14] found that the shortage of nurses was the most important reason for medication errors in the emergency department. Nursing shortage has been implicated as crucial in MAEs, including nursing burnout and high workload among existing nurses [17].

Physicians' medication orders are not clear was identified as the second most important cause of MAEs among nurses in Tabuk. Hartel, Staub, Röder, and Egli [16] confirmed that nurses generally struggled to read traditional handwritten medication prescriptions, which was implicated in most medication incidents. The quality of medication prescriptions has been found to be a contributing factor in MAEs [11]. The findings on Different medications look alike corroborate Avery et al. [7], who discovered that unique medication items being prescribed comprise a frequent factor in increased MAEs. The NCCMRP [27] recommends using Medication Computerised Provider Order (MCPO) entry in order to decrease MAEs; MCPO is being widely adopted and used in many health care settings worldwide [35].

Nurses also stated that MAEs are partly due to nurses being "pulled" between teams and from other units. Bae, Mark, and Fried [8] found that using floater nurses to cover nursing shortages has beneficial aspects for health systems and for individual nurses, but it can also cause harm to nurses and compromise patient safety, depending on the level of floating use and the nature of care provided. Klaus, Ekerdt, and Gajewski [22] opined that floating is not effective for nursing staff or patients due to a lack of experimental evidence on the subject. In contrast to the current study findings, Lafontant [23] considered the floating process as a significant factor in patient safety that assisted in matching optimal patients care to basic nursing staff needed.

Kapadohos, Kelesi, and Mitsis [21] defined the nursing workload as the first factor responsible for medication errors, with a percentage of 78.9%. Floating nurses between units could lead to MAEs due to nurse's lack of specific knowledge, work experience, and unit orientation; floating is associated with and contributes to MAEs. Professional nurses with specialist expertise in their customary deployments report feeling incompetent when ordered to float to unfamiliar units [37]. Moreover, nurses' knowledge of medications was also considered a reason for MAEs, particularly in unfamiliar care specialties [11].

Regarding barriers to reporting MAEs, participants evidently considered organisational barriers to be the most prominent barriers to reporting MAEs, such as the ignorance of the nursing administration, and its focus on individual nurses rather than developing the entire system in its response to MAEs. This is of highest priority, as focusing on every nurse makes it difficult of the management to see the overall system as a whole and identify what is going wrong. The finding of the present study is consistent with a previous study which showed that management behaviour in addition to personal and professional barriers such as fear, accountability, and nurse characteristics are barriers to reporting medication errors [39]. In addition, a similar study conducted in Jordan showed that less than quarter of minor MAEs and less than half of major MAEs committed by

nurses reported were blaming individuals instead of the system, consequences of reporting errors, and fear of reprimand and punishment [10]. The second major barrier to reporting MAEs identified by participants was No positive feedback is given for passing medications correctly. According to Van Bogaert [38], nurses' working environment factors are associated with MAEs and patient safety.

The third major barrier according to the participants is blaming nurses if anything happens to patients. This is because nurses often feel extra pressure and are apprehensive about getting blamed if they fill a report concerning an error. If they are caught 'committing' an error they may be sued or severely reprimanded. In addition, there is no awareness of non-punitive, fearless, learning culture, due to the entrenchment of the traditional biomedical paradigm (focused on task completion), and a lack of management support and well-structured health policy to support nurses. According to the nurses, excessive emphasis is placed on medication errors as a measure of the quality of nursing care provided. The nurses ranked this as the fourth major barrier to error reporting. Nurses are held responsible for anything that happens to patients, thus fear of adverse effects on patient condition is the fifth most significant major barrier. These results are consistent with a previous study conducted in Saudi Arabia by. Alduais et al. [3], the majority of them did not agree with this fact. Furthermore, the fear of professional consequences such as losing their job induced them to overlook errors.

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