Original Research Article

Non-reporting of Medication administration errors among Nurses in Qatar

ABSTRACT

Background: Prompt recognition and reporting of Medication Administration Errors (MAE) are paramount in ensuring patient safety in hospitals. The data on under-reporting MAE in Middle East Area is limited.

Aim: The study intended to estimate the percentage of fear factor and explore the perception of nursing professionals regarding the reason for the occurrence and underreporting of MAE.

Design: A cross-sectional design was utilized to conduct the current study.

Place and Duration of Study: The study was conducted in eight hospitals working under Public health sector of Qatar between August and September 2016

Methodology: The data were collected with a purposive sample of 487 clinical nurses employed by the public health sector of Qatar who responded to a pre-designed online questionnaire.

Results: The perceived prevalence of fear factor in non-reporting MAE was 23.45%, 95% confidence interval (C.I).: 16% to 33%. The single factor confirmatory factor analysis (CFA) model explained 65% of the variance in the fear factor of nonreporting of medication administration errors. The highest mean score in the subscale of reasons for non-reporting of MAEs includes fear (mean 0.652±1.671) and administrative responses (mean 0.304±1.466), and reporting processes (mean -0.505±1.669), whereas disagreement over hospital definition (mean -1.158±1.528) of error was the least significant reason for nonreporting of MAE by the clinical nurses.

Conclusion: The study focuses on quantifying the fear factor and underscores the Nurses' fear about the professional consequences of reporting MAE. The findings in this study not only provide evidence concerning the fear of reporting MAE but also shed light on the contributing factors and reasons for the nonreporting of MAE. Nursing leadership needs to concentrate on modifying existing strategies and policies to more comprehensible approaches to reporting errors.

Keywords – Medication Administration Errors, Medication Error Reporting, patient safety, non-reporting[1] errors, perceptions, fear.

1.INTRODUCTION

Patient safety is considered the cornerstone of good health care and one of the metrics for assessing a sound health care system. Despite the international focus on patient safety and safe health care, medication administration errors remain prevalent. A safe administration of medication has a critical role in ensuring patient safety in the hospital. The challenges to this component are dual - the occurrence of Medication Administration Errors and the non-reporting of these errors. MAEs pose a public health concern since these medications have the potential to cause serious harm to patients, warranting the attention of the health system towards their prevention and regular reporting. In addition to the serious risk to the patients, it is also associated with huge global health care costs (1) and has potentially grave implications for the reputation of organizations as well as the psychological well-being of the health professionals involved (2) .

The National Coordinating Council for Medication Error Reporting and Prevention defines “A medication error is 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 labeling, packaging, and nomenclature, compounding, dispensing, distribution, administration, education, monitoring, and use."(3).This may occur at any phase of the medication process: prescribing, dispensing, transcribing, and administration errors and which are considered multi-disciplinary, structural, and systemic factors. Medication administration is considered a complex and protracted task which forms the major component of the responsibilities of nursing professionals. Medication administration is considered a basic and routine nursing task and nurses either assume or are assigned the responsibility of MAE in most situations.

A recently published mixed-methods study that explored the facilitators and barriers of medication error reporting among the health care professionals reveals that health care professionals, including

nurses, had critical concerns about the process and consequences of reporting errors (4). Many of the barriers to reporting of MAE stated in the literature include fear of adverse personal and career consequences following reporting, disagreement over the definition of MAE, organizational culture and workflow, lack of knowledge (4,5).The systematic review shows that organizational barriers like organizational culture, error reporting system, and management style play a major role in reporting medication errors (6). A study from Saudi Arabia underlined similar findings, that administrative responses were the major challenges in reporting medication errors(7) .Interestingly, the recent study involving the direct supervisors pointed out that the fear factor of reporting MAE is more important than management issues (8).

The timely reporting of errors can reduce the complications of medication errors and improve the safety and health of the patients. A systematic review of literature that explored medication errors across the countries of the middle east reported that the quality and reporting of errors needs to be improved (9).The nurses who are primarily assigned the task of medication administration in hospitals usually assume the greater responsibility of MAE. In this context, it is important to explore the perspectives of nursing professionals regarding the reasons for the occurrence of MAE and their reasons for not reporting it. The primary aim of this study is to estimate the percentage of fear factors perceived by the nurses for non-reporting of MAE. Also, this study explores the potential factors influencing MAE, the possible reasons for not reporting MAE, from the perspectives of clinical nurses working in a hospital.

2.MATERIAL AND METHODS

2.1 Design

This cross-sectional study was conducted to estimate the percentage of fear factors in the non-reporting of MAE, potential causes of MAE, and the possible reasons for non-reporting of MAE from the perceptive of clinical nurses. This study was executed at eight hospitals functioning under the public health sector in Qatar between August to September 2016.

2.2 Participants

The clinical nurses who indicated an interest in participating through an online survey were recruited in this study. 487 clinical nurses who had at least 1 year of experience in administering or preparing medication to their patients as part of routine work were responded to the survey and the data collected using the Survey Monkey software. The nurses during the preceptorship period and nursing managers were excluded from the study.

2.3 Study Instrument

A validated self-administered questionnaire developed by Gladstone and Wakefield in the form of the 'modified Gladstone scale' and 'Wakefield Tool' was used to collect data (10,11,12) with their permission. Demographic information data were collected to identify the participant's characteristics: gender, age, nationality, level of education, total years of clinical experience, and experience in the current clinical facility.

The face validity and content validity of the survey questionnaires were assessed for their appropriateness in the Arab scenario. The content validity of all items of the questionnaire was assessed by five experts on the relevance of the instrument, understandability/clarity of the statement, comprehensiveness, and significance in relation to the objective of the study and the cultural context of the country (13). The experts rated each item for the relevance on 4-point scale, highly relevant (4), quite relevant (3) somewhat relevant (3) not relevant (1). Individual-level content validity (ICVI), scale level content validity (S-CVI)/Average (scale level content validity index with the average method), and SCVI/universal average method (UA) were calculated with the responses of the experts on agreement of relevance. The I-CVI was calculated based on the number of experts providing a score of 3 or 4 divided by the total number of experts and the I-CVI score should not be less than 0.78 if more than 5 experts evaluated the tool (14). The I-CVI score of the questionnaire was calculated at 0.88. To calculate the S-CVI, two different indices were calculated: 1) the proportion of the items on the tool scored as valid by the experts (ratings of 3 and 4 only) (universal agreement by experts = S-CVI/UA) and 2) the average score of the items rated by the expert either 3 or 4 (average agreement by experts = S-CVI/Ave). The calculated S-CVI/UA and the S-CVI-Ave were 0.93 and 0.98

accordingly. The accepted standard score for S-CVI/UA and the S-CVI-Ave up to 0.90 is considered an excellent score (13).

The composite questionnaire consists of 36 questions divided into four sections includes:-why do medication errors occur (10 items), reasons for non-reporting of medication errors in their respective units (16 items), demographic (6items), and professional characteristics (4 items).

In section A of the questionnaire, the participants were asked to rank the possible causes of medication errors in their unit, based on 'the modified Gladstone scale' (10,11) from 1-10 ,in which 1 indicating the most frequent reason of MAE whereas 10 indicates the least possible cause of MAE in their respective units. In section B of the questionnaire, the participants were asked the reason for non-reporting medication errors adapted from Wakefield et al's scale (12), to rate their opinions in 6-point scores from strongly agree to strongly disagree, whereas section C and D of the questionnaire cover the demographic and professional characteristics of the participants included the personal estimation of the proportion of all types of medication errors reported in their unit.

2.4 Data Collection

The study was invited for all the clinical nurses working in a Public hospital in Qatar. The participants were recruited through an open invitation in the hospital intranet. The survey was conducted online over two months using a purposive sampling method. The electronic version of the questionnaire was sent to the nurse's official email group. The information sheet stated the purpose of the study and the participants were allowed to refuse or withdraw from the study. once the participants proceed with the survey, it was considered as their consent for participation. The participation was completely voluntary and anonymous. Two reminders were sent to the participants at an interval of two weeks to encourage their participation. The response received during the study period taken for analysis and the collected data was kept confidential

2.5 Data analysis

The data were collected by survey monkey software and transferred to Microsoft Excel Spreadsheet for analysis. The collected data were analyzed using Statistical Programme for Social Sciences (SPSS) Version 27. Socio-demographic characteristics and prevalence of MAE reporting were descriptively analyzed and presented in frequencies and percentages. The reasons for the occurrence of MAE were ranked according to the scores received for each item between 1-10 in

which 1 means most frequent and 10 means least frequent causes for medication errors. CFA was conducted to define the underlying constructs that contributed to the non-reporting of medication administration errors. To make qualitative and quantitative data comparable for use in advance statistical analysis, 16 items of 6-point Likert's scale in wakefield scale regarding the reason for not reporting medication error were coded "strongly disagree", "moderately disagree", "slightly disagree", “slightly agree", “moderately agree” and, “strongly agree” as -3, "- 2", "-1", "+1", "+2" and "+3" respectively. The fear items have been calculated in proportion using the formula Σ (reported items)/Σ (highest value of that item) × 100 for each item (13). The average percentage of the fear factor has been calculated as fear index**.**

3. RESULTS

3.1 Participant Characteristics

Based on the results, out of the 670 responses received during the two-month study period, 487 completed responses were used for analysis.Table:1 showed the socio-demographic and professional characteristics of the participants. The majority of the study participants were females (78%), aged between 20 and 40 years (80.9%), working in the inpatient unit (39.3%), and predominantly of Asian ethnicity (82.1%). A major proportion of the participants was holding a minimum of a Bachelor's degree in Nursing. (82.5%) and with less than 10 years of working experience in current clinical facilities (82.75%). A large proportion of the study participants (80.2%) responded that they frequently administered medications as part of their routine work and nearly half of them reported (47.6%) that they were working in different units to cover the shortage of staff or additional staff requirements during emergencies. A Major proportion of nurses (59.5%) reported that the actual reporting of medication errors in their respective units was between 0-20%.

Table 1 Socio-demographic and professional characteristic of study participants

Characteristics	**Frequency (%)**
Sex	
Female	380 (78.0)
Male	107 (22.0)
Age in years	

20-30	180 (37.0)
31-40	214 (43.9)
41-50	77 (15.8)
51-60	16 (3.3)
Ethnic Background	
African	40 (8.2)
Asian	400 (82.1)
Europe	7 (1.4)
America*	1 (0.3)
Mediterranean	13 (2.7)
Others	26 (5.3)
Highest Qualification	
Diploma	85 (17.5)
BSN	372 (76.3)
MSN	30 (6.2)
How often do you administer medications?	
Never	13 (2.7)
Rarely	37 (7.6)
Occasionally	46 (9.5)
Frequently	391 (80.2)
Years of experience in HMC	
<10 years	403 (82.75)
>10 years	84 (17.25)
Type of Nursing unit	
Emergency department	79 (16.2)
Critical care unit	62 (12.7)
Inpatient Units	191 (39.3)
General unit	155 (31.8)
What is the average number of times you float between units per month?	

1 to 5	208 (42.7)
6 to 10	16 (3.3)
>10	8 (1.6)
Not Applicable	255 (52.4)
What percentage of all types of medication errors are actually reported on your unit	
0-20%	290 (59.5)
21-30%	32 (6.5)
31-40%	15 (3.0)
41-50%	13 (2.6)
51-60%	11 (2.2)
61-70%	9 (1.8)
71-80%	20 (4.1)
81-90%	45 (9.2)
100%	52 (10.6)

The estimated mean percentage of a fear factor was 23.4, which suggests that the presence of consequences of reporting medication errors hinders the nurses from reporting medication administration errors. Fear 50th and 75th percentiles were 33% and 66% respectively. Figure:1 showed the predisposing factors of MAE in different units across the corporation. Based on the ranking of the participants the first five causes of medication administration errors in their units were, nurse fails to check patient's name band with the Medication Administration Record (MAR), physician's order being difficult to read or illegible, labels/packaging are of poor quality or damaged, confusion between two drugs with similar names and physician prescribes the wrong dose. The least frequent reason for medication errors reported by the participants was the tired and exhausted condition of nurses.

Figure:1 The perception of the participants regarding reasons for occurrence of Medication administration errors (MAE)

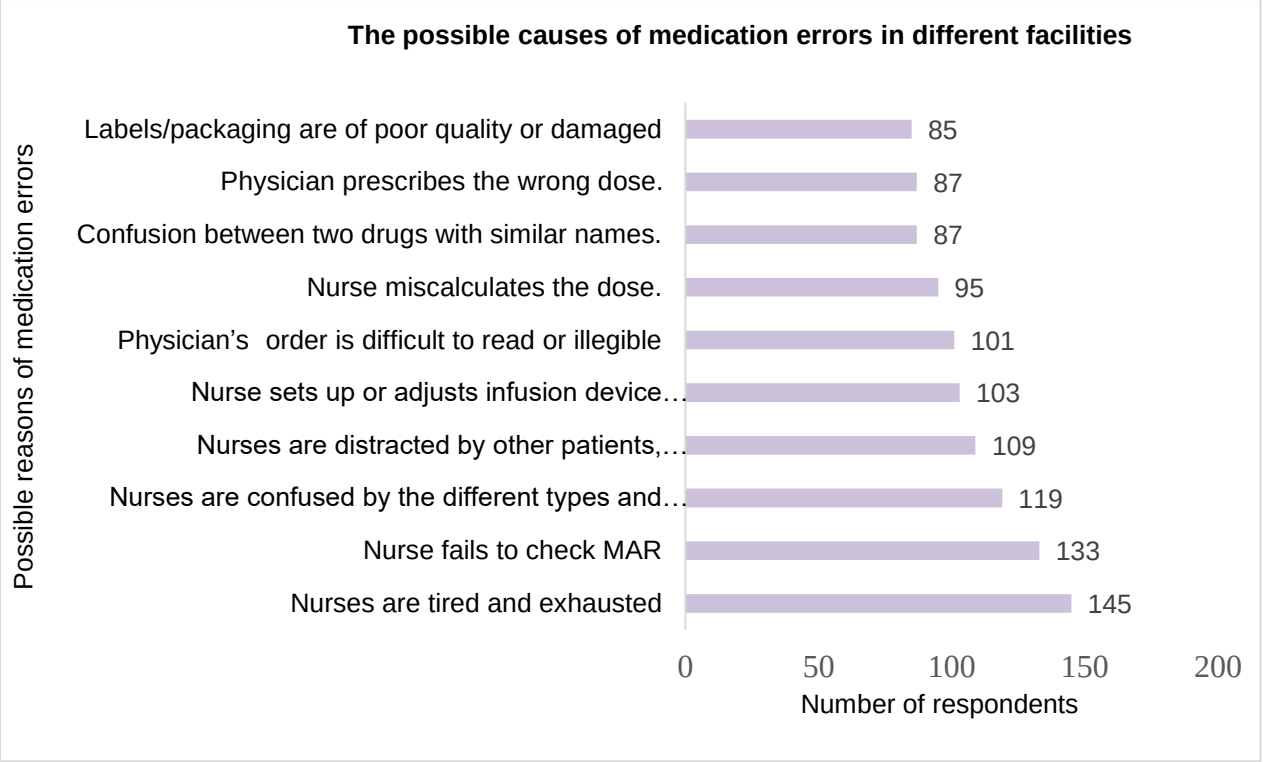

Table:2 showed the confirmatory factor analysis of factors that leads to nonreporting of medication administration errors in different units. Based on maximum likelihood estimation the comparative fit index (CFI) = 0.80, Tucker lewit fit index (TLI) =0.77 where Root Mean Square Error of Approximation (RMSEA) was 0.11 more than 0.08.

Table 2: Confirmatory factor analysis for fear factor in non-reporting of medication administration errors

Sl No	Standardized Factor loading	Coef.	St. Err	z	*P* > |z|	95% Confidence Interval
1	Nurses do not agree with hospital's definition of a medication error.	1.4	0.08	16.7	0.001	1.21-1.54
2	Nurses do not recognize an error occurred.	0.99	0.08	11.15	0.001	0.812-1.15
3	Filling out an incident report for a medication error takes too much time.	-0.10	0.09	-1.11	0.200	-0.28-0.07
4	Contacting the physician about a medication error takes too much time.	-0.39	0.09	-4	0.001	-0.57- -0.19
5	Medication error is not clearly defined.	1.10	0.08	12.79	0.001	0.93-1.27
6	Nurses may not think the error is important	1.00	0.09	10.91	0.001	0.84-1.21

	enough to be reported.					
7	Nurses believe that other nurses will think they are incompetent if they make medication errors.	0.26	0.09	2.7	0.001	0.07-0.45
8	The patient or family might develop a negative attitude toward the nurse or may sue the nurse if a medication error is reported.	0.91	0.09	10.13	0.001	0.73-1.09
9	The expectation that medications be given exactly as ordered is unrealistic.	-0.77	0.08	-8.84	0.001	-0.94 - -0.60
10	Nurses are afraid the physician will reprimand them for the medication error.	0.16	0.09	1.68	0.090	-0.02-0.34
11	Nurses fear adverse consequences from reporting medication errors.	0.74	0.09	7.89	0.001	0.55-0.92
12	The responses by nursing administration does not match the severity of the error.	-0.09	0.09	-1.09	0.270	-0.27-0.79
13	Nurses could be blamed if something happens to the patient as a result of the medication error.	1.2	0.95	12.35	0.001	0.99- 1.36
14	No positive feedback is given for passing medications correctly.	0.68	0.09	6.98	0.001	0.48 -0.86
15	Too much emphasis is placed on medication errors as a measure of the quality of nursing care provided.	0.76	0.09	8.39	0.001	0.58 -0.93
16	When med errors occur, nursing administration focuses on the individual rather than looking at the systems as a potential cause of the error.	0.96	0.09	10.27	0.001	0.77-1.14

Log likelihood=-15243.69; number of observations=487

Likelihood test of model vs. Saturated: chi2 (104) = 752.99, Prob > chi2 = 0.0000

Likelihood test of baseline vs. Saturated: chi2 (120) = 3405.564, Prob>Chi2=0.000

Root mean squared error of approximation (RMSEA)=0.11[0.106-0.121], Probability

REMSA<0 .05

SRMR=Standardized root mean squared residual=0.055

Tucker Lewis Index (TLI) = 0.77

Comparative fit index (CFI) =0.80

Coefficient of determination (CD) =0.92

A single factor CFA of 16 items was conducted to assume the correlation between the items with the single common factor. The study adopted the fear factor as a common factor to correlate with the other 16 items on the scale. The chi-square value for the model (chi2_ms (104) 752.99 P=0.00) suggests that the model is well fit and consistent with the covariance data and described in figure 2. The model explained 65% of the variance in the fear factor of nonreporting of medication administration errors.

Figure 2: Confirmatory factor analysis of Fear of nonreporting of medication administration error.

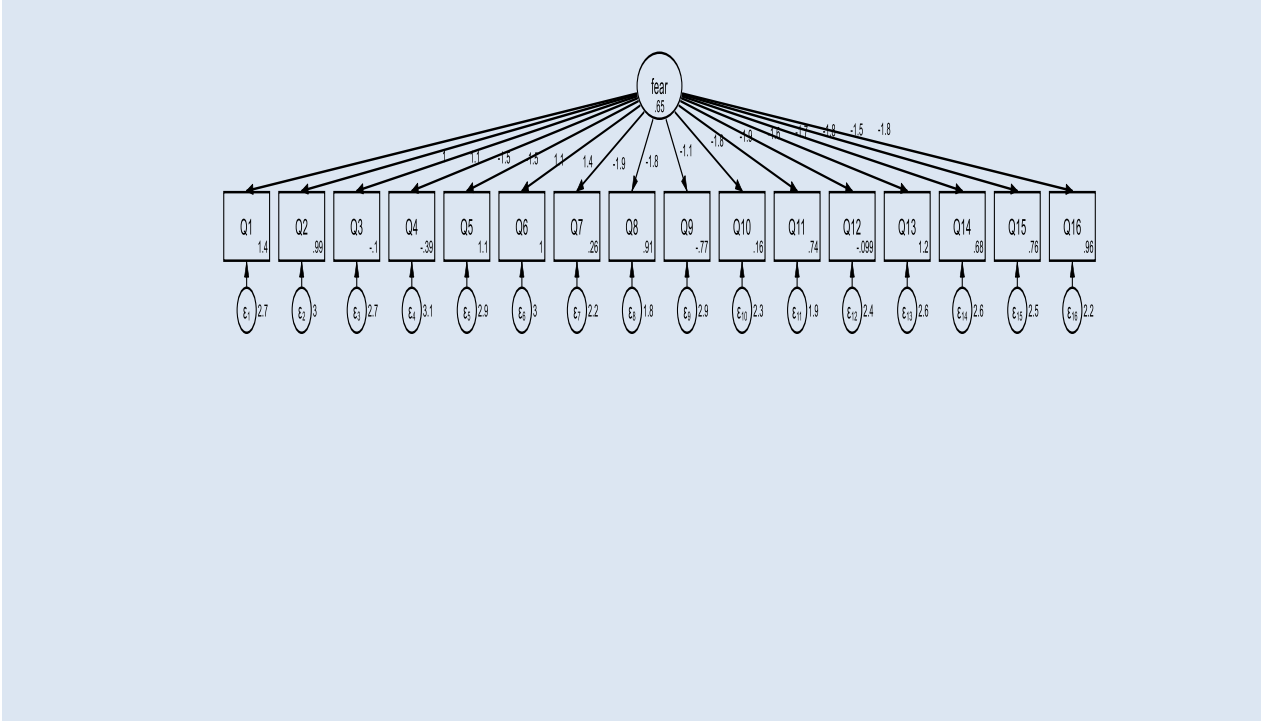

Table 3 summarizes the reasons why medication errors are not reported by the clinical nurses. The Wakefield scale was divided into four subscales: Fear, disagreement over error, reporting effort, and administrative responses. When considering the subscale 'fear' has 5 items. The highest score was given to the statement that agreed for fear factor was 'Nurses could be blamed if something happens to the patient as a result of the medication error' (mean=1.179 ± 2.108). Whereas 'Nurses are afraid the physician will reprimand them for the medication error' received the lowest score in subscale fear (mean=0.160±2.110). The subscale 'disagreements over errors' had 3 items, the highest score of the agreement was given to the statement that the 'Nurses do not recognize an error occurred' (Mean= 0.986±1.953) and the lowest mean score given to the statement 'Nurses do not agree with the hospital's definition of a medication error'(mean=-1.381±1.827).

Another subscale 'reporting process' had 3 items in which the highest score of agreement belongs to 'Filling out an incident report for a medication error took too much time'(mean= -0.103±2.035) and the lowest score belonged to 'Nurses may not think the error was not important enough to be reported' (mean = -1.027 ±2.078). Finally, the fourth subscale 'administrative responses' had 5 items, in which the highest score of agreement received to the statement 'When medication errors occur, nursing administration focuses on the individual rather than looking at the systems as a potential cause of the error' (mean =0.961±2.067) and lower score given to 'the expectation that medications are given exactly as ordered is unrealistic' (mean= -0.774±1.935). In summary, the highest mean score in the subscale of reasons for why MAE was not reported by nurses was found to be fear, administrative responses followed by reporting process and the least significant reason was disagreement over errors.

Table 3: Barriers in reporting of medication administration errors

No:	Items	Obs	Group Mean (SD)	Mean	SD
	Subscale : Fear	487	0.652 (1.671)		
7	Nurses believe that other nurses will think they are incompetent if they make medication errors.	487		0.264	2.163
8	The patient or family might develop a negative attitude toward the nurse or may sue the nurse if a medication error is reported.	487		0.914	1.992
10	Nurses are afraid the physician will	487		0.160	2.110

	reprimand them for the medication error.				
11	Nurses fear adverse consequences from reporting medication errors.	487		0.743	2.080
13	Nurses could be blamed if something happens to the patient as a result of the medication error	487		1.179	2.108
	Subscale : Administrative Responses	487	0.304 (1.466)		
9	The expectation that medications be given exactly as ordered is unrealistic			-0.774	1.935
12	The responses by nursing administration does not match the severity of the error	487		-0.099	2.006
14	No positive feedback is given for passing medications correctly.	487		0.675	2.139
15	Too much emphasis is placed on medication errors as a measure of the quality of nursing care provided.	487		0.758	1.996
16	When med errors occur, nursing administration focuses on the individual rather than looking at the systems as a potential cause of the error.	487		0.961	2.067
	Subscale :Disagreement over errors	487	-1.158 (1.528)		
1	Nurses do not agree with hospital's definition of a medication error.	487		-1.382	1.827
2	Nurses do not recognize an error occurred.	487		-0.986	1.953
5	Medication error is not clearly defined	487		-1.107	1.912
	Subscale : Reporting Process	487	-0.505(1.669)		
3	Filling out an incident report for a medication error takes too much time	487		- 0.103	2.035
4	Contacting the physician about a medication error takes too much time.	487		-0.386	2.131
6	Nurses may not think the error is important enough to be reported.	487		-1.027	2.078

The subscale ‘disagreement over errors’ was statistically significant with the gender, the males were more in disagreement with the errors defined by the hospital management compared with the female nurses (Male -0.882±1.558, Female -1.236±1.513, *P*=0.034). Interestingly, all subscales like fear

(BSN 0.752±1.639,Diploma 0.212±1.744, MSN 0.667±1.696, *P*=0.027) reporting effort (BSN-0.368±1.620, Diploma-1.035±1.702,MSN -0.700±1.900, *P*=0.003) disagreement over error (BSN-1.036±1.492,Diploma-1.573±1.564, MSN-1.500±1.660, *P*=0.006) and administrative responses (BSN 0.384 ±1.437,Diploma -0.122 ±1.505,MSN 0.527 ±1.540, *P*=0.011) were statistically significant difference according to the education categories. The four subscales explaining the nurses' perspectives regarding the reasons for the nonreporting of MAEs did not show any significant difference across age, ethnicity, experience in current clinical settings, and unit of working with any of the subscales of nonreporting of MAE (Table 4).

Table 4: Association of demographic characteristics of the participants and reason for nonreporting MAE

Demographic variable	**Categories**	**N**	**Fear mean (SD)**	**Reporting process mean (SD)**	**Administrative response mean (SD)**	**Disagreement over errors mean (SD)**
Age	20 to 30	180	0.733 (1.600)	-0.452 (1.672)	0.380 (1.426)	-1.113 (1.474)
	31 to 40	214	0.667 (1.729)	-0.461 (1.739)	0.338 (1.506)	-1.065 (1.633)
	41 to 50	77	0.538 (1.605)	-0.736 (1.447)	0.127 (1.335)	-1.550 (1.279)
	51 to 60	16	0.087 (1.972)	-0.583 (1.732)	-0.150 (1.912)	-1.021 (1.626)
	P -value		0.45	0.61	0.35	0.11
Gender	Female	380	0.641 (1.695)	-0.579 (1.707)	0.274 (1.484)	-1.236 (1.513)
	Male	107	0.693 (1.586)	-0.243 (1.507)	0.411 (1.402)	-0.882 (1.558)
	P -value		0.77	0.066	0.39	0.034
Experience	<10 years	403	0.675 (1.644)	-0.484 (1.676)	0.326 (1.432)	-1.115 (1.527)
	> 10 years	84	0.543 (1.799)	-0.607 (1.643)	0.200 (1.624)	-1.365 (1.525)
	P -value		0.51	0.54	0.47	0.17
Ethnicity	African	40	0.540 (1.648)	-0.317 (1.686)	0.000 (1.560)	-1.350 (1.344)
	Asian	400	0.651 (1.675)	-0.542 (1.647)	0.336 (1.453)	-1.153 (1.531)
	Europe	7	0.743 (1.986)	-0.000 (1.587)	-0.171 (1.512)	-0.429 (1.618)
	Mediterranean	13	0.862 (1.817)	-0.205 (2.124)	0.277 (1.201)	-1.692 (1.174)
	American	1	0.000 (.)	-1.333 (.)	0.400 (.)	-3.000 (.)
	Others	26	0.738 (1.626)	-0.487 (1.848)	0.431 (1.667)	-0.808 (1.812)

	P -value		0.99	0.85	0.73	0.25
Education	BSN	372	0.752 (1.639)	-0.368 (1.620)	0.384 (1.437)	-1.036 (1.492)
	Diploma Nursing	85	0.212 (1.744)	-1.035 (1.702)	-0.122 (1.505)	-1.573 (1.564)
	MSN	30	0.667 (1.696)	-0.700 (1.900)	0.527 (1.540)	-1.500 (1.660)
	P -value		0.027	0.003	0.011	0.006
Unit	critical care	62	0.626 (1.644)	0.349 (1.840)	0.313 (1.308)	-1.145 (1.538)
	emergency	79	0.878 (1.619)	-0.679 (1.564)	0.514 (1.515)	-1.198 (1.491)
	inpatient unit	155	0.504 (1.760)	-0.647 (1.675)	0.185 (1.516)	-1.211 (1.556)
	general unit	191	0.730 (1.590)	-0.303 (1.631)	0.341 (1.437)	-1.077 (1.520)
	P-value		0.35	0.17	0.4	0.87

4.DISCUSSION

This study intended to explore the perceptions of nursing professionals regarding the reasons for the occurrence of MAE and the reasons for the non-reporting of MAE by nursing professionals. Nursing professionals play a prominent role in health care delivery and drug administration, and they are important elements of the healthcare system. From that point of view, it is nurses themselves who can provide clear insights into why medication errors occur and why MAE does not get promptly reported. The CFA was done to identify the latent construct fear factor which could lead to MAE was in accordance with the existing literature which suggests that fear is one of the prominent factors that could be responsible for MAE. The study estimated that fear of reporting of MAE was 23.45%.

According to a recent study, administrative response, fear, reporting efforts, and disagreement on the definition of errors were the most significant hurdles (15).According to Aboshaiqah, lack of administrative support was the major reason for nurses' hesitation to report MAE (16). Another study by Petrova suggested that the hospital administration should be concentrating more on reporting errors and implementing a no-punishment approach to improve patient safety (17) .These findings are consistent with the results of our study.

According to our findings, Fear was considered as the primary reason that can influence the nurses to nonreporting of MAEs. The majority of the participants (64.5%) agree with the five fear factors of nonreporting of MAE.The nurses' fear of personal and professional consequences, conflicts over the definition of what constitutes an MAE, and administrative challenges in recognizing and reporting MAE were the main causes for non-reporting MAE. Many studies have pointed to the fact that fear and blaming culture are significant barriers to reporting medication errors (17,18) .

A study of nurses' perceptions of medication errors found a similar pattern: fear and fear of blaming were the key barriers to reporting medication errors (19) .However, a survey of pharmacists shows that fear of being blamed was the least reason for reporting medication errors (20) .Another recent study conducted in Northwest Ethiopia also identified nurses' fear as a major reason for non-reporting errors (21) which is closely linked with current study results. Hence the fear factor dominates, there is a likelihood of reducing reporting of medication administration errors.

The five items related to the administrative responses include, nursing administration focuses on the individual rather than looking at the systems, the responses by nursing administration do not match the severity of the error, lack of positive feedback, the medication errors consider as the measurement of quality of nursing care and more emphasis on medication error. The five items of the subscale administrative responses were agreed upon by 59.3 percent of the participants in our study. The unsupportive attitude of management, lack of positive feedback, legal consequences, and lack of job security have been identified as impediments to medication administration error (22). In our study, the administrative responses were the second potential reason for the nonreporting of MAE.

Nurses may be willing to disclose medication errors if the reporting process is simple and does not take too long. Many studies have reported that their organization does not have an effective method to report medication errors (23).According to two studies (22, 24) reporting MAE is a time-consuming process. In our study, reporting process was the third relevant reason for nonreporting of MAE. The majority of participants (58.3%) disagree with the three items of the reporting process that indicated that the existing MAE reporting process is convenient to the end-user.

The reasons for disagreement over errors included nurses do not agree with hospitals' definitions of medication errors, failure to recognize that an error occurred, and the medication errors not being clearly stated. According to Kang, the participants believed that the near-miss incidents were not

necessary to report since no harm was caused to the patient (20) .In our study findings revealed that disagreement over errors was the fourth leading factor of nonreporting errors by the nurses.

A recent study identified four factors of Medication errors – inadequate information on new medications, poor communication between nurses and physicians, frequent changes in medication orders by physicians, and unclear medication orders by physicians. The majority of the factors identified in this study were related to the medical team, especially the physicians (1) .Another study from Asia found that the leading causes of errors were 'look alike' and wrongly labeled medications (25) .In a descriptive study conducted in the Middle East area, the participants' ranked the top three potential reasons for medication error includes poor labels or packaging, incorrectly set up infusion devices, and confusion over the different types of infusion devices (26) .In a quantitative study in Jordan, (27) the majority of the participants reported that insufficient staffing, heavy workload, lack of proper training for nurses, and interruption during medication administration contributed to MAE. The top five reasons identified from our study sharply coincide with these findings include, nurses failing to check MAR physician's order being difficult to read or illegible, labels/packaging are of poor quality or damaged, confusion between two drugs with similar names followed by physician prescribes the wrong dose.

The socio-demographic characteristics of the participants (except education) did not seem to have any association with the underlying constructs of reasons for MAE. This pointed out the fact that all nurses are equally vulnerable to medication errors.The type of nursing unit was found to be no impact on the likelihood of MAE. However, this finding was contradicted with the results of another study conducted in Saudi Arabia, where the current work department was found to be significantly associated with the reasons for the occurrence of MAE (28) .The most reasonable reason for this would be that nurses are more likely to be tired and distracted in busier units. These units could also create more favorable circumstances for equipment and drug chart-related, medical team-related, and drug-related determinants of MAE. However, there is no significant association between the unit of working with any subscales of the nonreporting of MAE in the current study.

The actual reporting of MAE was observed to be rather low in our study (the majority reported the range to be 0-20 %). This was in accordance with two other studies conducted in Saudi Arabia which reported comparable proportions, 20% and 22% respectively (16,28). Another study conducted in South Korea, reports that 28.3% of their study participants (nurses) submitted an incident report

following an MAE and limited studies address that the errors were informed the patients and their families (29). According to the study participants, this has a strong relationship with the causes for under-reporting.

In comparison to those with only a diploma in nursing, participants with higher educational qualifications (Bachelor of Science Nursing or Master of Science nursing) were less prone to anxiety, reporting effort, administrative responses, and disagreement over errors defined by the management (21) .Nurses with more advanced degrees are more aware of the need of reporting medication errors. This underlines the need for continuing education in minimizing medication errors and improving the quality of health care(30) .

In summary, the results of this study emphasize that the under-reporting of medication errors is a fact. In the healthcare industry, the safe administration of medication is a highly challenging task. But it will be more critical if we are uncertain about the problem of the under-reporting of medication errors remains unsolved.

5.CONCLUSION

The primary implication of the study is the need to create a positive work environment with human work circumstances, conducive work schedules, and adequate staff patterns, which also nurtures free and fearless communication between the nursing professionals and the nursing management team. This will not only reduce the occurrence of MAE but also encourage good reporting practices. The need for continuing education for nurses to update and reinforce the definitions and standards of safe health care is another major inference. The lack of consensus and clarity regarding "what constitutes an MAE" underscores that regular in-service training and continuous reinforcement focusing on this topic are mandatory. A major inference that can be drawn from this finding is that even within a facility, the context-specific requirements of each facility may be different, mandating appropriate levels of additional support for nurses working in hectic settings.

LIMITATION

This study was successful to estimate the percentage of the fear factor that influences the non-reporting of MAE, however, there were four inevitable limitations. First, this study employed a non-random sampling method to cover a large number of the population. Second, Since the participants were recruited from the nurse's hospital email group, there are chances that those nurses who did not participate in this study had different perceptions. Third, Medication administration errors and

underreporting are highly sensitive issues that might influence the low rate of participation. Finally, there might be other factors which was not addressed in this study can contribute the medication errors and non-reporting of errors.

ETHICAL APPROVAL

The study was reviewed and approved by the institutional review board (IRB) of the Medical Research Centre (protocol #14165/14). The study was conducted fully in conformance with principles of the "Declaration of Helsinki", Good Clinical Practice (GCP), and within the laws and regulations of the Ministry of Public health (MOPH) in Qatar.

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ABBREVIATIONS

MAE- medication administration errors

MAR- medication administration record