Barriers in Reporting Medication Administration Errors as Perceived by Nurses in Saudi Arabia"

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Abstract: Patient safety continues to be threatened because of medication administration errors (MAEs). This study aimed to assess why medication administration errors are not reported as perceived by nurses in a large government-owned tertiary hospital in Saudi Arabia. A cross-sectional survey was conducted among 307 nurses assigned to various service units. Data were analyzed using SPSS v.17 software. The results indicated that nurses in this setting perceived administrative response (M=4.04) as a factor why medication administration errors were not reported. Blaming (M=4.2) and focusing on the individual rather than looking at the systems as potential cause of error (M=4.12) were the top two perceived reasons why medication administration errors were not reported. More than half of the nurses (181/307; 58.96%) reported actual errors between 0% and 20% suggesting that there is under-reporting. Not reporting actual medication administration errors is a complicated issue that involves nurses' paradigm, leadership style and organizational culture as evidenced in this study. Further studies are needed in order to understand and find out what really are the underlying reasons why medication administration errors are not reported. Individual, Administration, organizational and cultural peculiarities are needed to be considered in formulating organization-specific strategies to address non-reporting of medication administration errors that will result in improved patient safety.

Key words: Medication Administration Error • Barriers • Nurses • Patient • Patient Safety • Administrative Response

INTRODUCTION

Research, education, policy, practice and administration were identified as the major barriers to safe medication administration during a symposium attended by nurse practitioners, administrators, educators, researchers, leaders from regulatory and consumer sector. Additionally, lack of a "just culture of safety", lack of interdisciplinary collaboration and communication, nurses' work environment that does not support safety, missing voices of front-line nurses in decision making and systems design and difficulties in translating research into practice were also identified as the most significant barriers to safe medication administration [1].

Barriers continue to exist and hinder MAE reporting because of various factors attributed to operational, institutional and individual intricacies that are involved [2]. Studies indicated that the most cited reason why MAEs were not reported was fear which is expressed in various contexts; fear in general [2-5]; fear of punishment / reprimand / disciplinary action [6-12]; fear from being blamed [7, 13]; fear from press or media, licensing board / Nursing Board [8]; fear of losing job [7, 10]; fear of reaction from leadership, peer, patients and their families [14-15]; fear from being considered as troublemaker [7].

The effects of errors on nurses were reported in terms of quality and professional development [4] and professional identity [2]. In another study, power

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hierarchy, face-saving concern and work environment accounted for more than half of the variances on why MAEs were not reported [5].

Based on the foregoing evidences, it appeared that individual, leadership, organizational and environmental factors were cited as reasons why most of MAEs were not reported.

The literature on why MAEs were not reported may be substantial. However, there is paucity of studies conducted in Saudi Arabia setting on why MAEs were not reported.

MATERIALS AND METHODS

The purpose of this descriptive survey was to assess the reasons why medication administration errors were not reported as perceived by nurses in a large tertiary government-owned hospital in Saudi Arabia. This survey was conducted during the first quarter of 2013. The results of this study would provide baseline data on the perceived reasons why nurses in this hospital setting do not report medication administration errors. The results would also serve as basis in formulating strategies to improve medication administration error reporting and find solutions in avoiding medication errors. This study is part of the hospital's initiatives in their ongoing quality improvement measures to improve safety and quality of patient care.

This study was conducted after an approval from the Institutional Review Board was obtained. Permissions to conduct the study from the Administrators and Unit Managers of the setting were obtained.

Sample: A total of 350 randomly selected nurses assigned in various service units representing 35% of the total nurses employed in this hospital were invited to participate in this study. The objectives of the study were explained to the prospective participants. It was also emphasized that participation was voluntary and that confidentiality of identities were assured. Implied consents were provided by the participants when they voluntarily accomplished and returned the survey questionnaires. The participants were instructed to drop their answered questionnaires in padlocked boxes located near the nurses' station. There were 320 questionnaires retrieved from the padlocked boxes after seven days. Only 307 cases were processed for the final analysis with an effective response rate of 87.71%.

Instrument: The Reasons Why Medication Administration Errors Are Not Reported which is part of the original survey instrument developed by Wakefield *et al*. [16] was used with permission in this study. The instrument is comprised of four subscales namely disagree with definition, reporting effort, fear and administrative response. It has a total of 16 items that appropriately describe situations and processes that assess why medication administration errors are not reported. The items in the original instrument underwent rigorous validation and tested for its psychometric properties through confirmatory factor analysis. The instrument is recommended for use in assessing an institutions' error reporting culture [16]. On the basis of the construct and criterion-related validity tests and subscale reliability with Cronbach's alpha ranging from .69 to .76 [16] and its use in various studies [3-5, 9], the original instrument was used without modification. Participants rate how they perceived the items as it apply to their experiences using a six-point Likert scale responses from strongly disagree (coded 1) to strongly agree (coded 6). A demographic profile questionnaire was included to gather information on gender, age range, education level, length of work as a nurse, unit assigned, position and percent of actual errors reported.

The instrument was pretested on 50 nurses not included in this study. The participants of the pretest completed the survey within 15-20 minutes without any difficulties.

Principal component analysis was conducted to explore if the factor structure of the instrument is similar to the previous studies indicating the presence of four factors underlying the items for the sample of registered nurses in this study. Data screening was conducted. Mahalanobis distance criteria of $\square$ = .001, df16 (corresponding to the total number of items of the questionnaire) with the critical x^2 = 39.25 was used to screen for outliers. There were 13 surveys that exceeded the criteria, were considered as outliers and were excluded from the final analysis. The factor loading of 0.45 was used as the cut-off criteria. The Varimax rotation yielded 15 items with factor loadings between .476 and .905 as shown in Table 1. The item "the expectation that medications be given exactly as ordered is unrealistic" had a loading factor of .393 and was not included in the final subscale. Two items loaded differently in this study: "the response by nursing administrator…severity of

Table 1: Results of factor analysis and inter-item correlation coefficient test (Cronbach's alpha)

Factor & Label	Eigenvalue	% Variance	Item	Factor Loading	Cronbach's Alpha
I. Fear	6.858	40.39	- Nurses fear adverse consequences from reporting medication errors	.705	.875
			- Nurses are afraid the physician will reprimand them for the medication error	.695	
			- Nurses believe that other nurses will think they are incompetent if they make medication errors	.676	
			- The patient or family might develop a negative attitude toward the nurse, or may sue the nurse if a medication error is reported	.556	
			- The response by nursing administration does not match the severity of the error	.512	
II. Administrative response	1.910	9.159	- Too much emphasis is placed on med errors as a measure of the quality of nursing care provided	.689	.784
			- When medication error occur, nursing administration focuses on the individual rather than looking at the systems as a potential cause of the error	.674	
			- No positive feedback is given for passing medications correctly	.662	
			- Nurses could be blamed if something happens to the patient as a result of the medication error	.585	
III. Disagree with definition	1.127	5.463	- Nurses do not recognize an error occurred	.770	.825
			- Nurses do not agree with hospital's definition of a medication error	.761	
			- Nurses may not think the error is important enough to be reported	.532	
			- Medication error is not clearly defined	.476	
IV. Reporting effort	1.007	3.667	- Contacting the physician about a medication error takes too much time	.905	.864
			- Filling out an incident report for a medication error takes too much time	.712	
Collectively				58.679	.904

error" loaded in the fear subscale; and "nurses could…medication error" loaded in the administrative response subscale.

The subscales in this study, with its corresponding items, were subjected to inter-item correlation coefficient test. Fear had a Cronbach's Alpha of 0.875; administrative response had $\alpha = .784$; disagree with definition had $\alpha = .825$; reporting effort with $\alpha = .864$. Collectively, the instrument had Cronbach's alpha of .904 as shown in Table 1.

The results indicated that the instrument used in this study appeared reliable in assessing why medication administration errors were not reported in this setting.

Data Analysis: Data were processed using SPSS v.17 (Chicago, Il.). Descriptive statistics was used in analyzing the characteristics of the participants. Mean scores of the individual items were aggregated to come up with the aggregate mean score for each subscale. The aggregated mean scores of each subscale were interpreted through a mean range interpretation model.

RESULTS

Characteristics of the Participants: There were 307 out of 350 surveys that were processed indicating 87.71% effective response rate (Table 2) and the majority (N=293; 95.4%) of the participants were female. Most (N=226; 73.6%) of the participants were between 20-40 years old [20-30 years old (N=116; 37.8%) and 31-40 years old (N=110; 35.8%)]. Majority (N=234; 76.2%) had BSN degrees. More than half (N= 158; 51.5%) had more than 11 years of work experience as a nurse.

Most of the participants were assigned either in Critical/Cardiac care (N=93; 30.3%) or Medical/Surgical Unit (N=82; 26.7%). Majority (N=281; 91.5%) were staff nurses.

Perceived Barriers in reporting MAEs: The results revealed that administrative response (M=4.04; slightly agree) was perceived as a factor why MAEs were not reported as shown in Table 3. Nurses could be blamed if something happens to the patient as a result of

Table 2: Selected profile of participants (N=307)

		Frequency	Percent
Sex	Male	14	4.6
	Female	293	95.4
Age range	20-30 years old	116	37.8
	31-40 years old	110	35.8
	41-50 years old	48	15.6
	51-60 years old	33	10.7
Education level	Associate Degree	66	21.5
	Bachelor Degree	234	76.2
	Master Degree	7	2.3
Length of work	5 years or less	86	28.0
	6-10 years	63	20.5
	11-15 years	69	22.5
	16-20 years	49	16.0
	21 years or more	40	13.0
Unit Assigned	Medical/Surgical	82	26.7
	Maternity/OB-Gynecology	38	12.4
	Pediatrics	57	18.6
	Critical Care	75	24.4
	Cardiac Care	18	5.9
	Oncology	13	4.2
	Orthopedic	6	2.0
	Emergency Department	12	3.9
	Psychiatry	6	2.0
Position	Staff Nurse	281	91.5
	Charge Nurse	19	6.2
	Head Nurse	7	2.3
Percent of actual medication errors reported[a]	0-20%	181	59.0
	21-40%	37	12.1
	41-60%	19	6.2
	61-80%	12	3.9
	81-100%	58	18.9

[a]Medication administration error is defined in this study as error related to actual ingestion, injection or application of individual medication doses (e.g., wrong method of administration, wrong patient, wrong additive).

Table 3: Perceived reasons why MAEs are not reported

Items	Mean	SD	Interpretation[a]
Fear	2.79	1.427	Sl Disagree
Nurses believe that other nurses will think they are incompetent if they make medication errors	2.39	1.595	Mod Disagree
The patient or family might develop a negative attitude toward the nurse, or may sue the nurse if a medication error is reported	3.27	1.801	Sl Disagree
Nurses are afraid the physician will reprimand them for the medication error	2.66	1.716	Sl Disagree
Nurses fear adverse consequences from reporting medication errors	2.99	1.813	Sl Disagree
The response by nursing administration does not match the severity of the error	2.72	1.624	Sl Disagree
Administrative Response	4.15	1.406	Sl Agree
Nurses could be blamed if something happens to the patient as a result of the medication error	4.20	1.789	Slightly Agree
No positive feedback is given for passing medications correctly	3.95	1.848	Slightly Agree
Too much emphasis is placed on med errors as a measure of the quality of nursing care provided	3.89	1.658	Slightly Agree
When medication error occur, nursing administration focuses on the individual rather than looking at the systems as a potential cause of the error	4.12	1.683	Slightly Agree
Disagreement Over Error	2.02	1.119	Mod Disagree
Nurses do not agree with hospital's definition of a medication error	1.84	1.210	Mod Disagree
Nurses do not recognize an error occurred	1.85	1.205	Mod Disagree
Medication error is not clearly defined	2.12	1.349	Mod Disagree
Nurses may not think the error is important enough to be reported	1.96	1.388	Mod Disagree
Reporting Effort	2.84	1.571	Sl Disagree
Filling out an incident report for a medication error takes too much time	2.59	1.564	Sl Disagree
Contacting the physician about a medication error takes too much time	2.75	1.596	Sl Disagree

[a]Interpretation Model: 1.00-1.80=Strongly Disagree; 1.81-2.64=Moderately Disagree; 2.65-3.48=Slightly (Sl) Disagree; 3.49-4.32=Slightly (Sl) Agree; 4.33-5.16=Moderately (Mod) Agree; 5.17-6.00=Strongly Agree.

medication error (M=4.20; slightly agree) and when medication errors occur, nursing administration focuses on the individual rather than looking at the systems as a potential cause of the error (M=4.12; slightly agree) were the top two items in the subscale. The participants moderately disagreed that disagreement with definition (M=2.02) and slightly disagreed that reporting effort (M=2.84) and fear (M=2.79) were the perceived factors why MAEs were not reported.

Percent of Actual Errors Reported: In this study, medication administration errors were defined as errors related to the actual ingestion, injection or application of individual medication doses (e.g., wrong method of administration, wrong patient, wrong additive).

More than half of the participants (181/307; 58.96%) reported actual errors between 0% and 20%. Another 18.89% (58/307) reported actual errors between 81% and 100%. The results may also suggest that at most, 79% of actual errors that were committed were not reported.

DISCUSSION

Administrative Response: In this study, administrative response was collectively perceived by the participants as a factor why MAEs were not reported. These findings were supported by the same results [3, 17]. In the current study, blaming and focusing on individuals rather than looking at systems as the potential cause of errors were identified where MAEs were not likely to be reported. A study supporting the current findings suggests that focusing on poor work and wrong or unacceptable behaviors of subordinates exemplify an aversive style of leadership. Aversive leadership style was found out to result in negative behavior from subordinates [18]. In another study, it was found out that perceived negative responses on errors that were committed were more likely to be associated with defensive changes. This contributes to non-reporting of errors because nurses tend to resort to escape-avoidance behaviors [19]. In a symposium held in 2005, insufficient support for a non-punitive culture for error reporting and error-prone situation corrections were identified as administration's contributions to the barriers to safe medication administration [20]. Another survey revealed that the non-punitive response to error scored low among the respondents [21] suggesting that the staff feel being blamed for mistakes that were committed.

Lambert (2004) stated that "a culture of blame is counterproductive and is likely to drive errors underground, leading to underreporting or covering up of errors" [22]. Suggestions were made for shifting the error reporting procedure to less punitive paradigm that increased the error reporting rate and reduced the incidence of errors [23]. Another study showed that there was an increased willingness of nurses to report errors when they perceived that their environments are supportive [24].

The administration in this setting may need to reassess their position in MAE reporting in order to find mutually beneficial and effective means of resolving the issue of non-reporting from among the staff nurses and administration. This should benefit the organization, the clients and community being served at large.

Fear Factor: The participants in this study may not have collectively perceived fear as a factor why MAEs were not reported in this setting. The non consideration of fear as a factor why MAEs were not reported in this setting was in contrast with the results from various studies that identified and considered fear as a major factor why MAEs were not reported [2-8, 10, 12-15]. According to the findings in another study [17], when fear dominates a person's perspective, there is an increased likelihood that medication errors will not be reported. Another study explained that fear results when there is low psychological acceptance which was associated further with lower work engagement especially on jobs that were demanding [25]. Further studies may be needed in order to explore the underlying reasons why nurses in this setting do not consider fear as a factor why MAEs were not reported despite only reporting an average of about 20%-40% of actual errors that were committed.

Reporting Effort: Reporting effort was not collectively perceived as a barrier in reporting MAEs. Nurses were more likely to submit MAE reports when time is short [26]. The error reporting procedure in this setting may not be a burden to the nurses. Yet, there is a need to explore further why all MAEs that were committed were not reported in this setting.

Disagreement over Error: The results suggest that nurses in this setting know the hospital's definition of medication error, recognize when error occurred, has clear definition of what medication error is and knows the importance of reporting medication administration error.

Percent of Actual Errors Reported: Numerical count was not established in this study since the instrument that was used only asked for the percentage of actual errors

committed that were reported. More than half of the nurses (N=18l; 59%) reported between 0% and 20% actual errors that were committed. Based on the average range of 21% to 40%, actual errors committed and reported may range from 2 to 4 out of the 10 possible errors that were committed. This indicated that there was under reporting of actual errors committed in this setting. The failure to report of at most 79% of MAEs in the current study is high.

In one of the reviews, MAEs were reported between 14.9% and 74.7% with a computed average of 38.8% in nine of the studies that were reviewed [27]. Medication administration errors that were reported from 16 other studies [28] were between 1.50% and 74.49% with a computed average of 5.88% and with various reasons why those errors occurred. These reports suggest that the current setting is similar with the other settings in terms of the high percentage of unreported medication administration errors.

The results of the current study and other studies cited suggest that under-reporting of medication errors is prevalent and a cause for concern. The task of improving the quality of health care services particularly in safe administration of medications will remain unresolved if under- reporting of actual medication errors continue. The administration and nurses in this setting need to take a deeper look on the underlying reasons why MAEs continue to occur and under-reported.

CONCLUSION

Various factors explain why MAEs were not reported not only in the current study but in different settings as well. Not reporting MAEs is a complicated issue that involves nurses' paradigm, leadership style and organizational culture as evidenced in this study. Further studies are needed in order to understand and find out what really are the underlying reasons why MAEs are not reported not only in this setting but in other healthcare organizations as well.. Nurses should bear in mind that they are personally accountable to whatever is the outcome of their decisions and actions. A "non-blaming, non-punitive" environment should facilitate the development of more acceptable quality and safety outcomes as advanced by various proponents of patient safety.

Solutions and strategies may be needed to be formulated and implemented on a per institution basis since diverse factors appear to influence why MAEs are

not reported. Best practices from other institutions may be of value in shaping an institution's initiatives towards MAEs.

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REFERENCES

1. Burke, K.G., 2005. Executive summary: The state of the science on safe medication administration symposium. American Journal of Nursing, Supplement, pp: 4-9.

2. Hartnell, N., N. MacKinnon, I. Sketris and M. Fleming, 2012. Identifying, understanding and overcoming barriers to medication error reporting in hospitals: A focus group study. BMJ Quality & Safety, 21: 361-368. doi:10.1136/bmjqs-2011-000299.

3. Petrova, E., D. Baldacchino and M. Camilleri, 2009. Nurses' perceptions of medication errors in Malta. Nursing Standard, 24(33): 41-48.

4. Chiang, H.Y., S.Y. Lin, S.C. Hsu and S. Ma, 2009. Factors determining hospital nurses' failures in reporting medication errors in Taiwan. Nursing Outlook, 58: 17-25. doi: 10.1016/j.outlook.2009.06.001.

5. Chiang, H.Y. and G.A. Pepper, 2006. Barriers to nurses' reporting of medication administration errors in Taiwan. Journal of Nursing Scholarship, 38: 392-399. doi:10.1111/j.1547-5069.2006.00133.x/pdf.

6. Fitzgerald, E., D. Cawley and N.J. Rowan, 2011. Irish staff nurses perceptions of clinical incident reporting. International Journal of Nursing and Midwifery, 3: 14-21.

7. Kim, K.S., S. Kwon, J. Kim and S. Cho, 2011. Nurses' perceptions of medication errors and their contributing factors in South Korea. Journal of Nursing Management, 19: 346-353. doi:10.1111/j.1365-2834.2011.01249.x.

8. Moumtzoglou, A., 2010. Factors impeding nurses from reporting adverse events. Journal of Nursing Management, 18: 542-547.

9. Covell, C.L. and J.A. Ritchie, 2009. Nurses' responses to medication errors: Suggestions for the development of organizational strategies to improve reporting. Journal of Nursing Care Quality, 24: 287-297. doi:10.1097/NCQ.0b013e3181a4d506.

10. Mrayyan, M., K. Shishani and I. Al-Faour, 2007. Rate, causes and reporting of medication errors in Jordan: Nurses' perspectives. Journal of Nursing Management, 15: 659-670. doi:10.1111/j.1365-2834.2007.00724.x.

11. Potylycki, M.J., S.R. Kimmel, M. Ritter, T. Capuano, L. Gross, K. Riegel-Gross and A. Panik, 2006. Nonpunitive medication error reporting: 3-year findings from one hospital's primum non nocere initiative. Journal of Nursing Administration, 36: 370-376.

12. Stratton, K.M., M.A. Blegen, G. Pepper and T. Vaughn, 2004. Reporting of medication errors by pediatric nurses. Journal of Pediatric Nursing, 19: 385-392. doi:10.1016/j.pedn.2004.11.007.

13. Sarvadikar, A., G. Prescott and D. Williams, 2010. Attitudes to reporting medication error among differing healthcare professionals. European Journal of Clinical Pharmacology, 66: 843-853. doi:10.1007/s00228-010-0838-x.

14. Ulanimo, V.M., C. O'Leary-Kelly and P.M. Connolly, 2006. Nurses' perceptions of causes of medication errors and barriers to reporting. Journal of Nursing Care Quality, 22: 28-33.

15. Mayo, A.M. and D. Duncan, 2004. Nurse perceptions of medical errors: What we need to know for patient safety. Journal of Nursing Care Quality, 19: 209-217.

16. Wakefield, B.J., T. Uden-Holman and D.S. Wakefield, 2005. Development and validation of the Medication Administration Error Reporting Survey. In K. Henriksen, J.B. Battles, E.S. Marks and D.I. Lewin (eds). Advances in Patient Safety: From Research to Implementation (Vol 4: Programs, Tools and Products). Rockville (MD): Agency for Healthcare Research and Quality, pp: 475-489.

17. Patrician, P.A. and L.R. Brosch, 2009. Medication error reporting and the work environment in a military setting. Journal of Nursing Care Quality, 24: 277-286.

18. Yun, S., J. Cox, H.P. Sims Jr. and S. Salam, 2007. Leaders and teamwork: The effects of leadership and job satisfaction on team citizenship. International Journal of Leadership Studies, 2: 171-193.

19. Karga, M., P. Kiekkas, D. Aretha and C. Lemonidou, 2011. Changes in nursing practice: Associations with responses to and coping with errors. Journal of Clinical Nursing, 20: 3246-3255. doi: 10.1111/j.1365-2702.2011.03772.x.

20. Lewis, L., 2005. Discussion & recommendations: Safe medication administration. American Journal of Nursing, Supplement, pp: 42-47.

21. Bahrami, M.A., R. Montazeralfaraj, M. Chalak, A.D. Tafti, A. Tehrani and S.E. Ardakani, 2013. Patient safety culture challenges: Survey results of Iranian Educational Hospitals. Middle-East Journal of Scientific Research, 14(5): 641-649.

22. Scott-Cawiezell, J., A. Vogelsmeier, C. McKenney, M. Rantz, L. Hicks and D. Zellmer,2006. Moving from a culture of blame to a culture of safety in the nursing home setting. Nursing Forum, 41(3): 133-140.

23. Ross, L.M., J. Wallace and J.Y. Paton, 2000. Medication errors in a paediatric teaching hospital in the UK: Five years operational experience. Archives of Disease in Childhood, 83: 492-497.

24. Throckmorton, T. and J. Etchegaray, 2007. Factors affecting incident reporting by Registered Nurses: The relationship of perceptions of the environment for reporting errors, knowledge of the nursing practice act and demographics on intent to report errors. Journal of PeriAnesthesia Nursing, 22: 400.412. doi: 10:1016/j.jopan.2007.09.006.

25. Matthew, D., T. Clark and N.J. Loxton, 2012. Fear, psychological acceptance, job demands and employee work engagement: An integrative moderated mediation model. Personality and Individual Differences, 52: 893-897.

26. Fukuda, H., Y. Imanaka, M. Hirose and K. Hayashida, 2010. Impact of system-level activities and reporting design on the number of incident reports for patient safety. Quality Safe Health Care, 19: 122-127. doi:10.1136/qshc.2008.027532.

27. McBride-Henry, K., 2006. Medication administration errors: Understanding the issues. Australian Journal of Advanced Nursing, 23(3): 33-41.

28. Lisby, M., L.P. Nielsen, B. Brock and J. Mainz, 2010. How are medication errors defined? A systematic literature review of definitions and characteristics. International Journal for Quality in Health Care, 22 (6): 507-518. doi: 10.1093/intqhc/mzq059.