Sudan Journal of Medical Sciences
Volume 15, Issue no. 4, DOI 10.18502/sjms.v15i4.8167
Production and Hosting by Knowledge E

Knowledge E
enriching | engaging | empowering

Research Article

Errors and Near-miss Errors Encountered By Nursing Students in Clinical Settings in Governmental Universities, Khartoum State (2018)

Sahar Ahmed[1], Mohamed Toum[2], Samah Abdalla[3], and Montahaa Mohammed[4]

[1]Assistant Professor of Medical Nursing, Faculty of Nursing Sciences, University of Khartoum
[2]Professor of Surgery, Faculty of Medicine, University of Khartoum
[3]Assistant Professor of Medical Nursing, Faculty of Nursing Sciences, University of Khartoum
[4]Assistant Professor of Medical Nursing, Faculty of Nursing Sciences, University of Khartoum

Corresponding Author:
Sahar Ahmed;
email: sahar88@uofk.edu
sa262697@gmail.com

Received 2 November 2020
Accepted 16 December 2020
Published 31 December 2020

Production and Hosting by Knowledge E

© Sahar Ahmed et al. This article is distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use and redistribution provided that the original author and source are credited.

Editor-in-Chief:
Prof. Mohammad A. M. Ibnouf

Abstract

Background: Identifying and analyzing the occurrence and sort of student clinical errors which will allow for early detection of problems and offer chance for system evaluation and improvement. This study intended to explain the types of errors along with near-miss errors encountered by nursing students in clinical settings.

Methods: This descriptive cross-sectional study was conducted at five recognized governmental universities in Khartoum State and included 470 nursing students in their fourth year (2017–2018)who met the selection criteria of the study. A full-converge sampling method was used and data were first collected by the researcher using published self-administered survey and then analyzed.

Results: Initially, the study included 519 nursing students but only 470 of them responded(at a rate of 90.5%).The responses showed that while one-third of them, that is, 162(34.5%) students, had never encountered an error, 99(21.1%), 79 (16.8%), 71 (15.1%), 46(9.8%), and 13(2.8%) of them encountered errors with respect to needle stick, medical administration, omission of treatment, and wrong treatment, respectively. Regarding the near-miss errors encountered by the respondents, almost half, that is, 202(43%)of them had never encountered a near-miss errors, while 112(23.8%), 106(22.6%), 18(3.8%),17(3.6%), and 15(3.2%) of them encountered near-miss errors with respect to medication administration, omission of treatment, wrong patient, providing wrong treatment and others such as improper bedrail used, did not follow sterile precautions respectively.

Conclusion: This study concluded that errors and near-miss errors exist and that awareness on clinical errors and near-misses need to be raised and strategies be developed for error management.

Keywords: errors, near-miss errors, nursing students, clinical setting, nursing errors

OPEN ACCESS

1. Introduction

A near-miss error is defined as “an error that has the potential to cause an adverse event (patient harm) but fails to do so because of chance or because it is intercepted.”The Institute of Medicine(IOM) also defines a near-miss as “an act of commission or omission that could have harmed the patient but did not cause harm as a result of chance, prevention or mitigation” [1].

Many factors that contribute to the development of a near-miss have been identified; these include individual factors, system factors, and chaotic environments [2].

Adverse events are defined as the harm, whether transient or permanent, caused by medical interventions relatively to the core situation of the patient[3].

Moreover, the cost of preventable medication errors in the United States(US) is on average $20 million. It has been reported that 672,000 patients are injured and98,000 die due to preventable medication errors each year. In addition, the European Medicines Agency has reported that the estimated annual cost of preventable medication errors in European countries varies between 4.5 and21.8 billion euro. In developed countries, the World Health Organization (WHO) has emphasized that one in every ten patients is injured because of errors or adverse events during their hospital process[4].

Concerning nursing, the common reply to student error has been some type of punishment, vary from a verbal warning to abrupt release or dismiss. This environment of shame and blame remains widespread. Also, several faculty members accept that individual self-vigilance is what matters most and that if an error or a near-miss occurs, the student is at a mistake; if the fact of student errors becomes open knowledge, clinical organization may be unwilling to have students in their facilities [5].

Education in nursing schools is expected to be up-to-date and of high quality, which should be done by ensuring that the new novice nurses are able to offer safe patient care in a variety of clinical settings[6].

Nursing students are one of the primarily responsible bodies for their effective implementation of skills and perception of students is an significant factor in determining types of errors in clinical settings.

In Sudan, due to the lack of awareness about errors and near-miss errors and the absence of patient safety reporting systems, no published statistics on the topic were available. Upon checking with hospital faculties, the researchers found that no tool was available for the nurse students to repot errors or near-miss errors. Therefore, this study was carried out to clarify the types of errors and near-miss errors encountered by nursing students in clinical settings.

2. Materials and Methods

To find out the types of errors and near-miss errors encountered by nursing students in clinical settings, an exploratory cross-sectional study was conducted using a published self-administered survey[6]and including470 nursing students in their fourth year (2017–2018)who met the selection criteria of the study. It is a full-coverage sample.

3. Results

In this descriptive survey, a total of 519 of nursing students were included from five governmental universities located in Khartoum state. Of these, 49 did not take part in the survey by either refusing to participation or submitting largely incomplete questionnaires. This resulted in a final sample size of 470 students with a response rate of 90.5%.

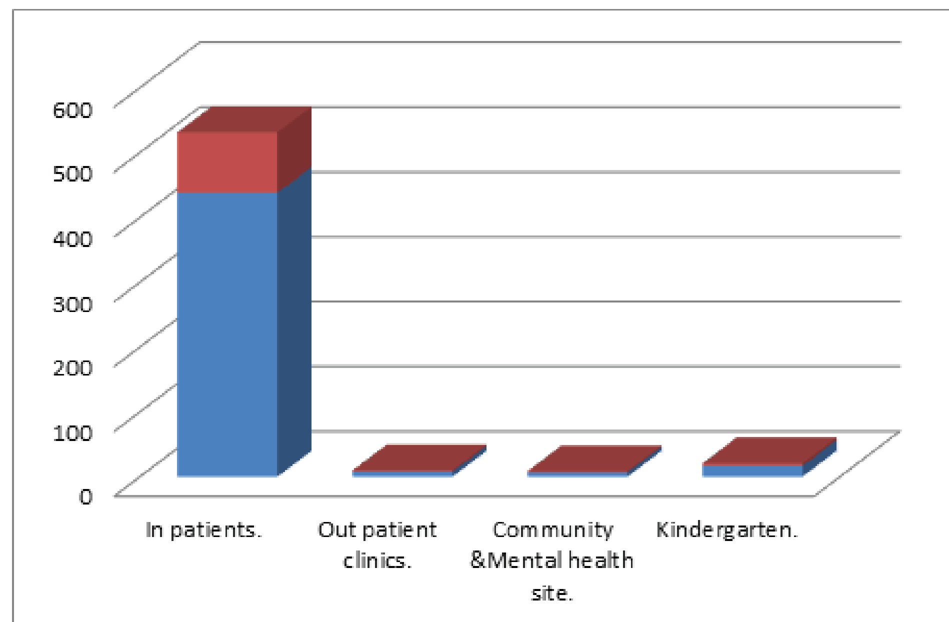

Figure 1: Types of clinical settings in which students are taught (*n*=470).

As shown in Figure 1, among the 470 respondents, inpatients' setting was the most frequently ticked response for the clinical teaching site at 93.2%.

Regarding the errors encountered by the respondents,162(34.5%) of them had never encountered an error, while 99(21.1%), 79 (16.8%), 71 (15.1%), 46(9.8%), and 13(2.8%) encountered others errors such as did dressing inappropriately, wrong procedure in order to remove urinary catheter, used tap water for oxygen humidification, shared oxygen mask and suction catheters, followed by medication administration by79 (16.8%), needle stick by 71 (15.1%),, omission of treatment by 46(9.8%), and wrong treatment 13(2.8%),as presented in Figure 2.

With regards to the near-miss errors encountered by the respondents,202(43%) of them had never encountered a near-miss errors, while 112(23.8%), 106(22.6) , 18(3.8),17(3.6), and 15(3.2) encountered others near-miss errors such as improper bedrail used, did not follow sterile precautions, used some equipment inappropriately, chemotherapy spilled, gave the patient wrong information about nutrition, followed by medication administration by 112(23.8%), omitted a treatment by106(22.6), wrong patient by18(3.8), and a wrong treatment given by15(3.2) ,as shown in Figure 3.

DOI 10.18502/sjms.v15i4.8167

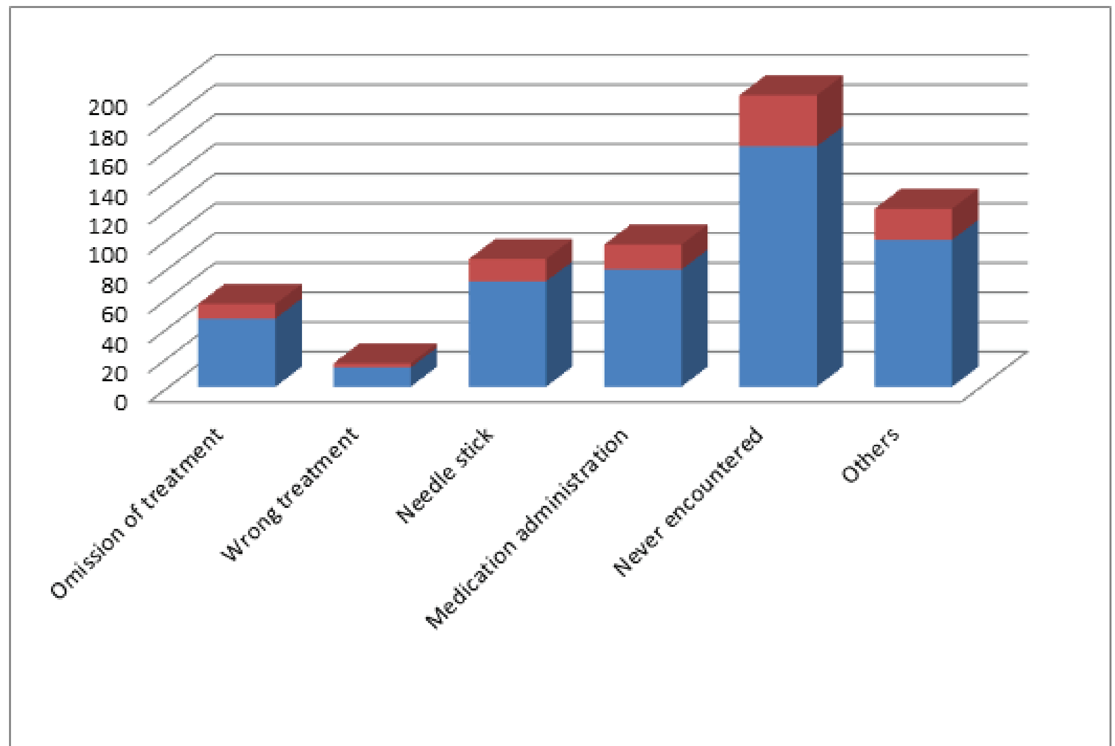

Figure 2: Types of errors encountered by respondents (*n*=470).

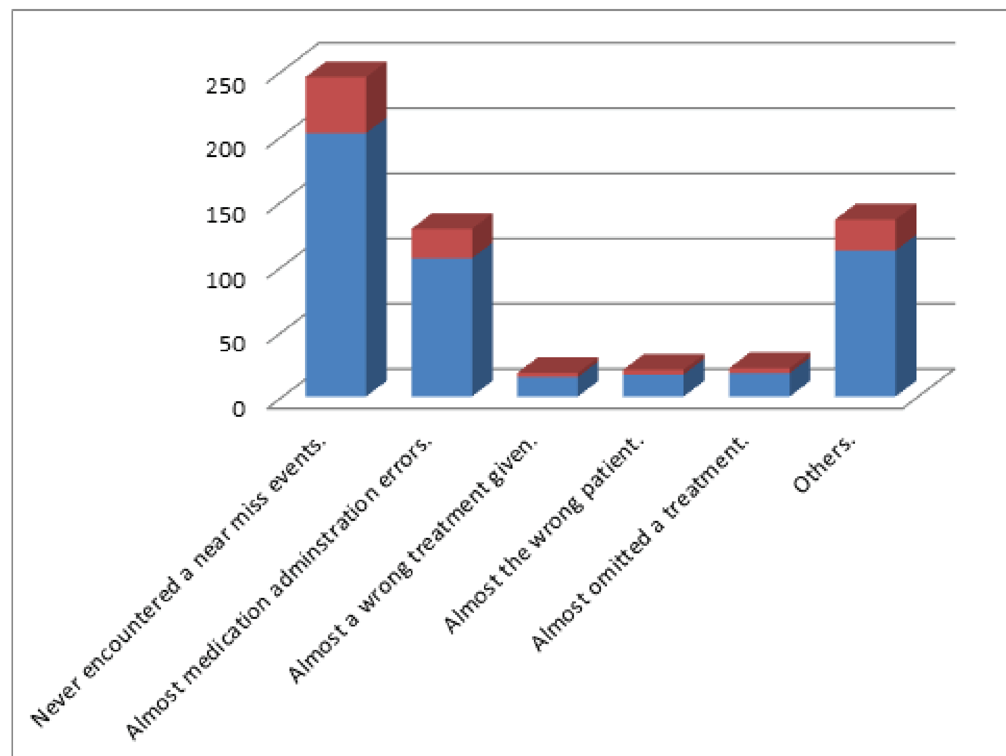

Figure 3: Near-miss events encountered by respondents (*n*=470).

4. Discussion

The code of ethics in nursing obligate nurses to provide safe, competent, and ethical care. This study describes the types of errors and near-miss errors encountered by fourth-year nursing students in clinical settings.

The results of this study demonstrated that of the 470 students included, 162(34.5%) had never encountered errors, while 99(21.1%) of them encountered errors such as did dressing inappropriately, tried to remove the urinary catheter without aspirating the amount of water used for fixation, used tap water for oxygen humidification, shared oxygen mask and suction catheters were, followed by medication administration by79 (16.8%).

This is comparable with the study conducted in San Franciscoincluding121 prelicensure nursing students, in which the greater part of the subjects replied not at all encountering an error. However, for the students who had been exposed to an error, medication administration was the most frequent type followed by wrong treatment provided to the patient, omission of treatment, and needle stick[6].The annual cost of preventable medication errors is staggering, with a reported $10.3 billion price tag for avoidable healthcare spending [10].

Interestingly, 38 systematic reviews focused on the barriers to reporting medication errors and near-misses in nursing revealed that organizational barriers such as culture, the reporting system, and management behavior in addition to personal and professional barriers such as fear, accountability, and characteristics of nurses are the most common barriers to reporting medication errors [11].

Nursing students often meet strangers while in their clinical site, having to organize and handle patient care in a complex environment. Indeed, developing an innovative pharmacology and medication administration will better prepare the nursing students for practice and to enter the workforce, capable of offering quality care, as well as acquiring critical thinking skills related to pharmacology and safe medication administration[8].

The present study also confirmed needle stick injuries (NSIs) in71 (15.1%) participants. This is in line with a study conducted in Jordan including162 students from different levels which reported that the two-thirds of the student nurses practiced NSIs.

Nursing students must be well-informed to distinguish the severity of such incidences and thus be qualified to avoid unintentional exposure while performing their nursing duties. Also, continuous in-service training must be integrated into the curriculum and workplace on a regular basis, particularly when there are innovations and changes made on the prickly instruments [9].

Besides, regarding the near-miss errors encountered by the respondents,202(43%) of them had never encountered a near-miss error, while 112(23.8%) reported near-miss errors such as improper bedrail used, did not follow sterile precautions, inappropriate use of some equipment, chemotherapy spilled, gave the patient wrong information about nutrition, followed by medication administration most of the time. This is in-line with a study conducted in San Francisco that reported that a greater part of nursing students did not encounter a near-miss event, and those who did, a near-miss or medication error event led the list[6].

It is important that the clinical nurse and instructors focus on safe medication administration practice in order to build a culture of safe and quality patient care. Also, we need to incorporate tools to report near-miss errors in order to put forward a process to identify potential adverse events before they occur.

In addition to voluntary disclosure of near-misses, it may also help improve students' outcome and increase transparency.

However, it is necessary to develop a non-blaming, non-punitive, and non-fearful learning culture at unit and organizational level [11].

5. Limitations

The main limitation of this study is that it included only upper-level students (fourth year). It would be more interesting to compare the different levels of nursing students. Moreover the lack of literature in national settings for comparing the results of the study should be considered and this study is hoped to be an input to this regard.

6. Conclusion

This study concluded that errors and near-miss errors exist in clinical settings and explains the importance of a classroom and clinical instructions regarding safe, appropriate care, and strategies for error management, The main challenge associated with nursing education is developing an educational framework with an emphasis on innovation and the encouragement of an open safe culture in which students can learn from their mistakes. Also, awareness on clinical errors and near-misses need to be raised and strategies for error management be developed.

Acknowledgements

The authors are very indebted to the dean of faculties of nursing sciences for the nice cooperation and to the nursing students participated in this study.

Ethical considerations

The study was approved by the Dean of Faculties of Nursing Sciences. Prior to starting the study, subjects were clearly informed about the goal of the study and a written consent was obtained from them. Also, permission was sought through email for the use of published questionnaire from the author.

Competing interests

The authors declare that there is no conflict of interests regarding the publication of this paper.

Availability of data and material

The data used in the study are available upon reasonable request.

Funding

There was no fund .

References

[1] Sheikhtaheri, A. (2014). Near misses and their importance for improving patient safety. *Iranian Journal of Public Health*, vol. 43, no. 6, pp. 853–854.

[2] Linnard-Palmer, L. and Ngo, T. (2015). Near misses: nurses' experiences with medication errors, power distance and error recover. *Clinical Nursing Studies*, vol. 4, no. 1, p. 40.

[3] Martinez, W., Lehmann, L. S., Hu, Y.-Y., et al. (2017). Processes for identifying and reviewing adverse events and near misses at an academic medical center. *Joint Commission Journal on Quality and Patient Safety*, vol. 43, no. 1, pp. 5–15.

[4] Gök, D. and Sarı, H. Y. (2017). Reporting of medication errors by pediatric nurses. *Journal of Nursing Education and Practice*, vol. 7, no. 9, p. 25.

[5] Disch, J., Barnsteiner, J., Connor, S., et al. (2017). CE: original research exploring how nursing schools handle student errors and near misses. *American Journal of Nursing*, vol. 117, no. 10, pp. 24–31.

[6] Cooper, E. E. (2017). Nursing students' perception of safety in clinical settings: from the quality and safety officer. *Nursing Education and Practice*, vol. 7, no. 10, pp. 91–96.

[7] WHO. (2017).*Patient Safety: Making Health Care Safer*, pp. 20–24. Geneva: WHO. Available from: https://creativecommons.org/licenses/by-nc-sa/3.0/igo

[8] Johnson, K. F. (2016). *US nursing students' perceptions of safe medication administration*[PhD thesis], pp. 192–16.USA:Walden University.Available from: http://scholarworks.waldenu.edu/dissertations [accessed December 8, 2017].

[9] Nawafleh, H. A., El Abozead, S., Al Momani, M. M., et al. (2017). Investigating needle stick injuries: incidence, knowledge and perception among South Jordanian nursing students. *Journal of Nursing Education and Practice*, vol. 8, no. 4, p. 59.

[10] Claffey, C. (2018). Near-miss medication errors provide a wake-up call. *Nursing*, vol. 48, no. 1, pp. 53–55.

[11] Vrbnjak, D., Denieffe, S., O'Gorman, C., et al. (2016). Barriers to reporting medication errors and near misses among nurses: a systematic review. *International Journal of Nursing Studies*, vol. 63, pp. 162–178.