Short Report
2025, 15(2): 73-78
DOI: 10.22038/EBCJ.2025.84653.3073

Received: 18/01/2025
Accept & ePublished: 12/05/2025

Evidence Based Care Journal
http://ebcj.mums.ac.ir
Online ISSN: 2008-370X

Healthcare Professionals' Attitudes Toward Diagnostic Medical Errors and Informing Patients: A Cross Sectional Study

Saeed Biroudian [1], Asal Navaee [2], Hamid Mohammadi Kojidi [3], Zohreh kazempour keleshteri [4], Kourosh Delpasand [5*]

Abstract

Background: Medication errors can cause morbidity and mortality. The reporting system for medication errors can prevent harms to patients.

Aim: The present study was conducted with aim to assess the healthcare professionals' attitudes toward medical errors and informing patients in Guilan province, Iran.

Method: This cross-sectional analytical study was conducted on 140 health care professionals (physicians, Nurses). Data collection tool was a the researcher's checklist consisting of two parts: demographic information and self-reported attitude towards medical errors. Data were analyzed using SPSS (version 21) and Mann–Whitney and Kruskal-Wallis tests. $p<0.05$ was considered statistically significant.

Results: The mean age of participants was 29.19±6.53 years. The Kruskal-Wallis test revealed statistically significant associations between education level ($p=0.001$) and profession ($p=0.001$) and attitudes toward medical errors. Doctors demonstrated the most favorable attitudes toward medical errors followed by medical students and nurses. Conversely, Mann–Whitney test showed no significant correlations between attitudes and gender, marital status, or age ($p>0.05$).

Implications for Practice: Fundamental challenges in healthcare, such as transparency and accountability, require systemic solutions. Addressing these issues demands targeted educational initiatives and policy reforms to foster a culture of safety, where healthcare providers are empowered to learn from errors rather than fear punitive consequences.

Keywords: Attitude, Healthcare Professionals, Medication, Medication Errors, Prescription

1. Assistant Professor of Medical Ethics, Department of Medical Ethics, School of Medicine, Iran University of Medical Sciences, Tehran, Iran
2. Student Research Committee, Faculty of Pharmacy, Guilan University of Medical Sciences, Rasht, Iran
3. Associate Professor of Forensic Medicine, Department of Forensic Medicine, School of Medicine, Social Determinants of Health Research Center, Razi Hospital, Guilan University of Medical Sciences, Rash, Iran
4. Ph.D of Business Administration, Razi Clinical Research Development Unit, Rasht, Iran
5. Associate Professor of Medical Ethics, School of Medicine, Guilan University of Medical Sciences, Rasht, Iran

* Corresponding Author Email: kd388@yahoo.com

Introduction

Patient safety is one of the most critical aspects of healthcare delivery, yet medical errors continue to undermine the security of healthcare systems worldwide (1). Among these, medication errors are particularly prevalent, resulting from improper use of medications during prescribing, dispensing, administering, or monitoring processes. These errors are not only preventable but also carry significant consequences for patients and healthcare systems (2). Globally, medication errors are estimated to cost $42 billion annually, accounting for nearly 1% of global health expenditure. In Iran, the ministry of health and medical education reports that excessive costs are spent annually on extended hospitalizations and additional care caused by such errors (3). A recent meta-analysis in Iran revealed that medication error rates in hospitals range from 25% to 30%, with administration errors being the most common (25.07%) (4). The financial burden of these errors is paralleled by their impact on patient satisfaction and trust, as evidenced by the rising number of complaints filed against healthcare providers. Dispensing errors alone accounted for 2.6% of reported cases in a study conducted in Tehran, with wrong medication being the most frequent type (75.6%) (5). Despite this alarming trend, underreporting remains a significant issue; many errors are unreported due to fear of legal repercussions or cultural stigma. Addressing these challenges requires transparency in reporting and open communication with patients, families, and medical staff to effectively implement targeted interventions (3, 6, 7). Unfortunately, many mistakes are not reported (8, 9). The present study was conducted with aims to investigate healthcare professionals' attitudes toward medical errors and informing patients in Guilan province, Iran, focusing on their willingness to report mistakes and their perceptions of accountability. By identifying barriers to error disclosure and exploring attitudes across professional groups, this research seeks to inform policies that promote a culture of safety and learning within healthcare systems.

Methods

This cross-sectional study was carried out from April 2023 to January 2024 on undergraduate and graduate students at the college of medicine and health sciences (CMHS) of Guilan university of medical sciences (physicians, nurses) in Rasht, Iran. In this study, a convenience sampling approach was used. The healthcare professionals and eligible individuals who declined to participate were excluded. The employees who had spent less than six months in the hospital were also deemed ineligible and consequently excluded. Overall, 140 respondents participated in the study. The information was collected based on the researcher's checklist that its face validity has been confirmed. The questions of the checklist are presented in Table 1.

Table 1. The questions of the researcher-made checklist

Items	Yes N (%)	No N (%)
1. Do you inform the patient about the medical error?	78 (54.9)	64 (45.1)
2. Do you fully inform the patient about the medical error occurred?	31 (21.8)	111 (78.2)
3. Do you hide a medical error if it occurs?	41 (28.9)	101 (71.1)
4. If you encounter a past medical error you made, do you inform the patient?	65 (45.8)	77 (54.2)
5. Do you compensate for a medical error you made?	128 (90.1)	14 (9.9)
6. Do you inform the patient of a colleague's medical error?	38 (26.8)	104 (73.2)
7. If you see another's error and can't refer the patient, do you take action?	116 (81.7)	26 (18.3)
8. If you encounter a past error causing no harm, do you inform the patient?	19 (13.4)	123 (86.6)
9. Do you explain future complications of the medical error to the patient?	96 (67.6)	46 (32.4)
10. Do you consider the psychological and social aspects when informing patient?	127 (89.4)	15 (10.6)

In this questionnaire, for each question, a yes answer is given one point and a no answer is given no points, and the total score was calculated as the awareness score. To ensure the validity, the content validity index (CVI) and content validity ratio (CVR) were used. Regarding CVI, all questions across three sections demonstrated simplicity, clarity, and relevance scores exceeding 0.7, while the CVR for all questions was also above 0.7. To evaluate the scientific reliability of the questionnaire, it was divided into sections and the correlation coefficient was calculated using Cronbach's alpha of 0.8.

Data were analyzed using SPSS (version 21) and descriptive indices, Mann-Whitney and Kruskal-Wallis tests. $p<0.05$ was considered statistically significant.

Ethical Consideration

In all stages of the research, the ethical considerations were adhered and the informed consent was obtained from each participant. This study was approved by the ethics committee of Guilan University of Medical Sciences (ethical code: IR.GUMS.REC.1401.538).

Results

A total of 142 participants included in this study. The demographic variables of the participants is presented in Table 2. The mean age of the participants was 29.19±6.53 years, with a range of 22 to 55 years. The Kruskal-Wallis test revealed statistically significant associations between education level (p=0.001) and profession (p=0.001) and attitudes toward medical errors. Doctors demonstrated the most favorable attitudes toward medical errors, followed by medical students and nurses. Conversely, Mann–Whitney test showed no significant correlations were observed between attitudes and gender, marital status, or age (p>0.05).

In the assessment of participants' attitude toward medical error, the mean scores of participants in various aspects of dealing with medical errors were recorded. Notably, the mean response to the question about informing patients of medical errors was 0.54±0.49, while the willingness to compensate for medical errors had a mean score of 0.90±0.29. The relationship between demographic variables (gender, marital status, age, education, and profession) and attitude toward medical errors were examined.

Table 2: Relationship between demographic variables and attitude toward medical errors

Variable	Frequency	Percentage (%)	*p*-value
Age (years)**			
<30	107	75.4	
30-40	25	17.6	0.05
>40	10	7.0	
Gender*			
Female	95	66.9	0.21
Male	47	33.1	
Marital Status*			
Single	90	63.4	0.21
Married	52	36.6	
Education**			
Bachelor	39	27.5	
Master	3	2.1	0.001
Doctorate	100	70.4	
Profession**			
Medical student	66	46.5	
Nurse	42	29.6	0.001
Physician	34	23.9	

* Mann-Whitney, ** Kruskal-Wallis

Discussion

The purpose of the present study was to assess the healthcare professionals' attitudes toward medical errors and informing patients in Guilan province. This study provides valuable insights into the perceptions and behaviors of healthcare professionals regarding medical errors. The mean age of participants in this study was 29.19 years that lines up with the age ranges reported in other studies, as participant ages often range from 23 to 36 years (10-12). Regarding gender distribution, 66.9% of participants in the current research were female, which is close to the rates reported in previous studies (1,12-14), where female participants proportions range from 40% to 87%. Concerning marital status in this study, 36.6% of individuals were married, aligning with findings from other research that indicate marriage rates range from 28% to 56% (1, 12-14). The current research included variety of professions, medical students (46.5%), nurses (29.6%), and physicians (23.9%), which allows for a comprehensive examination of how different roles within healthcare influence attitudes toward

medical errors.

The present study examined multiple aspects of healthcare professionals' attitudes toward medical errors, uncovering some notable concerns. The average score for disclosing medical errors to patients was relatively low at 0.54, indicating a hesitation or reluctance among professionals to openly report such errors. In contrast, the willingness to offer compensation for errors was notably higher, with a mean score of 0.90. It suggests that while healthcare professionals may acknowledge the importance of accountability, there is a gap between their recognition of responsibility and their willingness to communicate errors to patients, which is reported in literature, where healthcare providers face challenges in error disclosure due to fears of possible consequences. Many physicians are more likely to report errors only when patient harm is evident, minimizing the disclosure of less severe incidents to avoid blame or punishing action. In many healthcare settings, there aren't good ways to report mistakes, which can make this behavior even worse because experts may not report mistakes even when they know how important they are (15).

In the current research, there is no relationship between the age, gender and marital status and the performance of health professionals in the face of medical error and informing the patient, which is in line with the results obtained from other studies (14, 16, 17).

According to the results of the present study, a significant and positive relationship was found between education level and performance of healthcare professionals regarding medical errors. This may be attributed to the improvement of different parameters of professional ethics, experiential learning at the patient's bedside, and an increased understanding of the significance of honesty in error reporting. Prior research confirms this concept (18, 19). However, several studies indicated no significant correlation between an increase of educational status and the disclosure of medical errors, possibly influenced by facing the realities of their profession and the current culture of organization within clinical and healthcare settings (20). In the present study, the higher scores of attitude towards medical errors was among doctors, followed by medical students and nurses, which was in line with Carandang et al. research, in which doctors had more knowledge in this field than nurses (21).

This study has some limitations. It relies on self-reported data, which may not always be accurate. The cross-sectional design of the study makes it difficult to see how attitudes might change over time. In addition, healthcare professionals are willing to take responsibility for medical errors, but many are hesitant to tell patients about these errors.

Implications for practice

Fundamental challenges in healthcare, such as transparency and accountability, require systemic solutions. Addressing these issues demands targeted educational initiatives and policy reforms to foster a culture of safety, where healthcare providers are empowered to learn from errors rather than fear punitive consequences.

Acknowledgments

The authors would like to appreciate the Vice-Chancellor for Research of Guilan University of Medical Sciences for the financial support of the present study.

Conflicts of interest

The authors declared no conflict of interest.

Funding

This study was funded by Guilan University of Medical Sciences.

Authors' Contributions

Kourosh Delpasand designed and supervised the study protocol. Asal Navaee and Hamid Mohammadi Kojidi conducted data interpretation and statistical analysis. Saeed Biroudian and Kourosh Delpasand prepared the manuscript and Asal Navaee and Zohreh kazempour keleshteri collected the data. All authors have read and agreed to the published version of the manuscript.

References

1. Alser M, Böttcher B, Alfaqawi M, Jlambo A, Abuzubaida W, Abu-El-Noor N. Undergraduate medical students' attitudes towards medical errors and patient safety: a multi-center cross-sectional study in the Gaza Strip, Palestine. BMC Medical Education. 2020;20:1-9.
2. Giannetta N, Katigri MR, Azadboni TT, Caruso R, Liquori G, Dionisi S, et al. Knowledge, Attitude, and Behaviour with Regard to Medication Errors in Intravenous Therapy: A Cross-Cultural Pilot Study. Healthcare (Basel). 2023;11(3):436.
3. Pirzadeh A, Kamran A, Hasanzadeh M. The Relationship between Professional Identity, Performance and Attitude to Medical Errors Self-reporting among Medical Students. Journal of Advances in Medical Education & Professionalism. 2023;11(1):61-7.
4. Isfahani P, Bazi A, Alirezaei S, Samani S, Sarani M, Boulagh F, et al. Medication error rates in Iranian hospitals: a meta-analysis. BMC health services research. 2024;24(1):743.doi: 10.1186/s12913-024-11187-6.
5. Karimian Z, Kheirandish M, Javidnikou N, Asghari G, Ahmadizar F, Dinarvand R. Medication Errors Associated With Adverse Drug Reactions in Iran (2015-2017): A P-Method Approach. International journal of health policy and management. 2018;7(12):1090-6.
6. Hodkinson A, Tyler N, Ashcroft DM, Keers RN, Khan K, Phipps D, et al. Preventable medication harm across health care settings: a systematic review and meta-analysis. BMC medicine. 2020;18:1-13.
7. Khan KS, Mustafa G, Samiullah S, Watanpal A. Knowledge, attitude and practice about medication errors reporting system among health care professionals in public hospitals of Pakistan. Asia-Pacific Journal of Pharmacotherapy & Toxicology. 2023; 3: 7-15.
8. Shahmiri Z, Izadi-Avanji FS, Azizi-Fini I, Bahrami A, Atoof F. Assessing the influence of noise levels on medication errors of nurses in a hospital in Kashan, Iran. Health Science Monitor. 2024;3(1):1-10.
9. Brenner MJ, Boothman RC, Rushton CH, Bradford CR, Hickson GB. Honesty and Transparency, Indispensable to the Clinical Mission-Part I: How Tiered Professionalism Interventions Support Teamwork and Prevent Adverse Events. Otolaryngologic clinics of North America. 2022;55(1):43-61.
10. Kiesewetter I, Könings KD, Kager M, Kiesewetter J. Undergraduate medical students' behavioural intentions towards medical errors and how to handle them: a qualitative vignette study. BMJ open. 2018;8(3):e019500.
11. Bottcher B, Abu-El-Noor N, Abuowda Y, Alfaqawi M, Alaloul E, El-Hout S, et al. Attitudes of doctors and nurses to patient safety and errors in medical practice in the Gaza-Strip: a cross-sectional study. BMJ open. 2019;9(8):e026788.
12. Dadgar Moghadam M, Bahonar MJ, Hoseini SS. Level of professional ethics of medical students in externships and internships in Mashhad University of Medical Sciences in 2018. The Iranian Journal of Obstetrics, Gynecology and Infertility. 2021;23(11):15-23.
13. Biranvand S, Valizadeh F, Hosseinabadi R, Safari M. Disclosing medical errors and its relationship to disclosure of actual and hypothetical errors: nursing staff's attitude. Journal of Medical Ethics & History of Medicine. 2014;7(1): 53-64.
14. Ahmadipour H, Mortazavi N. Study of interns and residents viewpoint to medical error disclosure. 2015; 9(31): 11-27.
15. Hamdan AB, Javison S, Alharbi M. Healthcare professionals' culture toward reporting errors in the oncology setting. Cureus. 2023;15(4): e38279.
16. Ghalandarpoor SM, Asghari F, Kaviyani A, Daeemi M. Disclosing medical error: the attitude and practice of surgeons and surgery residents. Iranian Journal of Medical Ethics and History of Medicine. 2011;4(3):61-8.
17. Ebrahimi S, Hemmati Z. Supportive Measures for Medical Error Disclosure from the Viewpoints of Residents in Shiraz University of Medical Sciences. Iranian Journal of Medical Ethics and History of Medicine. 2019;12:361-70.
18. Kohansal Z, Avaznejad N, Bagherian B, Jahanpour F. Evaluation of moral sensitivity in nursing students of Bushehr University of Medical Sciences in 2016. Iranian Journal of Medical Ethics and History of Medicine. 2018;11:242-52.
19. Safarpour H, Tofighi M, Malekyan L, Bazyar J, Varasteh S, Anvary R. Patient safety attitudes, skills, knowledge and barriers related to reporting medical errors by nursing students. International

Journal of Clinical Medicine. 2017;8(1):1-11.
20. Mansour R, Ammar K, Al-Tabba A, Arawi T, Mansour A, Al-Hussaini M. Disclosure of medical errors: physicians' knowledge, attitudes and practices (KAP) in an oncology center. BMC medical ethics. 2020;21:1-8.
21. Carandang RR, Resuello D, Hocson GB, Respicio KM, Reynoso C. Research article knowledge, attitude and practices on medication error reporting among health practitioners from hospitals in Manila. Scholars Academic Journal of Pharmacy (SAJP) 2015b. 2015;4(5):293-300..