International Journal of
Medical Toxicology & Forensic Medicine
Winter 2022, Volume 12, Number 1

# Research Paper: Knowledge and Attitude of the Faculty Members and Residents of Guilan University Towards Medical Errors, Barriers, and Predisposing Factors

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**Citation** Farzi F, Soltanipour S, Sedighinejad A, Mirmansouri A, Naderi Nabi B, Delpasand K. Research Paper: Knowledge and Attitude of the Faculty Members and Residents of Guilan University Towards Medical Errors, Barriers, and Predisposing Factors. International Journal of Medical Toxicology and Forensic Medicine. 2022; 12(1):35824. https://doi.org/10.32598/ijmtfm.v12i1.35824

https://doi.org/10.32598/ijmtfm.v12i1.35824



**Article info:**
**Received:** 18 Aug 2021
**First Revision:** 30 Aug 2021
**Accepted:** 23 Sep 2021
**Published:** 15 Nov 2021

**Keywords:**
Knowledge, Attitude, Medical Faculty, Medical Errors

## ABSTRACT

**Background:** Patient safety is among the main goals in a health system. Medical errors are considered a significant threat to patient safety. An effective strategy to reduce this risk is reporting these errors even when the patient is not affected. This study investigated the main barriers to reporting medical errors and related factors.

**Methods:** This cross-sectional descriptive study was conducted in academic hospitals afflicted with Guilan University of Medical Sciences (GUMS) in 2020. University faculty members and residents enrolled in the survey, and a questionnaire was filled out via a face-to-face interview by the responsible resident of anesthesiology.

**Results:** Overall, 366 individuals, 156 faculty members, and 210 residents completed the questionnaires. Overall, 271 (74.2%), 134 (85.9%) faculty members, and 137 (65.6%) residents, the main barrier to report medical errors was concerning legal consequences. Furthermore, the other important factors were concerning losing job credit (63.4%) and losing the patient's trust (61.2%). Moreover, the main predisposing factors of medical errors were high workload and a large number of patients (83.3%), long work shifts, and physicians fatigue (80.8%). High job stress and the lack of feeling of support from higher authorities (70.5%), and the lack of adequate equipment and appropriate medical facilities (56%) were the most related factors based on their perspective.

**Conclusion:** According to the obtained findings, the main barrier to reporting medical errors was legal consequences. Moreover, the main predisposing factors were high workload, many patients, long working shifts, and physicians' fatigue. Attempts should be made to plan programs to improve the current conditions.

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## 1. Introduction

Despite recently increasing attention focused on patient safety, Medical Errors (MEs) frequently occur, but they are not documented or reported most of the time. Studies indicated that MEs are rarely reported [1]. Indeed MEs are a significant threat to patients' safety and a significant challenge that healthcare providers face worldwide [2]. Numerous individuals are victims of MEs in all countries [3]. It is estimated that MEs are the third cause of death in the USA [4]. Studies indicated that the frequency of claims against physicians has recently increased; however, the natural causes are unclear. Despite this raise, the medical team largely underreported MEs [5-7]. The medical team needs help with proper communication, disclosure, and transparency of MEs when searching the literature. In the current medical curriculum, the medical reporting process and its importance are not addressed, and unfortunately, the MEs disclosure process has not been practiced among health care institutions. The accurate rate of MEs remains unknown in Iran; it is estimated higher than in developed countries, particularly in the medication field [1, 8].

To improve the current conditions, understanding the knowledge and attitude of the medical team towards the issue is the fundamental step. The causes, predisposing factors, types, and rate of MEs, and the barriers to reporting them are not similar among different areas. Therefore, some similar studies' findings could not be generalized, and planning studies for each hospital seem crucial. To the best of our knowledge, no study was performed in Guilan providence investigating the knowledge and attitude of medical faculty members of all fields and their residents towards medical errors disclosure barriers and predisposing factors.

This study aimed to investigate the knowledge and attitude in Guilan faculty and residents towards medical errors, the barriers, and predisposing factors.

## 2. Materials and Methods

Initially, the study protocol was approved by the Research Committee of Ethics of GUMS, and the ethical code was IR.GUMS.REC.1399.271.This descriptive, cross-sectional study was conducted at academic hospitals affiliated with GUMS. Informed consent was obtained after a complete explanation of the aim of this research to the medical faculty from all fields and their residents and the required information. The sample size was not determined since all faculty members and residents were interviewed in this study. Then, a researcher-made questionnaire containing questions divided into two parts of demographic data and items assessing the barriers to report MEs and the predisposing factors of the occurrence of these errors was filled out by a responsible anesthesiology resident via a face-to-face interview. Content Validity Index (CVI) and Content Validity Ratio (CVR) were measured to evaluate the validity of the content of the questionnaire items used. For this purpose, the questionnaire was provided to 10 faculty members and 5 residents. The CVR index for all items was more than 49% (the minimum value with the average CVI for all items was above 79%). None of the panel members described the questionnaire items as irrelevant and needed serious review. The data were analyzed by SPSS software using Binomial and Chi-Square tests at a significance level of $P< 0.05$.

## 3. Results

Of the 525 available subjects, 366 completed the questionnaires; therefore, we responded to 68%. The personal and social characteristics of the faculty members and residents who participated in the survey are presented in Table 1. Of them, 156 (42.6%) were attending, and 210 (57.4%) residents, the main barrier to not reporting MEs was concerned about the legal consequences. Still, the legal issue was significantly more reported by faculty than residents (P=0.001). Moreover, concerning about losing job credentials in the hospital (63.4%) and fear of losing patient trust in physicians (61.2%), fear of improper reaction after the medical error is reported (57.1%), and the lack of knowledge on how to report MEs correctly (58.5%) were the other important factors. (Table 2 & Figure 1).

The main predisposing factors were high workload and numerous patients (83.3%), long work shifts, and physicians fatigue (80.8%). Besides, high job stress, lack of support from higher authorities (70.5%), and lack of adequate equipment and appropriate medical facilities (56%) were the most related factors based on their perspective. The lack of an accurate inspection system to detect MEs was significantly more reported by faculty members than residents (P=0.001). There was no significant difference among the individuals' answers in terms of gender. Surgeons (92.9%), cardiologists (82.1%), anesthesiologists (85.2%), and obstetricians (86.4%) mostly were agreed that having high job stress and lack of feeling of support from higher authorities was the reason for not reporting medical errors. (Table 3 & Figure 2).

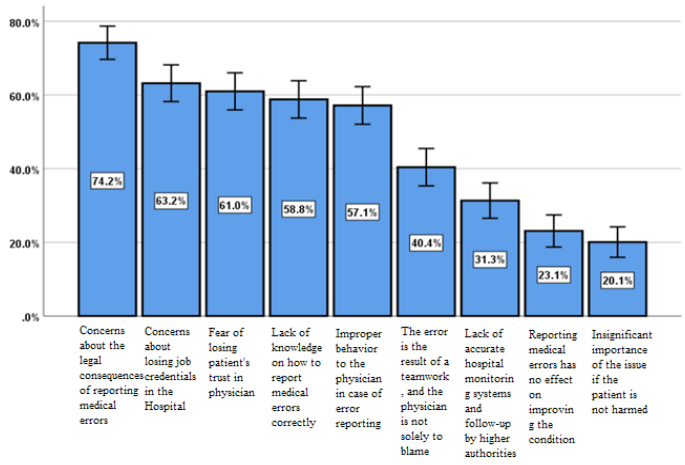
**Table 1.** Demographic and social characteristics of the faculty members and residents

| Characteristic | | No.(%) |
|---|---|---|
| Scientific degree | Faculty member | 156(42.6) |
| | Residents | 210(57.4) |
| | Total | 366(100) |
| Gender | Male | 213(58.2) |
| | Female | 153(41.8) |
| | Total | 366(100) |
| Specialized medical disciplines | Emergency Medicine | 10(2.7) |
| | Pediatrics | 36(9.8) |
| | Neurosurgery | 16(4.4) |
| | Poisoning | 2(0.5) |
| | Infectious Disease | 4(1.1) |
| | Dermatology | 10(2.7) |
| | Radiologist | 16(4.4) |
| | Surgery | 28(7.7) |
| | ENT | 16(4.4) |
| | Psychiatry | 24(6.6) |
| | Ophthalmologist | 15(4.1) |
| | Internal Medicine | 56(15.3) |
| | Urology | 14(3.8) |
| | Neurology | 15(4.1) |
| | Obstetrics and Gynecology | 22(6.0) |
| | Orthopedics | 27(7.4) |
| | Anesthesiology | 27(7.4) |
| | Cardiology | 28(7.7) |
| | Total | 366(100) |
| work experience (Mean±SD) | 6.16±6.23 (1-34) | |

International Journal of
Medical Toxicology & Forensic Medicine

## 4. Discussion

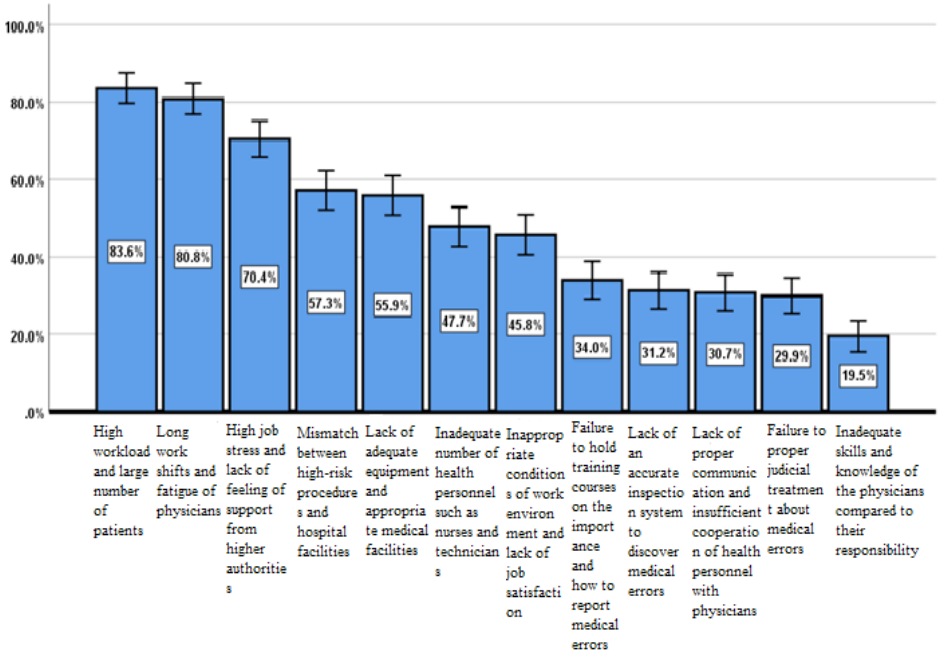
According to the collected results, 525 physicians were interviewed, and 366 completed the questionnaire. Thus, a response rate of 68% was achieved. Among them, 156 (42.6%) attended and 210 (57.4%) residents. Physicians from all fields participant in the survey. Overall, concern about legal consequences was 74.2% was the main barrier to disclose MEs, followed by concerns about losing job credentials in the hospital 63.4% and fear of losing patient trust 61.2%.




International Journal of
Medical Toxicology & Forensic Medicine

**Figure 1.** Prioritizing the reasons for not reporting medical errors in Rasht Hospitals based on the frequency of opinions of faculty members and medical assistants working at Guilan University of Medical Sciences

In contrast, the minor importance of the issue if the patient is not harmed had a minor agreement. However, when evaluating the results separately by attending and residents, faculty members reported significantly more legal issues than residents (P=0.001). The primary legal responsibility is attending, although residents perform the majority of medical affairs, especially on duty. In terms of the predisposing factors for MEs occurrence, overall high workload and a large number of patients, 83.3% were the main factor, followed by long work shifts and doctors' burn out 80.8% and high degrees of stress and anxiety, and the lack of feeling of support from higher authority's 70.5%. However, the lack of an accurate inspection system to detect MEs was significantly more reported by faculty members than residents. It could be due to their more years of experience facing these systems. Long working shifts, unsuitable environmental conditions, and job dissatisfaction were reported significantly




International Journal of
Medical Toxicology & Forensic Medicine

**Figure 2.** Prioritizing the underlying factors of medical errors in Rasht teaching hospitals based on the frequency of opinions of faculty members and medical assistants working at Guilan University of Medical Sciences

**Table 2.** Comparing the frequency of faculty members' and residents' answers about the reasons for not reporting medical errors

| Reasons | Scientific Degree | No.(%) | | P |
|---|---|---|---|---|
| | | Faculty Members | Residents | |
| Lack of knowledge on how to report medical errors correctly | Disagreed | 73(46.8) | 79(37.6) | 0.078 |
| | Agreed | 83(53.2) | 131(62.4) | |
| Concerns about the legal consequences of reporting medical errors | Disagreed | 22(14.1) | 72(34.4) | 0.001 |
| | Agreed | 134(85.9) | 137(65.6) | |
| Concerns about losing job credentials in the Hospital | Disagreed | 48(30.8) | 86(41.0) | 0.046 |
| | Agreed | 108(69.2) | 124(59.0) | |
| Fear of losing patient trust in physician | Disagreed | 60(38.5) | 82(39.0) | 0.909 |
| | Agreed | 96(61.5) | 128(61.0) | |
| Insignificant importance of the issue if the patient is not harmed | Disagreed | 122(78.2) | 171(81.4) | 0.445 |
| | Agreed | 34(21.8) | 39(18.6) | |
| Lack of accurate hospital monitoring systems and follow-up by higher authorities | Disagreed | 93(60.0) | 158(75.2) | 0.002 |
| | Agreed | 62(40.0) | 52(24.8) | |
| The error is the result of teamwork, and the physician is not solely to blame | Disagreed | 93(59.6) | 124(59.0) | 0.913 |
| | Agreed | 63(40.4) | 86(41.0) | |
| Improper behavior to the physician in case of error reporting | Disagreed | 70(44.9) | 87(41.4) | 0.510 |
| | Agreed | 86(55.1) | 123(58.6) | |
| Reporting medical errors does not affect improving the condition | Disagreed | 116(74.4) | 166(79.0) | 0.291 |
| | Agreed | 40(25.6) | 44(21.0) | |

International Journal of
Medical Toxicology & Forensic Medicine

more by residents. Considering that the main workload and patient exposures in academic hospitals are on residents, it was quite predictable. Moreover, it should be noted that faculty members have job stability.

Physicians with more experience believed that legal consequences were the main barrier to reporting MEs. The contradiction of high-risk procedures with hospital facilities is markedly more highlighted among orthopedics departments. Considering that most of their procedures are dependent on the instruments, it was expectable. Following, we review some similar studies from different areas. Alsafi et al. from Saudi Arabia reported that their physicians did not feel necessary to report MEs when the patient was not affected. 56.4% of their participants believed that reporting MEs lead to positive consequences, but they did not have any strategies or guidance to improve the conditions. One-Third of them reported that punitive actions against them were the main barrier to reporting MEs [9].

Compared to our research that 74.2% of our physicians reported that fear of legal consequences was the main barrier, it was markedly lower. It might be due to the accuracy of answers or more robust superior supporting systems. Afolau et al. from Nigeria reported that lack of confidentiality was the main barrier to disclosing MEs. They declared that their protection from litigation was strongly needed [10]. Askarian et al. investigated the prevalence of non-reporting MEs in an academic tertiary in Shiraz. They interviewed 283 faculty members, nurses, and medical students regarding the main barriers

**Table 3.** Comparing the frequency of faculty members' and residents' answers about the predisposing factors of medical errors

| Factors of Medical Errors | Scientific Degree | No(%) | | P |
|---|---|---|---|---|
| | | Faculty Member | Assistant | |
| The mismatch between high-risk procedures and hospital facilities | Disagreed | 50(37.3) | 68(44.7) | 0.203 |
| | Agreed | 84(62.7) | 84(55.3) | |
| High workload and large number of patients | Disagreed | 23(17.2) | 22(14.5) | 0.533 |
| | Agreed | 111(82.8) | 130(85.5) | |
| Lack of an accurate inspection system to discover medical errors | Disagreed | 75(56.0) | 112(73.7) | 0.002 |
| | Agreed | 59(44.0) | 40(26.3) | |
| Long work shifts and fatigue of physicians | Disagreed | 34(25.6) | 20(13.2) | 0.008 |
| | Agreed | 99(74.4) | 132(86.8) | |
| Failure to hold training courses on the importance and how to report medical errors | Disagreed | 82(61.2) | 95(62.5) | 0.820 |
| | Agreed | 52(38.8) | 57(37.5) | |
| Inadequate skills and knowledge of the physicians compared to their responsibility | Disagreed | 94(70.1) | 127(83.6) | 0.007 |
| | Agreed | 40(29.9) | 25(16.4) | |
| Inadequate number of health personnel such as nurses and technicians | Disagreed | 65(48.5) | 82(53.9) | 0.358 |
| | Agreed | 69(51.5) | 70(46.1) | |
| Lack of adequate equipment and appropriate medical facilities | Disagreed | 55(41.0) | 68(44.7) | 0.529 |
| | Agreed | 79(59.0) | 84(55.3) | |
| Failure to proper judicial treatment about medical errors | Disagreed | 89(66.4) | 103(67.8) | 0.809 |
| | Agreed | 45(33.6) | 49(32.2) | |
| Inappropriate conditions of work environment and lack of job satisfaction | Disagreed | 88(65.7) | 76(50.0) | 0.007 |
| | Agreed | 46(34.3) | 76(50.0) | |
| Lack of proper communication and insufficient cooperation of health personnel with physicians | Disagreed | 100(74.6) | 99(65.1) | 0.082 |
| | Agreed | 34(25.4) | 53(34.9) | |
| High job stress and lack of feeling of support from higher authorities | Disagreed | 46(34.3) | 39(25.7) | 0.109 |
| | Agreed | 88(65.7) | 113(74.3) | |
| Total | | 134(100.0) | 152(100.0) | - |

International Journal of Medical Toxicology & Forensic Medicine

to reporting MEs. The top barriers mentioned by faculty members were the fear of revealing a colleague's identity, worrying about malpractice lawsuits, and an ineffective MEs disclosure system. Issues most often reported by nurses and medical students were fear of being criticized by supervisors and colleagues or supervisors [11]. Vaziri et al., in a systemic review, investigated the prevalence of MEs in Iran. They found that nursing students and nursing staff were the most frequently involved group. Academic hospitals and intensive care wards were the most frequent centers and wards. Medication error was the most common type of MEs [12]. Mendonca et al. from Brazil found that the main preventive factor of MEs disclosure was the uncertainty of confidentiality. They also

reported that workload and poor communication among the medical team were the main predisposing factors [1]. Doshmangir et al. reported that the medical team did not feel secure and environmental factors were the main predisposing factors of MEs occurrence [13]. Tawfic et al. from the US, in a large national study, found that doctors' fatigue and burnout were associated with significant MEs [14]. In another study by Hewitt et al. in the US, it was reported that surgical residents' poor well-being and not proper psychiatric conditions were positively associated with more documented MEs; however, patient outcomes were not objectively affected [15].

Searching the literature shows that the concern about legal consequences and loss of credit in the hospital were the main barriers to reporting MEs. Health care providers must acknowledge that MEs reporting results in patients' safety. Society must provide a suitable environment that physicians feel safe to report MEs. They should believe that MEs disclosure is an opportunity to provide safer conditions. MEs should not be judged solely due to physician failure, and the whole health system is involved.

## 5. Conclusion

Practical programming can be planned based on this comprehensive research and awareness of the main barriers to reporting MEs and predisposing factors.

**Limitations:** This study provided valuable information regarding MEs status in Guilan academic hospitals; however, we acknowledge some limitations. Firstly, private sectors were not evaluated. Second, due to the face-to-face interviews, many physicians were disabled and refused to precipitant or might not give the answers they believed in.

## Ethical Considerations

### Compliance with ethical guidelines

The study protocol was approved by the Research Ethics Committee of the Guilan University (Code: IR.GUMS.REC.1399.271).

### Funding

This research did not receive any grant from funding agencies in the public, commercial, or non-profit sectors.

### Author's contributions

All authors equally contributed to preparing this article.

### Conflict of interest

The authors declared no conflict of interest.

### Acknowledgements

The authors would like to thank Anesthesiology Research Center members Mohadese Ahmadi and Mahin Tayefeh Ashrafie for their collaboration in this study.

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