

Original Article

Factors Affecting the Attitudes of Health Care Professionals toward Medical Errors in a Public Hospital in Turkey

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Abstract

Background: Previous studies have shown that the incidence of patient impairment and preventable death due to medical errors is inadmissibly high.

Aim: This study primarily aims to determine the attitudes of health professionals in a public hospital towards medical errors and related factors.

Methodology: This study was designed as a descriptive and cross-sectional study and the sample included 652 healthcare employees in a public hospital in Turkey. The study data were collected with a Sociodemographic and Working Characteristics Questionnaire Form and Medical Errors Attitude Scale. The data were analyzed with descriptive statistics and multiple regression analysis.

Results: The participants' perception of medical error was found to be negative, and some variables were defined as effective (lack of knowledge, administrative approach that supports learning from mistakes, higher numbers of patients, longer working hours, age, medical error education, and educational status.), in the ratio of 25%, for explaining attitudes towards medical error.

Conclusion: That managers at all levels and health care professionals should be encouraged to participate in education programs, which should also be included in school curricula as well as in-service training programs to be conducted in health institutions. Research and development studies are recommended to be based on a scientific methodology in order to improve patient safety in health institutions.

Keywords: Nursing, medical error, attitudes towards medical errors

Introduction

Ensuring patient safety and preventing medical errors are key elements of quality health care. For medical institutions to provide appropriate health services, it is necessary to fulfill these key requirements; processes that are necessary for patient safety should be applied accurately, without errors, and in accordance with

institutional procedures (Sen, Er&Sevil, 2009). The complex combination of processes, technologies, and human interactions that constitutes the modern healthcare delivery system can offer significant benefits. Healthcare interventions are intended to benefit patients, but they can also cause harm (Sen, Er&Sevil, 2009; World Health Organization, 2002). Medical

errors resulting in injury (adverse events) might result in prolonged hospitalization, the emergence of disability after discharge, or death. The increased hospital costs alone of preventable adverse drug events affecting inpatients are about \$2 billion for the nation as a whole (Kohn, Corrigan & Donaldson, 2000).

Background

According to the literature on frequently encountered medical errors throughout the world medical errors occur in 5–15% of all hospital admissions (WHO, 2008). The frequency of encountering medical errors (making the error or witnessing the error) ranged from 20% to 69% in Turkey (Astı & Kivanc, 2003; Cebeci, Karazeybek & Sucu, 2010; Filiz, 2008; Gunes, Gurlek & Sonmez, 2014; Tansuyer, 2010; Turkish Medical Association, 2010). However, errors occurring in hospitals were observed to be reported inadequately or not reported at all (Akin, Sen, Dogan, 2010; Cakir & Tutuncu, 2009; Cebeci, Karazeybek & Sucu, 2010; Gunes, Gurlek & Sonmez, 2014; Hajibabae et al., 2014; Liu et al., 2013; Parish, 2003; Tansuyer, 2010; Yilmaz, 2009). In Turkey, error reporting rates are quite lower (Filiz, 2009; Karaca & Arslan, 2014). According to Istanbul et al.'s (2012) study, 62% of health care professionals stated that they did not report the medical events they encountered. A study by Martowirono et al. (2012) showed that participants had negative attitudes concerning reporting because of the absence of a culture that encourages them to do so. A safety culture reflects the shared beliefs, perceptions, value and attitudes of professionals towards safety (The Health Foundation, 2011). Accordingly, it is necessary to examine patient safety within the context of perception, attitudes, and behaviors (Tak, 2010). An attitude study by Jaykare et al. (2013) in their study at a rural tertiary care teaching hospital in India demonstrated that most healthcare professionals (doctor, nurse and pharmacist) considered drug errors to be an important and preventable problem, and saw errors as a crime. In Hand and Barber's (2000) study, most nurses stated that they held themselves responsible for errors. In the same study, it was stated that errors injurious to the patient and having serious side effects need to be reported. It was found that there was

difference of opinion on the explanation of errors to the patients when they are not injurious. In Chakravarty's study (2013), attitudes of participants towards adverse events were examined, and fear of punishment was emphasized as an obstacle to reporting. Moreover, Sarvadikar et al. (2010) stated that healthcare professionals exhibit varying attitudes towards reporting. In order to increase reporting and enhance patient safety, primary evaluation of health care professionals' attitudes toward medical errors and improvement of strategies (e.g. technical or behavioral intervention) for this were emphasized (Gulec & SerenIntepeler, 2013; The Health Foundation, 2011; Tak, 2010).

The aim of this study is to determine the attitudes of healthcare professionals in a public hospital toward medical errors and factors affecting them.

Research Questions

1. What are the attitudes of healthcare professionals in a public hospital toward medical errors?
2. Do the sociodemographic and working characteristics of health care professionals affect their attitudes toward medical errors?

Methodology

Design and sample

This descriptive and cross-sectional study was conducted in a public hospital in Izmir with a capacity of 1,100 beds between December 2013 and March 2014. A total of 38 reports were filed in the last six months (December 2013 and March 2014) on the institution's reporting system. Among the errors that had been reported, 26 were related to falls 68.4% (fall in hospital corridor and fall beds), 11 had to do with surgical safety 29% (about the physical conditions of the environment such as temperature) and one report involved drug safety 2.6% (sending the wrong medicine from the pharmacy). During this period, no reports about transfusion safety, laboratory services, or inappropriate products were filed.

The population of the study consisted of all nurses, health officers/public health personnel/dialysis technicians, midwives, and emergency medical technicians who worked in a public hospital (n=741). 71 nurses were excluded

from the study sample due to annual leaves and sick leaves, medical problems and other problems. The questionnaire was handed out to 670 nurses and 18 nurses refused to participate in the study. The study sample therefore contained 652 nurses. The sample convenience was 88%. Among the employees, 91.9% were women, 44.9% were bachelors degrees, and 81.7% were nurses. The average duration of employment was 15.8 (± 9.1) years and the average working duration at the hospital was 9.5 (± 7.7) years. Among the employees, 20.9% worked on surgical units, 50% did day/night shift work, 62.3% worked for 41 hours or more per week, and 53.4% had not received training about medical errors.

Medical doctors weren't included in the study sample since nurses in management services who were also working in patient services unit already participated in the study.

Data collection tools

In this study, the "Sociodemographic and Working Characteristics Questionnaire Form" and the "Medical Errors Attitude Scale (MEAS)" were used as data collection tools. On the Sociodemographic and Working Characteristics Questionnaire Form, there were 10 questions on the topics of sociodemographic and working characteristics and level of education about medical errors. The Medical Errors Attitude Scale was developed by Gülec and SerenIntepeler (2013); it is a 16-item Likert-type scale that consists of three sub-dimensions, namely the perception of medical errors, the approach to medical errors and causes of medical errors.

Responses were given in the following form: 1=completely disagree, 2=disagree, 3=undecided, 4=agree, and 5=completely agree. The total scale score ranged between 16 and 80. Two items on the scale (the 10th and 13th items) were scored reversely. The scale score was calculated by dividing the raw score by the number of items. Employees who received below 3 points on average from the scale were evaluated as having negative attitudes, while who received a score of 3 or more points were seen as having positive attitudes.

A negative attitude means that awareness of the employee concerning medical errors and

reporting of errors is low, whereas positive attitude means that the employee's awareness concerning medical errors and the reporting of errors is high. The scoring and evaluation specified for the overall scale was also accepted to be the same for all sub-dimensions of the scale. The Cronbach's alpha reliability coefficient of the MEAS has been reported as .75; in this study, it was found to be .66.

Data analysis

Data were evaluated through coding SPSS 16.0 Packet Software (SPSS Inc., Chicago, Illinois). Results for each item and sub-dimension on the scale were calculated as numbers, percentages, and arithmetic averages. The effects of variables on attitudes toward medical error were evaluated through multiple regression analysis. The study data were analyzed with regression analysis since there was one dependent variable and multiple independent variables in the study. The study data were further analyzed with ANOVA and Tukey's Additivity Test to investigate the additivity of the scale and the significance of the participant answers. It was finally concluded that the scale was additive and there was no significant difference between scale scores. The least squares method was used to estimate parameters in linear regression analysis. However, prior to linear regression analysis, the data were analyzed with correlation test in order to look into the correlations between dependent variables and independent variables as well as correlations between multiple independent variables. Certain variables such as age, years spent in professional service, years spent in the current institution, years spent in the current unit weren't included in the study model since they were not totally independent from each other. The significance of the model was tested with ANOVA and T test and it was found significant. Three items of the scale (number 7, 9, and 11) were found to include the most commonly accentuated variables in recent literature and they were incorporated into the model. The statistical significance value was specified as $<.05$ in all tests.

Research ethics

Written permission was received from the Dokuz Eylul University Non-Interventional Research

Ethics Board (Date: 23/02/2012, No. 2012/06-02) and from the public hospital in which the study was conducted.

Results

Employees' attitudes toward medical error

Lower scale point averages regarding employees' attitudes toward medical errors were as follows: "the perception of medical errors" was substantially lower than the medium level (2.89, $SD=.75$), while "the approach to medical errors" (3.81, $SD=.42$) and "causes of medical errors" were higher than the medium level (3.82, $SD=.42$). The total medical error attitude score of the employees was found to be higher than the medium level, at 3.70 ($SD=.32$). The employees' perception of medical error was found to be negative, whereas their attitudes in the measurements of approach to medical errors, causes of medical errors, and general attitude were found to be positive (Table 1).

Distribution of responses regarding sub-dimensions of the attitude scale related to medical errors is shown in Table 2. Tables 2 were evaluated through agreement status, as the sum of responses of "agree" and "completely agree," while disagreement was determined through the sum of responses of "disagree" and "completely disagree. When the distribution of the responses regarding medical error perception was examined, only 9% of the employees agreed with the statement "The person who committed the medical error is not guilty," whereas 65.8% agreed with the statement, "Understanding should be shown in case of medical error." When

the responses given to the items that included the lower dimensions of approach to medical errors were examined from the special one, 42% agreed with the statement, "If the medical error was prevented before it happened, there is no need to report it"; and 8.2% agreed with the statement, "I avoid reporting the medical errors I committed." Among employees, 46.3% responded "I'm uncertain" to the item, "Committed errors should be explained to the patient/patient's relative." This was the item that received the most "uncertainty" responses among the scale items. When the answers given to the clauses regarding sub-dimensions of the causes of medical errors were examined. 33.7% agreed with the statement, "Medical errors arise from the lack of communication of the person who committed the error". This item except employees mostly agreed with all items (Table 2).

Factors affecting attitudes toward medical errors

As a result of the analysis regarding the attitudes to medical errors of the participants, seven variables remained in the regression model. These explained 25%. The most significant variables were lack of knowledge, administrative approach that supports learning from mistakes, higher numbers of patients, longer working hours, age, medical error education, and educational status, in that order. Only from this variables age and medical error education negatively influenced the attitudes toward medical errors (Table 3).

Table 1. Employees' attitudes toward medical error

Subdimension	X	SD	Median	min	max
the perception of medical errors	2.89	.75	3.00	1	5
the approach to medical errors	3.81	.42	3.85	2.14	5
causes of medical errors	3.82	.42	3.85	2.14	5
medical error attitude (total)	3.70	.32	3.68	2.44	4.69

Table 2. Distribution of responses regarding sub-dimensions of the attitude scale related to medical errors (n=652)

	items	agree		uncertainty		disagree	
		n	%	n	%	n	%
perception of medical errors	1. The person who committed the medical error is not guilty	59	9	113	17.3	480	73.6
	2. Understanding should be shown in case of medical error	429	65.8	119	18.3	104	16
approach to medical errors	3. Medical errors and their causes should be openly discussed with the employees	629	96.5	8	1.2	15	3.3
	8. I'm of the opinion that all committed errors should be reported	561	86	59	9	32	5
	10. I avoid reporting the medical errors I committed	54	8.2	79	12.1	519	79.6
	11. Institute administrators should display an approach that supports learning from mistakes	528	80.9	50	7.7	74	11.3
	12. Committed medical errors and their causes should be discussed between administrators	625	95.9	13	2.0	14	2.2
	13. If the medical error was prevented before it happened, there is no need to report it	274	42	135	20.7	243	37.2
	14. Committed errors should be explained to the patient/patient's relative	176	27	302	46.3	174	26.7
causes of medical errors	4. Medical errors arise from the lack of communication of the person who committed the error	220	33.7	166	25.5	266	40.8
	5. Medical errors arise from system defects	385	59.1	147	22.5	120	18.4
	6. Medical errors arise from the lack of knowledge of the person who committed the error	383	58.7	137	21.0	132	20.3
	7. A higher number of patients under care increases the number of medical errors	613	94	15	2.3	24	3.7
	9. Longer daily working hours increase the number of medical errors	621	95.2	19	2.9	12	1.8
	15. Most of the committed medical errors actually arise from preventable conditions	500	76.7	105	16.1	47	7.3
	16. Reporting medical errors increases patient safety	562	86.2	52	8	38	5.8

Table 3. Factors affecting attitudes toward medical errors

	B	Standart Error	Standart Beta (β)	t	p
Constant	51.938	1.589	...	32.677	.000
Lack of knowledge	2.768	.364	.262	7.605	.000
An administrative approach that supports learning from mistakes	3.365	.458	.254	7.346	.000
High numbers of patients	3.505	.773	.160	4.536	.000
Long working hours	3.158	.856	.129	3.689	.000
Age	-.072	.023	-.112	-3.181	.002
Medical error education	-.976	.361	-.094	-2.704	.007
Educational status	.327	.222	.051	1.474	.141

R=0.498 R²=0.248 F= 30.349 p= 0.000 DW=1.880

Discussion

Employees' attitudes toward medical errors

In this study, although employees' attitudes toward medical error are generally considered as positive, the number of reported errors was low in the institution where the study was conducted.

The result indicates that although the employees' attitudes toward medical errors were positive, the anticipated behavior did not take place, which means that errors were not reported sufficiently.

The scale used in this study hasn't been previously used in another study. Therefore, discussion chapter was extended so as to compare the sub dimensions of the scale and items in these sub dimensions with the results of different scales used in relevant studies.

It was determined in Yılmaz's (2009) study that 25.1% of cases were reported, although the overall error rate was 20.8% and the rate of witnessing an error was 60.1%. This situation might be correlated to an underdeveloped culture of patient safety in Turkey. When lower-scale medical error point averages of employees were analyzed, the lowest averages were found in the

medical error perception sub-dimension. Responses indicating a belief that the committed error is the fault of the committing person were common, and the view that understanding should be shown when an error is committed demonstrated that the expected perception did not develop. The results of several other studies in the literature similarly indicate that the person committing the error was held responsible and punished (Filiz, 2009; Hashemi, Nikbakht & Asghari, 2012). Among participants of the study, 42% thought that near errors should be reported.

Haw et al. (2014) stated that nurses are not yet fully convinced of the necessity of reporting all errors and near errors. Almost half of the participants stated that they experienced indecision about explaining the error to the patient/patient's relatives.

In Bodur et al.'s (2012) study, it was stated that participants did not want to explain the error in cases where the medical error was noticed and corrected quickly or had no potential to harm the patient.

In Flotta et al.'s (2012) study, doctors stated that they experienced indecision about explaining the committed error to the patient.

According to the literature, ethical follow-up in the case of a medical error involves, first, giving the patient a sufficient explanation about the error, then apologizing for the error and compensating him or her if possible (Crigger, 2004). In this study, employees were reluctant to explain the error to the patient/patient's relatives, since they thought that the patient/patient's relatives would not be sympathetic towards them and might have problems understanding the explanation, as well as because they wanted to avoid legal processes.

The results of this study demonstrated that employees are able to define the causes of medical error correctly and consistently with the literature and the results of other studies, and are aware of the causes of error, but cannot change its effects in practice. This situation indicates that errors are mostly due to institutional and operational system insufficiencies, and that individuals cannot have an influence on the system even if they are aware of the causes of error.

Factors affecting the attitude toward medical errors

The most important variables affecting these attitudes were the lack of knowledge of employees (Table 2). Similarly, in other studies, lack of knowledge was found to be related to medical errors (Ehsani et al., 2013; Gunes, Gurlek & Sonmez, 2014; Lan, 2014; Johnson & Thomas, 2013; Tansuyer, 2010). The fact that some events were reported on the reporting system as medical errors even though they were not medical errors in the hospital where the study was conducted shows that employees cannot distinguish medical errors.

In addition, the paucity of reports indicates employees' lack of knowledge about the reporting system, including its usage and necessity. Coyle et al. (2005) emphasized a positive correlation between participation in education programs on case reporting and attitudes and perceptions regarding such case reporting.

This study's contribution involves its characterization of employees' attitudes before applying initiatives regarding patient safety and medical errors in health institutions. It can be concluded that employees have positive attitudes to approaching medical errors and the causes of medical errors, but negative attitudes related to medical error perception. The variables were determined to be effective in 25% of medical error attitudes. Researchers in future studies might be advised to examine variables such as awareness of the error, which can affect attitudes toward medical errors, legal dimensions regarding errors, workloads, patient/nurse ratios, error reporting ratios, and administrator and colleague support.

Limitations

It was demonstrated in this study that variables could effectively account for 25% of medical error attitudes, which eventually suggested that variables that influenced medical error attitude were related to other reliable rather than sociodemographic characteristics of the nurses and workplace conditions. It may be concluded that the further studies might yield different results with new variables concerning systematic approaches and management approaches to medical errors.

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