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Investigation of medical error attitudes of faculty of health sciences students

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ABSTRACT

Objective: The research was conducted with the aim of examining faculty of health sciences students' medical error attitudes.

Method: The research was conducted as descriptive study. Total of 580 students studying at health sciences faculty of a university in 4-29 March 2019 and informed consent was obtained. Data were collected using the 'Medical Error Attitude Scale'.

Result: Students' mean age participating in the research was 20.7, 74.8% of them were women. 70.2% of the students specified that they did not take lessons on medical errors, and 65.3% stated that they did not take course on patient safety. 42.1% of the participants stated that they witnessed medical errors, and 12.9% stated that they made a medical error in the clinical setting. In the comparison made between Emergency and Disaster Management, Nursing and Dietetics Departments' students, a statistically significant difference was found between the medical error attitudes approach and total scale score means, and no statistically significant difference was found in the perception and reason sub-scale.

Conclusion: It can be said that the majority of the students of the faculty of health sciences did not take courses on patient safety and medical error, however it was found that the medical error attitudes of health sciences students were positive. Providing medical error and patient safety training in the curriculum of health sciences students and creating a knowledge base will increase students' awareness on this issue.

Key Words: Health Sciences, Medical Errors, Patient Safety, Student.

1. INTRODUCTION

Medical error is defined as unfavorable and unpredictable anticipated results in healthcare (1). Patient safety pertains to the actions taken by healthcare intuitions and their personnel to avert the negative impacts arising from healthcare procedures on individuals, forming an essential and fundamental prerequisite for proficient healthcare provision. The objective of ensuring patient safety is to establish an environment that fosters beneficial physical and psychological effects, thereby safeguarding the well-being of patients, their families, and hospital staff.

The fundamental objective is to establish a comprehensive framework aimed at preempting errors throughout the service delivery process, shielding patients from potential harm arising from such errors, and eradicating the potential for errors to occur (2,3). Medical errors, a principal contributor to mortality and injury within hospital settings, represent an inevitable facet of the healthcare system. Existing literature underscores that medical errors impact between 3% to 16% of hospitalized

patients, of which 30-70% are deemed preventable (4). Despite the recognition of medical error rates amongst healthcare practitioners, investigations pertaining to the involvement of students in this realm remain scarce. Health science students, in their clinical undertakings, engage with patients under the guidance of clinicians, thereby exposing them to instances of committing or observing medical errors. Notably, medical errors are prevalent among health science students; however, their reporting remains notably deficient (5). The available limited studies on this topic suggest that an estimated 25-40% of errors go unreported (5,6,7).

Based on a study conducted within the Turkish context, it was revealed that 38.3% of student respondents acknowledged involvement in at least one medical error during their clinical practice; however, the vast majority, encompassing 98.1%, did not lead to harm for the patient (6). A parallel investigation carried out in Italy exhibited a comparable trend, with 28.8% of students having either directly participated in or observed a medical error or adverse event (7). Further exploration into this realm showed that 30% of participating nursing students were responsible for at least one error in the clinical setting, with an average frequency of 1.98 drug-related errors per student (8). Subsequent studies by Cebeci et al. (2015) (6) demonstrated that 61.4% of nursing students disclosed their errors, while Noland (2014) (7) reported a 72.4% disclosure rate among nursing students in the United States, and Koohestani and Baghcheghi (2009) (8) found a 75.8% disclosure rate of medication errors among students in Iran.

Preparing the healthcare workforce to deliver safer care is a worldwide imperative. This is only possible by preparing and changing the training curricula according to patient safety (9). As posited by the investigation conducted by Mansour in 2012, education occupies a significant role within the realm of furnishing secure and high-caliber healthcare services (10). Substantiated by the inquiry undertaken by Latimer and colleagues, an observation is made that a substantial body of evidence implies inadequacies within numerous undergraduate curricula, as they fail to sufficiently impart to students the multifaceted elements underpinning medication errors and viable methodologies for their prevention (11). Given the paramount significance attributed to the delivery of safe care within contemporary healthcare establishments, it is imperative that students emerge from their educational journey equipped with a comprehensive comprehension of medical errors and patient safety (12).In the training of health professionals, providing medical error and patient safety training and establishing the knowledge base will also contribute to the clinical application areas within the scope of skill preparation. This training will help health care professionals trained in patient safety and medical errors, who will carry the workforce of the future, and will also reduce the burden of today's complex care environments (10-12).

The training given at the faculties of health sciences in general covers the technical knowledge and skills required in clinical practice. However, significant interest is not paid to required skills, attitudes and behaviors for students to provide a safe health service to their patients (13). Establishing students' patient safety information and ensuring the continuation of their education throughout the entire student life should be the basis of the curriculum. Teaching patient safety skills and gaining behaviors should be started as soon as the student starts their education, as soon as they step into the clinic or during the first health service delivery (12). Because while more importance is given to the scale of knowledge and skill development during education, positive behaviors related to patient safety remain after graduation (14).

Perspectives on patient safety and medical errors vary in institutional and theoretical settings. Cooperation should be made between the organizations providing health services and the institutions providing education for patient safety, and cooperation should be made with academic and

clinical staff who will be role models for students (13). It is an important problem for many countries to ensure that students adapt to complex health care services and develop positive attitudes towards patient safety and medical errors in institutions/ hospitals for their training (15). It is estimated that understanding attitudes of students towards medical errors will contribute to taking measures to be developed to prevent medical errors. Every education made for students who receive health education about medical errors is vital importance in future health care services. The questions of this research, which is thought to be a guide for health science educators and administrators about the curriculum, are listed below:

Is there a difference between the medical error attitudes of students studying in departments of health sciences faculty?

Is there a difference between male and female students' the medical error attitudes?

Is there a difference between the medical error attitudes of students who had the patient safety lesson and those who did not?

MATERIALS AND METHODS

Type of Research

This cross-sectional descriptive study was conducted with the students of Emergency and Disaster Management, Nursing and Nutrition-Dietetics Departments' in the Faculty of Health Sciences of a government university. Research data was collected in the spring semester of 2018-2019 academic year.

Sample of the Research

The research was conducted between 4-29 March 2019 at Faculty of Health Sciences of a government university. The research data were formed by the forms filled by 587 Nursing Department, 659 Emergency and Disaster Department (EDM) and 61 Nutrition and Dietetics Department students. In the study, it was tried to reach the entire sample group, so the sample calculation was not made.

The answers of 580 students who accepted to participate in the study and filled out the data collection forms completely formed the data of the research. The participation rate to the research is 44.37%.

Data Collection Forms

The research data collected with "Descriptive Information and Educational Conditions Form" prepared by researchers and "Medical Errors Attitude Scale (MEAS)" developed by Güleç and Seren İntepeler (2013) (16).

Descriptive Information and Educational Conditions Form: As a result of the literature review (6-8, 10-12), eight questions were prepared by the researchers to examine the students' age, gender, class, patient safety and medical errors.

Medical Errors Attitude Scale (MEAS): MEAS is developed by Güleç and İntepeler (2013) (16), is a five -point Likert type consisting of 16 questions. Written permission was obtained for the use of the scale.

The scale includes of three sub-scales: medical error perception, medical error approach and medical error causes. The cut-off point of the scale was determined as 3. The medical error attitudes of the employees with an mean score of less than 3 on the scale are evaluated as negative, and the medical error attitudes of the employees with a score of 3 and above are considered positive. Negative attitude means that employees are less aware of medical errors and the importance of error reporting. Positive attitude shows that employees are aware of medical errors and the importance of error reporting. The Cronbach α reliability coefficient of the original scale is .75 for the whole scale (16). In the analysis made as a result of the data obtained, the Cronbach α reliability coefficient was found to be .84.

Statistical Analysis

The analysis of the obtained data was carried out in the 'SPSS 23.0 for Windows Evaluation Version' software package program. Mean, total item score means and standard deviations of the MEAS and three sub-scales of the scale were calculated, and t-test and one-way variance analysis among independent groups were used in the evaluation of

the data. For statistical significance p value was accepted less than 0.05.

Ethical Issues in Research

In order to use the scale, written permission was obtained from the authors who developed the scale. Verbal and written consent was obtained from the students in the collection of research data, ethical approval was obtained from the institution where the research was conducted and from the Non-Interventional Scientific Research Ethics Committee of the university where the study was conducted (GO -2019/54). Explanations were made to the students about the purpose, process and questionnaire form of the research, and written consent was obtained from the students, stating that participation in the research was based on volunteerism. The study was carried out in accordance with the Helsinki Declaration 2008 Criteria.

Limitations of the Study

This research is limited to the students included in the research and the answers given by the students to the questionnaires. It is assumed that the students participating in the research gave correct answers to the questionnaires used within the scope of the research.

RESULTS

The mean age of 580 students who participated in the study and filled out the forms is 20.70±2.63. 74.8% of students are women. The sample of the research; 51.4% of students are from the Nursing Department, 40% of students are from the Emergency and Disaster Management Department, and 8.6% of students are from the Dietetics Department. 70.2% of the students stated that they did not take lessons related to medical errors and 65.4% of the students indicated that did not take lessons on patient safety. As a result of the analyzes made, the rate of witnessing a medical error was 42.1%, while 12.9% of the students indicated that they made a medical error in clinical practice (Table 1). 24.7% of the students stated that they saw medication errors, 14.7% patient falls, 4.5% blood transfusion errors, and

Table 1. Sociodemographic Characteristics of Students (n=580)

Sociodemographic Characteristics	Mean	Sd
Age	20.7	2.63
	n	**%**
Departments		
Dietetics	50	8.6
Emergency and Disaster Management (EDM)	232	40
Nursing	298	51.4
Grade		
First	183	31.5
Second	154	26.5
Third	117	20
Fourth	126	22
Taking Lessons About Medical Error		
Yes	173	29.8
No	407	70.2
Taking Lessons About Patient Safety		
Yes	201	34.6
No	379	65.4
Witnessing a Medical Error		
Yes	244	42.1
No	326	57.9
Making a Medical Error		
Yes	75	12.9
No	505	87.1

Table 2. Comparison of Students' Medical Error Attitude Scale Sub-Scales According to Departments (580)

	Nursing (a) Mean±Sd	MEDM*(b) Mean±Sd	Nutrition- Dietet-ics (c) Mean±Sd	F**	p
Medical Error Perception	5.91±1.36	6.13±1.49	5.96±1.12	1.620	0.199
Medical Error Approach	26.04±2.85	24.90±3.65	26.20±2.82	9.249	**0.000 c>a**
Medical Error Causes	23.59±3.06	23.23±3.65	24.14±2.94	1.842	0.159
Medical Error Attitude Scale	67.00±5.35	65.47±7.50	67.76±5.40	4.983	**0.007 c>a**

MEDM*: Emergency and Disaster Management F**: Anova test

2.8% wrong side surgery, in the areas where they practice in the hospital. At the same time, 4.1% of the students stated that they made medication errors, 0.7% of them stated that they made blood transfusion errors, and 0.9% of the patients they cared for fell in the hospital.

As a result of the Anova Test applied to compare the sub-scales of MEAS according to the departments of the students; the difference between the students' attitude scores in the medical error approach sub-scale was found to be statistically significant ($p< .05$). In the total scale mean scores and in the medical error approach sub-scale, it was defined that the students of the Department of Nutrition and Dietetics had higher mean scores among departments (Table 2).

In order to compare the sub-scales of MEAS according to the gender of the students, the t-test was applied to independent groups. In the applied test, a statistically significant difference was found between the mean scores of the MEAS' the perception sub-scale according to the genders ($p< .05$). It was observed that the mean scores of male students in the MEAS perception sub-scale scores were higher than that of female students (Table 3).

In the analysis of the difference between taking courses related to patient safety; In line with the answers given, an independent t-test was conducted between the patient safety-related course-taking status and the sub-scales of MEAS. As a result of the analysis, a statistically significant difference was found in the medical error perception sub-scale, the medical error approach sub-scale and the total score means of MEAS of the students who took courses on patient safety ($p<0.05$). The medical error perception, medical error approach sub-scales, and the total score means of MEAS of the students who took patient safety lessons were higher than the students who did not take patient safety lessons (Table 4).

Table 3. Comparison of Students' Medical Error Attitude Scale Sub-Scales by Gender (580)

	Woman (434) Mean±Sd	Man (146) Mean±Sd	t*	p
Medical Error Perception	5.92±2.32	6.27±1.57	-2.638	**0.009**
Medical Error Approach	25.57±3.11	25.65±3.60	-255	0.793
Medical Error Causes	23.38±3.13	23.81±3.68	-1.355	0.760
Medical Error Attitude Scale	66.18±5.82	67.26±7.66	-1.768	0.078

t*: T-test in independent groups

Table 4. Comparison of Medical Error Attitude Scale Sub-Scales According to Students' Patient Safety Course Taking (580)

	Yes (201) Mean±Sd	No (379) Mean±Sd	t*	p
Medical Error Perception	6.19±1.45	5.91±1.36	2.304	**0.022**
Medical Error Approach	26.02±2.68	25.36±3.48	2.343	**0.019**
Medical Error Causes	23.60±3.14	23.43±3.36	0.589	0.556
Medical Error Attitude Scale	67.34±5.43	65.98±6.74	2.469	**0.014**

t*: T-test in independent groups

DISCUSSION

In our study, which was carried out to examine the medical error attitudes of the students of the faculty of health sciences; 70.2% of the students stated that they did not take a course about medical error, and 65.4% of them stated that they did not take a course about patient safety. According to a recent study conducted at a different government university; almost all of the students stated that patient safety is an important issue. On the subject of patient safety; while the rate of those who think that it should be included as a subject in the courses is 63%; others reported that it should be taught as a separate course (17). In the same study, students stated that most of the medical errors could be prevented, and that the applied education and pharmacology education at school were insufficient to ensure patient safety. However, insufficient drug information carries a significant risk in terms of drug errors (12). According to a study by Härkänen et al.; A blended learning program including e-learning about drug administration and safety and 60-minute PowerPoint presentations are reported to be effective (18).

Interrogations were directed toward the students with regard to their observations of medical errors transpiring within the clinical area. It was ascertained that a notable 42.1% of the students reported instances wherein they bore witness to medical errors perpetrated by fellow healthcare professionals and co-students during their clinical practicum. A significant number of participants reported causing harm to patients during their practice. In parallel, a distinct subset amounting to 12.9% of the students disclosed their personal involvement in committing medical errors. About 24.7% of students reported witnessing medication errors, 14.7% observed patient falls, 4.5% saw blood transfusion errors, and 2.8% encountered wrong-side surgeries in their hospital practice areas. Additionally, 4.1% of students admitted to making medication errors, 0.7% reported their involvement in blood transfusion errors, and 0.9% noted that patients under their care experienced falls in the hospital. Similarly, within an investigation encompassing nursing students who underwent training according to varying educational paradigms, a substantial 43% of respondents conveyed instances of encountering medical errors. Correspondingly, 38.9% of these participants noted their observance of needlestick injuries sustained by nurses and other healthcare personnel, while 30% attested to instances wherein patients suffered falls within the clinical context (19). In another study, this rate was determined as 33% (5). In the study examining the attitudes of nursing and midwifery senior students about patient safety and medical errors; 37% of the students stated that they made medical errors (17). In another study conducted with nursing students; 33% of the students stated that they witnessed a medical error (20). Nursing candidates, whose training is grounded in practical application, integrate the theoretical knowledge gained during their education by applying it in clinical settings (21). Unlike other health professionals, nursing students go to their practice areas more often and participate in nursing practices more often. For this reason, the number of medical errors made and witnessed by nursing students is higher than other health professional students.

In our study, it was found that there was a difference between the medical error attitudes of the students who were educated in different departments, women/men and students who took or did not take courses on patient safety. It was determined that there was a statistically significant difference between mean scores of MEAS and the medical error approach sub-scale of the Dietetics Department students. In another study in which the same scale was used examining the medical error attitudes of Social Work, Nursing and Health Management students; it was determined that nursing students' total mean score of MEAS was higher than the students of other departments and there was a statistically significant difference (22). Considering that different education methods and curricula are applied in different departments of different universities, according to research findings,

it was found that the attitudes of health sciences faculty students towards medical errors are generally positive.

In our research, mean scores of MEAS and the medical error approach sub-scale of students studying in the departments of health sciences faculties were analyzed and it was seen that the mean score of male students was higher than that of female students. In the study conducted by Türk et al. with intern nurses, they found that the difference between the gender of the intern nurses and the mean scores of the "Communication" sub-scale was statistically significant, and that the mean scores of women were higher than men (23). At the same time, the use of different types of scales and questionnaires in different countries and research areas may cause such differences. In another similar study, medical error attitudes of male and female students were examined and differences were found (19). Although there is a difference in the medical error attitudes of male and female students in the literature, Sanko et al. stated that this difference is not due to gender, but to previous education and experience (24). The reason why male students had higher perceptions in our study may be that they attended medical error and patient safety courses and trainings.

In the comparison of the sub-scales of MEAS according to the students' status of taking course on patient safety, it was found that the average score of the students who had a course was higher than those who have not. In another study using the MEAS, it was determined that the mean scores of the students who received patient safety training in the medical error perception and approach sub-scales were higher than those who did not receive patient safety training (25). In a similar studies, it was emphasized that patient safety courses should be given for the formation of patient safety culture and curriculum should be changed to create a patient safety culture (26, 27). In a current study; institutions providing health professions education, including medicine, nursing, pharmacy, dentistry, and others, have reported limited training in patient safety (9). Conducting medical error reporting training will reduce the risk of medical errors. Establishment of medical error and patient safety trainings and knowledge bases will prevent errors that may be encountered in professional life and will increase the quality of care by maximizing patient safety (28).

CONCLUSION

Perspectives on patient safety and medical errors vary in practice and academy. In order to increase the patient safety and medical error training created for the education of healthcare workers, and to increase the awareness of the students on the subject, their education should be handled in a comprehensive way. In addition, by ensuring the integration of these subjects in all courses, applications that will contribute to the transformation of students' attitudes should be included.

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