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The Effect Of Medical Error Education On The Knowledge and Attitudes Of Nursing Students

Tıbbi Hata Eğitiminin Hemşirelik Öğrencilerinin Bilgi ve Tutumlarına Etkisi

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Abstract

Objective: This study evaluates the effects of medical error education on the knowledge and attitudes of nursing students.

Material-Method: In this study, one-group pretest-posttest semi-experimental design method is used. The study population consisted of final year students at Duzce University's School of Nursing. In the first stage of the study, need assessment is carried out with the senior students of nursing education. For the need assessment the entire group of senior students were recruited; therefore no sampling had done. Data collection form was applied to 150 students who accepted to participate the study voluntarily. On the second stage, seven–week education program was prepared in accordance with the data obtained from the need assessment and applied to the study group. Before the education sessions data on personal information was collected from the study group; scale of medical error trends and scale of medical error attitudes, a general exam on medical errors and a case-based exam were applied. Same set of measurement was applied after the education process was completed.

Results: In this study, it was determined that 85.3% of the students received education on medical errors, and 54.7% of the students who received education found the education inadequate. Scale and knowledge score averages increased following the participating nurses' education and training. This increase was found to be statistically significant ($p<0.001$). After training, more value problems were noticed by students compared to pre-training; furthermore, they were mentioned by more students.

Conclusions: This study revealed the following: (1) students think that the information they have been provided their undergraduate education regarding medical errors is inadequate; (2) medical errors are not adequately emphasized in nursing curricula, (3) medical error education increases the knowledge and awareness of students regarding medical errors, and; (4) medical error education decreases medical error tendencies and positively affects nursing students' attitudes toward medical errors.

Keywords: Ethical Responsibility, Malpractice, Medical Error, Nursing Education, Patient Safety.

Özet

Amaç: Bu çalışma, hemşirelik öğrencilerine verilen tıbbi hata eğitiminin öğrencilerin bilgi ve tutumlarına etkisini değerlendirmek amacıyla planlanmıştır.

Materyal-Metot: Bu araştırmada öntest-sontest tek gruplu yarı deneysel yöntem kullanılmıştır. Çalışmanın evrenini Düzce Üniversitesi Hemşirelik Bölümü son sınıf öğrencileri oluşturmuştur. Çalışmanın ilk aşamasında hemşirelik son sınıf öğrencileri ile ihtiyaç analizi yapılmıştır. İhtiyaç analizi için ayrıca örneklem seçimine gidilmemiş, veri toplama formu çalışmaya katılmayı gönüllü olarak kabul eden 150 öğrenciye uygulanmıştır. İkinci aşamasında ise ihtiyaç analizinden elde edilen veriler doğrultusunda toplam yedi haftadan oluşan eğitim programı hazırlanmış ve uygulanmıştır. Eğitim öncesi ve sonrasında öğrencilere, kişisel bilgi formu, bilgi testi, vaka formu, Hemşirelikte Tıbbi Hataya Eğilim Ölçeği ve Tıbbi Hatalarda Tutum Ölçeği'nden oluşan öntest ve sontest uygulanmıştır.

Bulgular: Çalışmada, öğrencilerin %85,3'ünün tıbbi hatalarla ilgili eğitim aldığı; eğitim alan öğrencilerin %54,7'sinin aldıkları eğitimi yetersiz buldukları belirlenmiştir. Eğitim öncesine göre eğitim sonrası Hemşirelikte Tıbbi Hataya Eğilim Ölçeği, Tıbbi Hatalarda Tutum Ölçeği ve bilgi puanı ortalamaları yükselmiştir. Bu artış istatistiksel olarak anlamlı bulunmuştur ($p<0,001$). Vaka analizlerinde eğitim sonrasında öğrenciler tarafından eğitim öncesine göre daha fazla sayıda değer sorunu fark edilmiş ve daha fazla sayıda öğrenci tarafından dile getirilmiştir.

Sonuç: Çalışmadan elde edilen sonuçlar doğrultusunda, öğrencilerin tıbbi hataya ilişkin aldıkları eğitimi ve bilgilerini yeterli bulmadığı, öğrencilere verilen tıbbi hata eğitiminin öğrencilerin tıbbi hataya yönelik bilgi ve farkındalıklarını arttırdığı, tıbbi hataya eğilimlerini azalttığı ve tıbbi hatalarda tutumlarını olumlu yönde etkilediği belirlenmiştir.

Anahtar kelimeler: Etik Sorumluluk, Hasta Güvenliği, Hemşirelik Eğitimi, Tıbbi Hata.

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Introduction

The concept of medical errors is important and is becoming increasingly important each day. Medical error is a concept that concerns all health professionals, including nurses. Healthcare work inevitably incurs certain medical errors. Nurses have an important place within healthcare, and must be concerned with their patients at all times when in their professional roles. However, nurses' involvement in the care and treatment of patients can have a negative effect on patient safety due to erroneous practices. In recent years, the number of litigation cases taken against nurses has increased. Medical errors arise due to erroneous practices of healthcare workers, a lack of knowledge and skills, and neglectful and careless behavior, which endangers patient safety. Reducing the prevalence of medical errors and ensuring patient safety is extremely important for improving the quality of patient care. For this, health workers should raise their awareness and help to develop positive attitudes.

Ensuring patient safety is the most important aspect of health care. Patient safety is the foundation of good patient care and an important quality indicator of health care facilities. The World Health Organization (WHO) defines patient safety as the main criterion of health care. Patient safety itself can be defined as the prevention and improvement of damages caused by health services and, as a process, concerns all those measures that need to be taken by health institutions and workers to prevent harm or damage to individuals patients. Although patient safety is not just concerned with the reduction of medical errors, the way to improve the quality of care within and among health services can nevertheless be achieved by reducing the prevalence of such errors. The International Council of Nursing (ICN) addresses patient safety thematically in its 2006 and 2015 publications, emphasizing that medical errors are a threat to patient safety; accordingly, the ICN considers medical errors to be the basis for a majority issues covered by patient safety (1, 2).

Reducing medical errors and ensuring patient safety are important indicators for the improvement of nursing care quality. The knowledge and awareness of healthcare professionals regarding medical errors can be improved through education. Accordingly, it is necessary for medical error training to begin, specifically, in the pre-graduation period of a nursing student's training and education; this will ensure that future health workers are ready and able to provide safe health services. Certain courses related to medical errors can then be added to nursing curricula. Consequently, medical error training can be arranged in such a way that the nursing student can easily comprehend and assimilate new understanding and knowledge or medical errors, thereby eliminating deficiencies within or concerning certain subjects via several means, including: the undertaking different activities; the teaching of duties, authorities, and responsibilities as well as legal, professional and ethical approaches within the nursing field; and keeping nurses' subject knowledge up-to-date through in-service trainings, congresses, and symposiums following their graduation.

This study was planned to evaluate the effect of medical error training when given to nursing students in regard to the knowledge and attitudes of those students. The aim of this course is to reduce errors and mistakes caused by students when undertaking clinical practices, to raise students' awareness of the legal and ethical dimensions of medical errors, and to raise the awareness of the students in general.

Material and Methods

The pretest-posttest single group semi-experimental method was used in the study. The research was carried out in two stages. In the first phase, needs analysis was conducted with the senior nursing students. In the needs analysis, a data collection form that was created by the researcher to reveal the deficiencies of the students about medical errors based on the literature was used. In the second stage; training program has been prepared and implemented in accordance with the data obtained from the needs analysis

Effectiveness of the training was evaluated by using personal information form developed by the researcher before and after the training, information test, case form prepared by the researcher receiving expert opinion, Malpractice Tendency Scale in Nursing developed by Özata and Altunkan, Attitude Scale in Medical Errors developed by Güleç and Seren İntepeler (3, 4).

The study population consisted of final year students at Duzce University's School of Nursing. No sample selection was made for the needs analysis, which comprised the first stage of this research. The data collection form was completed by 150 of 186 students who voluntarily accepted to participate in the study between 26–30th September 2016. This group had a participation rate of 80.6% in regard to this study. In the second stage, 40 students were selected for the study group to be provided with training. The study group was selected by random sampling method and all participants were involved in this study voluntarily.

Data were transferred to—and analyzed using—IBM's SPSS Statistics 22 software program. Frequency analysis was used to analyze those data collated from the study form for the needs analysis. While evaluating those data collated both before and after training, frequency distributions for categorical variables and descriptive statistics (mean±SD) were given for numerical variables. Reliability analysis was applied to the Malpractice Trend Scale in Nursing and Medical Errors Attitude Scale. In order to calculate participants' scale and subscale scores, scores were obtained by taking the average of those relevant items within the scale.

The Shapiro–Wilk normality test was applied to the participants' knowledge score, Malpractice Trend Scale in Nursing, and the subscales and attitude and sub-subscales scores of medical errors as part of the data analysis stage. The completion of the test revealed that all scores provided the assumption of normality ($p>0.05$); accordingly, parametric tests were used in the comparisons. An investigation as to whether there was a difference between the two dependent groups (e.g. a difference between pretest and posttest groups)

was undertaken with the use of a Dependent T-Test for paired samples. Differences between the two independent groups (e.g. per gender) were analyzed according to the scores using Independent T-Test for paired samples. The relationship between two independent numerical variables was interpreted using the Pearson correlation coefficient.

In this study, a case form consisting of four cases with medical errors was used. The cases were prepared by the researcher and expert opinion was received. Students were asked about their opinions about each case, whether there was a medical error or not, and asked to evaluate the situation in terms of ethical principles and values. Cases were analyzed by the researcher and turned into a rubric through examination of those medical errors they contained. Student responses for each individual case were then evaluated according to this rubric. Obtained data were input into the SPSS program and frequency analyzes performed.

Ethical permission for this study was granted by the relevant body (Duzce University Faculty of Medicine Ethics Committee for Invasive Non-Invasive Clinical Research); permission from the institution in which the study was carried out was also granted. For the data analysis, students were informed and verbal consent obtained. Necessary permissions were obtained from the scale owners to use the scales both before and after training was given. Written permission was obtained from all students participants who attended training.

Results

The data obtained from the study were evaluated in three stages: findings obtained from the needs analysis, findings obtained before and after the training, and findings obtained from the case studies.

Findings Obtained From The Needs Analysis

A total of 150 students participated in the needs analysis which comprised the first stage of the current study (participation rate: 80.6%). Overall, 84.7% of the participating students were female; 34.6% were Anatolian High School graduates, and 34.6% were graduates of a General High School. Participating students were aged 20–36; the mean age of the group was 21.7±1.6 (Table 1).

While 85.3% of the students have received training on medical errors, 54.7% of them reported the training they had received to be insufficient. Overall, 73.6% of students reported that they had received education concerning medical errors during their undergraduate education, with some students receiving medical error training in deontology (61.2%) and forensic medicine (38.8%).

According to the needs analysis, students believed their knowledge to be insufficient. The most important issue for students in this regard concerned the duties, authorities, and responsibilities of erroneous acts pertaining to medical errors and erroneous medical practice. Subjects that student respondents felt to be most significant are listed in descending order from most to least important: legal responsibility, ethical responsibility, professional responsibility, error reporting, patient safety, causes of medical errors, basic concepts, medical error examples, and medical error classification.

A group of 40 volunteer were trained in the second stage of this research. Overall, 82.5% of these students were female; 45.0% graduated from an Anatolian High School. All students were aged 21–25 and had a mean age of 22.7±0.97 years (Table 1).

Findings Obtained Before and After The Training

The mean total score of the Malpractice Trend Scale in Nursing after training increased from 4.27 to 4.57. Considering the sub-scale score averages of this scale, it was seen that the sub-scale score averages of Drug and Transfusion Applications increased from 4.22 to 4.58 (p=0.000); sub-scale score averages of Hospital Infections increased from 4.34 to 4.62 (p=0.000); sub-scale score averages of Patient Monitoring and Material Safety increased from 4.08 to 4.36 (p=0.002); sub-scale score averages of Falls increased from 4.43 to 4.67 (p=0.005), and sub-scale score averages of Communication increased from 4.47 to 4.70 (p=0.007). These results show a statistically significant difference (Table 2). These findings indicate that medical error training is effective in reducing students' Malpractice Trend Scale in Nursing scores.

The total score of the students' Medical Errors Attitude Scale increased from 3.80 to 4.33. These results show a statistically significant difference (p=0.000). Considering sub-scale

Table 1. Demographic information of students

Demographic information of students		Needs Analysis		Training	
		n	%	n	%
Gender	Female	127	84.7	33	82.5
	Male	23	15.3	7	17.5
Graduation Status	Anatolian High School	52	34.7	6	15.0
	General High School	52	34.7	18	45.0
	Health vocational high School	32	21.3	4	10.0
	Vocational and Technical High School	11	7.3	12	30.0
	Other	3	2.0		
Age $\bar{X}$±SS:		21.7±1.6		22.7±0.97	
Total		150	100	40	100.0

Table 2. Comparison of pretest and posttest scores of the Malpractice Trend Scale and Medical Errors Attitude Scale toward (Medical Errors and Sub-Dimensions)

	Pretest	Posttest		
	Mean±SD	**Mean±SD**	**t**	**p**
Malpractice Trend Scale Total Score	4.27±0.357	4.57±0.342	-5.038	<0.001
Sub-scales				
Drug and transfusion applications	4.22±0.427	4.58±0.360	-4.863	<0.001
Hospital infections	4.34±0.403	4.62±0.393	-3.808	<0.001
Patient monitoring and material safety	4.08±0.458	4.36±0.484	-3.372	0.002*
Falls	4.43±0.530	4.67±0.394	-2.995	0.005*
Communication	4.47±0.497	4.70±0.373	-2.836	0.007*
Medical Errors Attitude Scale Total Score	3.80±0.347	4.33±0.258	-10.169	<0.001
Sub Dimensions				
Medical error perception	3.11±0.702	3.56±0.744	-3.278	0.002
Approach to medical error	3.84±0.487	4.50±0.383	-7.866	<0.001
Causes of medical error	3.96±0.435	4.38±0.361	-5.912	<0.001

*p<0.01

score averages, sub-scale score averages of Medical Error Perception increased from 3.11 to 3.56 (p=0.002), sub-scale score averages of Approach to Medical Errors increased from 3.84 to 4.50 (p=0.000), and sub-scale score averages of Causes of Medical Errors increased from 3.96 to 4.38 (p=0.000). These results show a statistically significant difference (Table 2).

Considering the pretest and posttest mean scores of attitude scales toward medical errors, the attitudes of the students toward medical errors were found to be positive. It can be seen that students' mean post-training scores were higher than pre-training mean scores. These findings suggest that medical error training positively affects the attitudes of students toward medical errors.

The average knowledge scores of students participating in the training increased from 2.53 before training to 18.23 after training; a statistically significant difference can be seen between the two scores (Table 3). This finding also shows that medical error training has a significant effect on students' knowledge of medical errors.

Table 3. Comparison of the students' knowledge points related to medical errors

	Test	Mean±SD	t	p
Knowledge points	Pretest	2.53±1.109	-36.018	<0.001
	Posttest	18.23±2.326		

After training, a 54.2% linear relationship in a statistically significant positive direction was found between the tendency scale and attitude scale scores as a result of the correlation analysis of the Malpractice Trend Scale in Nursing and the Medical Errors Attitude Scale. It was revealed that the scores students obtain from the attitude scale for medical errors increases along with the scores from the Malpractice Trend Scale. In other words, medical error tendencies decrease as students' attitudes towards medical errors, their approaches and their attitudes towards the causes of medical errors change in a positive direction. It was seen that the medical error training provided to the students increased the awareness of the students about medical errors, and this situation affected the students' tendency toward medical errors. It was seen that the medical error training provided to the students increased the awareness of the students about medical errors, and that this situation affected the students' tendency toward medical errors.

Findings Obtained From The Case Studies

Students were given four cases involving medical errors and the students asked to express their cases with their own words. In the case analysis, students were not provided with options related to the value problems contained within the particular cases, and an analysis carried out based on their own statements. When the students' pre-training and post-training evaluations were compared, more value problems were revealed to have been noticed by students after training than before training; this was also expressed by more students. Students acquire a new professional language through their education. It was thought that the increased number of those who thought that there is a medical error and the number of value problems expressed before education depended on clarification of information pertaining to the concept of medical errors among students, and raising awareness accordingly.

Discussion

Analysis Of The Findings Obtained From The Needs Analysis

Patient safety education is a cornerstone for the provision of safe health care and also an integral part of a nursing student practice. The fact that this issue is not sufficiently integrated or involved in the training of nurses is a significant shortcoming, especially as nurses comprise such a large and broad membership of healthcare workers. It is inevitable that

students who are graduates of education programs that do not give give enough attention to the subjects of patient safety and medical errors within their curricula subsequently experience problems in their professional lives. Knowing the approaches and knowledge levels of the medical staff concerning medical errors is important for shaping those measures necessary for the prevention of possible errors. Studies show that nursing curricula do not sufficiently consider or address the issue of medical errors, and that consequently many students graduate with insufficient knowledge regarding this subject (5-7).

On examination of the nursing curriculum of Turkey, it can be seen that the subject was mostly ignored until recent years. Related courses have begun to be included in curricula in recent years due to the increasing awareness about and around the issue of medical errors. It is thought that, within nursing education, the issue of patient safety and medical errors is insufficient for students, and that lessons concerning these subjects are few and fragmented. As it currently exists, such education falls short of meeting the needs of the students. Subjects such as patient safety, forensic medicine, and health law are mandatory in some schools, while in others they are given as elective courses. However, their can be seen that the number of schools adding these courses to their curriculum in Turkey is not yet at a desirable level and that there is a lack of unity among such nursing schools. Many studies corroborate this and support such assertions, and this shall be the starting point of our work; namely, that the subject of medical error is not sufficiently involved in nursing curricula, and that consequently nursing students are lacking in knowledge regarding this subject (8-14). Overall, 85.3% of students who participated in our study said that they received an education about medical errors; 46.7% of participants stated that they found this training to be insufficient. This result is similar to that of other studies (15-18).

While 11.3% of the students who participated in our study reported that they had received their training in congresses and symposiums, 15.1% is in field where they applied their courses. Furthermore, 73.6% reported that they had received their training on medical errors during their undergraduate education; 61.2% as part of a deontology course and 38.8% as part of a forensic medicine course. The deontology course is compulsory, while the forensic medicine course is given to third-grade students for two hours a week as a selective course within the faculty in which research is being undertaken. The 'medical error' subject lasts a period of two hours within each of these courses. Students participating in the research are senior nursing students. Considering that all students take the compulsory deontology courses, and that some take the forensic medicine course alongside the deontology course, it is noteworthy that 14.7% of respondents of the current study reported that they had received no such medical error education, and that 38.8% did not indicate 'deontology' among their educational resources. These findings support the argument that medical error training, as it is given to student nurses in their undergraduate education, is insufficient, as is the information provided to them; furthermore, it suggests that, even when this subject is discussed according to different dimensions and as part of different courses, students find it difficult to assimilate such information and integrate it into their nursing education. For this reason, as emphasized within these studies, it should be given more attention in the curriculum for medical error and patient safety education, not a superficial in the forensic medicine and deontology classes, but also a separate subject or a lesson in itself (11, 15, 17).

Health workers see patient safety as a current, important, and necessary issue. Nursing practice that does not include these rules or responsibilities can rust in nurses experiencing problems in both legal and ethical dimensions (19). Within nursing and medical education, medical errors, professional responsibilities, duties and authorities, legal and criminal responsibilities, and ethical responsibilities are all considered to be secondary to patient safety. Training programs should be designed to effectively respond to those demands and problems arising from nurses' professional and ethical responsibilities in order to reduce medical errors and ensure patient safety (20). Accordingly, health workers should be aware of ethical judgments concerning medical errors. Health professionals need to be trained to act ethically and effectively in the event of themselves, or one of their colleagues, making a mistake (20). Other studies frequently emphasize that patient safety and medical error training are important, and that both nurses and physicians have educational needs regarding this subject (11, 15-18, 21, 22). Our findings parallel the findings of these studies as the students who participated in the current study also reported that they thought their knowledge regarding this subject to be insufficient.

Analysis Of The Findings Obtained Before and After The Training

Education is a factor that reduces the tendency toward medical errors. On examination of the mean scores of students regarding their tendency toward medical error in nursing, significant increases of the total scale score and all sub-scale scores were found after nurses had been given training. According to the study's scale scoring, an increase in the total score means that nurses' tendency toward making a medical mistake is low, while a decreased score suggests that nurses tend to make medical mistakes. In our study, it was determined that the students got high scores on all sub-scales of the Malpractice Trend Scale in Nursing. An average of the mean scores of this scale and subscale scores in Nursing were found to have a value of four or above. The mean score of students' tendency toward medical error in nursing is paralleled by this of Mankan et al., which used nursing and midwifery students (23). These findings are also paralleled by those of Cebeci et al., Yiğitbaş et al., and Demir Dikmen et al., all of which concerned nurses; and the study by Kıymaz, which concerned nurses working in emergency rooms (24-27). Despite this parallelism, in the study by Akgün Şahin and Kardaş Özdemir, nurses received lower scores than the scale and the sub-scale scores; therefore, the tendency toward medical errors were found to be as high (28). It is thought that the differences among these studies are due to the fact that the researches were conducted in different institutions and by using different sample groups.

The average Medical Errors Attitude Scale toward scores were found to increase, both in regard to total scale, and sub-scale scores, after training. The current study found that students' total score and sub-scale score averages were three or higher, both before and after training. According to the Medical Errors Attitude Scale in, if a score average value is lower than three then this means that the medical error attitudes of nurses are negative; a score of equal to, or higher than, three means that the medical error attitudes of the nurses are positive. Negative attitude show that employees are less aware of the importance of medical errors and error reporting; positive attitudes show that this awareness is high (4). When the average score of the students in the pretest and posttest is taken into consideration, it can be seen that students' attitudes toward medical errors is positive. Students attitude scores and sub-scale score averages regarding medical errors after training were higher than before education; the difference between pretest and posttest scores were found to be statistically significant (p=0.000). These findings suggest that medical error training positively affects students' attitudes toward medical errors.

Medical error training and patient-safety training provides students and nurses with a higher level of knowledge of these subjects. Karaoglu et al. showed that medical error and patient-safety courses, when given to first- and second-year medical students of a medicine faculty positively affected the knowledge and attitudes of students (29). According to the study by Madigosky et al., which was conducted using second grade medical students, education on patient safety and medical errors, when given to students, was fund to positively affect their knowledge, skills, and attitudes (30). Kahriman et al. found that the level of knowledge and awareness of the medical errors appeared to increase as nurses' training increased. After training, it was determined that nurses understanding of relevant information increased significantly, and the posttest information scores increased significantly when compared to pretest information scores (22). The same study also reported that the level of knowledge of those nurses who attended training sessions on medical errors and patient safety were higher. Aboumatar et al. conducted a study on the development and evaluation of the patient safety curriculum using medical students; the study found that education resulted in a significant increase in student scores concerning course knowledge (31). Karaca and Aslan stated that hospital workers who had been educated on patient safety had a higher level of understanding than those who did not (18). Maxwell and Wright stated that education positively affects the knowledge, skills, and attitudes of nursing students regarding quality improvement and patient safety (32). In a UK study that evaluated the effect of patient safety education on the knowledge, skills, attitudes, and behaviors of nurses given training over a 60-month period in England, it was specified that training has a positive effect on patient-safety knowledge, skills, behaviors, and attitudes among nursing interns; accordingly, training was found to result in a significant increase in patient safety information scores this was caused a significant increase in patient-safety information scores (33). According to another UK study; half-day training given to surgical interns was found to have a significant effect on the participants' error analysis and improvement attitudes and was revealed as significantly increasing their post-training knowledge scores. In the same study, participants reported increased awareness of patient safety at the end of their training (34). Other studies also emphasize the importance of education in the reduction of the prevalence of medical errors (8, 15, 17-19, 35).

Training studies have also been shown to affect error reporting. In the study by Istanbullu et al., it is observed that an increase in the number of notifications regarding the patient falls following training given Safety Reporting Systems (36). In a Japanese study, it was reported that nurse training, provided in short 15-minute periods every month for six months on the subject of patient safety, when given to working in surgical services in a university hospital increased the number of case reports (37). Our research findings are similar those of the aforementioned studies.

It is seen that the average knowledge scores of students who participated in our study increased following their training; accordingly, education can be said to lead to a significant increase knowledge level of nursing students. The training given to health professionals will be reflected in their attitudes and behaviors. The medical error training, when given to students, increases their awareness of medical errors and decreases their tendency toward medical errors. A direct traceable relationship between tendency and attitude toward medical errors was revealed. When the score of last-test Malpractice Trend Scale in Nursing and Medical Errors Attitude Scale was reviewed, a 54.2% linear relationship in statistically significant positive direction was found between the two scales. In his study, Kıymaz states that there is a very weak (0.235) positive correlation between the Medical Errors Attitude Scale and Malpractice Trend Scale in Nursing (27).

According to the results of these studies, when the score average of the Medical Errors Attitude Scale increases, the score average of the Malpractice Trend Scale in Nursing also increases. In other words, the more positive attitudes are regarding medical errors among health workers, the lower the medical error tendencies will be. In order to decrease such errors, it is necessary for health workers to gain a positive attitude and, in order to gain a positive attitude, it is necessary to provide employees with awareness of medical errors. The best way to achieve this is by providing regular training on the subject. In summary it can be seen that medical error tendencies, and therefore medical error rates, can be reduced by providing positive attitudes to students or health workers through training.

Analysis Of The Findings Obtained From The Case Studies

Regarding case analysis questions, which included four different magnitudes of medical error, were evaluated as medical errors by more students after training compared to pre-training. After training, more value problems were noticed by students compared to pre-training; furthermore, they were mentioned by more students. It can be said that the increased number of those students who thought there was a

medical error after education and the number of expressed value problems was effective in two regards: clarifying the knowledge of the concept medical errors among students, and raising awareness. It is thought that students can acquire a new professional language through education, learn the terminology of medical errors and ethical issues, create a new value universe, associate concepts learned during undergraduate more accurately in regard to medical errors, and better analyze medical errors using ethical principles and values.

Students' answers in case studies show that students tend to consider technical issues as medical errors. For example, cases of burns and infection were considered as lesser rate medical error than other cases. The fact that a student considers only drug administration errors as medical errors and leaves other cases un-responded supports this situation. These findings point to the importance a more comprehensive and complete education of prospective nurses regarding their roles and professional responsibilities.

Conclusion

Nurses have an important role to play in defining, analyzing, and acting according to their position within the hospital. They play a key role in reducing medical errors. In line with the results of the study, it is seen that there is a need for medical error training in nursing education. This need, which is also expressed by nursing students, needs to be fulfilled by initiation in the first year of nurse's undergraduate education and should continue into their senior year. The medical error training given to students increases their knowledge and awareness regarding medical errors, decreases their tendency toward making medical errors while also positively affecting their attitudes concerning medical errors. It is suggested that students should be prepared for the provision of safe health services through their education, which should include adequate training of medical error in its curriculum. Herein, medical error training needs to be spread across all classes, starting from the first years of nursing students' education and common learning opportunities for physicians, nurses, midwives and pharmacists need to be realized. In addition to undergraduate medical error education, in-service training, courses, congresses, symposiums and panels etc. events should be kept up to date.

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