Effect of training on ethical values in the report of errors among nurses in hospitals affiliated with the University of Medical Sciences of Alborz

Efecto de la formación en valores éticos en el informe de errores entre enfermeras en hospitales afiliados a la Universidad de Ciencias Médicas de Alborz

Efeito do treinamento em valores éticos no relato de erros entre enfermeiros de hospitais afiliados à Universidade de Ciências Médicas de Alborz

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Abstract

Values provide basis for the ethical dimensions of clinical practice and the behavior of nurses. One of the ways to manage errors in the nursing is reporting errors and recording them. Moreover, weakness in ethical factors is one of the factors involved in non- reporting the nursing errors. Hence, the current research was conducted to evaluate the effect of ethical values training on error reporting from the viewpoint of nurses. This research is a quasi-experimental study, in which 70 nurses were assigned into intervention and control groups non-randomly using purposeful sampling methods. The data were collected using demographic questionnaire and researcher-developed error reporting from nurses' viewpoint questionnaire. It was completed first by the intervention and control subjects. Then, the researcher-developed questionnaire was re-completed by both intervention and control subjects after holding ethical values training program in three 60-minute sessions for the intervention group. Data were analyzed using SPSS20 software and descriptive statistics, Mann-Whitney, Covariance, T-test, Chi-square and Fisher tests. The research results revealed that the mean and standard deviation of the variables of the error reporting from the viewpoint nurses increased from 1.90 ±0.47 in the pre-test stage to 2.87 ± 0.43 out of mean score of 2 in the post-test stage in the intervention group. The mean scores of change in viewpoint of nurses was reduced in the second stage compared to that in first stage in the control

Resumen

Los valores proporcionan una base para las dimensiones éticas de la práctica clínica y el comportamiento de las enfermeras. Una de las formas de gestionar los errores en la enfermería es informar los errores y registrarlos. Además, la debilidad en los factores éticos es uno de los factores involucrados en la no notificación de los errores de enfermería. Por lo tanto, la investigación actual se realizó para evaluar el efecto de la capacitación en valores éticos en el informe de errores desde el punto de vista de las enfermeras. Esta investigación es un estudio cuasi experimental, en el que 70 enfermeras fueron asignadas a grupos de intervención y control de forma no aleatoria utilizando métodos de muestreo intencionados. Los datos se recopilaron mediante un cuestionario demográfico y el informe de errores desarrollado por el investigador desde el punto de vista de las enfermeras. Se completó primero con los sujetos de intervención y control. Luego, el cuestionario desarrollado por el investigador fue completado nuevamente por los sujetos de intervención y de control después de llevar a cabo el programa de entrenamiento de valores éticos en tres sesiones de 60 minutos para el grupo de intervención. Los datos se analizaron utilizando el software SPSS20 y las estadísticas descriptivas, Mann-Whitney, Covariance, T-test, Chi-cuadrado y Fisher. Los resultados de la investigación revelaron que la media y la desviación estándar de las variables del informe de errores de las enfermeras del punto de vista

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group, while this reduction was not significant (P = 0.002). The research results suggest the positive effect of ethical values training on the error reporting from the viewpoint of nurses. Thus, it is recommended that training courses on ethical values to be held to change the viewpoint of nurses in order to increase the error reporting and improve the safety of patients.

Keywords: training, ethical values, nursing error reporting.

aumentaron de 1.90 ± 0.47 en la etapa de prueba previa a 2.87 ± 0.43 de la puntuación media de 2 en la etapa de prueba posterior en grupo de intervención. Las puntuaciones medias de cambio en el punto de vista de las enfermeras se redujeron en la segunda etapa en comparación con las de la primera etapa en el grupo de control, mientras que esta reducción no fue significativa (P = 0,002). Los resultados de la investigación sugieren el efecto positivo de la formación en valores éticos en el informe de errores desde el punto de vista de las enfermeras. Por lo tanto, se recomienda que se realicen cursos de capacitación sobre valores éticos para cambiar el punto de vista de las enfermeras con el fin de aumentar el informe de errores y mejorar la seguridad de los pacientes.

Palabras claves: formación, valores éticos, notificación de errores de enfermería.

Resumo

Os valores fornecem uma base para as dimensões éticas da prática clínica e o comportamento dos enfermeiros. Uma das maneiras de gerenciar erros na enfermagem é reportar erros e registrá-los. Além disso, a fraqueza nos fatores éticos é um dos fatores envolvidos na falha em relatar os erros de enfermagem. Portanto, pesquisas atuais foram realizadas para avaliar o efeito do treinamento em valores éticos no relato de erros do ponto de vista do enfermeiro. Esta pesquisa é um estudo quase experimental, no qual 70 enfermeiros foram designados para grupos de intervenção e controle de forma não-aleatória usando métodos de amostragem intencionais. Os dados foram coletados por meio de um questionário demográfico e do relatório de erros elaborado pelo pesquisador do ponto de vista dos enfermeiros. Foi completado primeiro com os sujeitos de intervenção e controle. Em seguida, o questionário desenvolvido pelo pesquisador foi novamente preenchido pelos sujeitos de intervenção e controle após a realização do programa de treinamento em valores éticos em três sessões de 60 minutos para o grupo de intervenção. Os dados foram analisados por meio do software SPSS20 e estatística descritiva, Mann-Whitney, Covariance, teste T, Qui-quadrado e Fisher. Os resultados da investigação revelaram que a média e o desvio padrão das variáveis do relato de erros do enfermeiro sob o ponto de vista aumentaram de 1,90 ± 0,47 no estágio anterior para 2,87 ± 0,43 do escore médio de 2 no estágio de teste posterior no grupo de intervenção. Os escores médios de mudança no ponto de vista dos enfermeiros foram reduzidos no segundo estágio em comparação aos do primeiro estágio no grupo controle, enquanto que essa redução não foi significativa (P = 0,002). Os resultados da pesquisa sugerem o efeito positivo do treinamento sobre valores éticos no relato de erros do ponto de vista dos enfermeiros. Portanto, recomenda-se que cursos de formação sobre valores éticos sejam realizados para mudar o ponto de vista dos enfermeiros, a fim de aumentar o relato de erros e melhorar a segurança do paciente.

Palavras-chave: treinamento, valores éticos, notificação de erros de enfermagem.

Introduction

Ethics is the inner tempers and characteristics of humans. It is the source of human behavior and has the highest effect on human behavior (Rashidi & Ashk Torab, 2017). Human knowledge lacks human values without ethics (Borzuei, 2018). Religion and ethical values of any community have a significant effect on health, education and social policies, and thus, on health care or patients care models. Paying attention to values and applying ethical values in all nursing practices not only add the value of nurse and nursing, but also can be helpful in promoting the nursing profession (Shahryari et al, 2014). Nurses are the largest group of people providing health care

services and have a significant effect on the quality of healthcare. In addition, observing the ethical standards will be an effective factor to improve the nurses' practice and provide high quality care. Responsible behavior of nurses with patients has major role in improving the health and well-being of patients.

Hence, nursing profession is based on ethics (Barati Marani et al, 2013). The nursing profession has been historically considered as ethical profession owing to need to care for others (Afshar et al, 2013). A nurse's practice is valuable when he or she acts based on ethical values characteristics in providing a clinical service for patients (Shahryari et al, 2014). The most important values in nursing profession include care, health, and healthcare. Care is the answer to the person who is considered important (Rashidi & Ashk Torab, 2017). Learning the nursing values is vital for nursing profession. Nursing values training is crucial considering the developments in medical technology and the increasing complexity of treatments (Chao et al, 2017). Nursing ethical priorities reflect the selections of people as part of a profession and represent important cases in providing high quality health services. In its proposed regulation entitled "Nursing Ethics in the Islamic Republic of Iran", Supreme Council of Medical Ethics at Ministry of Health and Medical Education formulated the most important values in this profession and made the nurses responsible to observe them in their profession (Afshar et al, 2013).

Nowadays, providing health services in medical centers is associated with the risk of occurrence of medical errors for those receiving these services (Zaboli et al, 2015). While occurrence of an error in clinical work is unavoidable, its rate and severity can be minimized (Nouhi et al, 2015). As errors in providing health care are a harmful and irreparable phenomenon in some cases, all health care providers might commit these errors, and as the ultimate goal of nursing profession is improving the human health, reporting the errors to meet medical goals is an essential (Ghol Afrooz, 2014). Reporting medical errors is want and right of all patients. One of the ways to manage errors in nursing profession is reporting and recording them. Reporting the error by nurses is very important to reduce the similar errors (Zaboli et al, 2015). Experts argue that the error disclosing is ethically increases the patient's satisfaction and trust in the health care system (Beyranvand et al, 2014). Providing high

quality care for patient is one of the necessary rights of the patients and no reason can compensate weakness in specialized cares in the hospital. Thus, nurses are responsible for their actions due to their professional independence and they should report their job errors (Ghol Afrooz, 2014). The results of studies suggest that managers should take actions to eliminate or reduce the errors reporting barriers to improve the patient's safety culture (Zaboli et al, 2015). Patients want that medical errors to be reported by nurses in order to be aware of unexpected results in their care. However, health care staffs do not report errors owing to legal issues, litigation, and disruption in their relationship with the patient.

Despite several benefits and ethical foundations of the disclosure of errors and the wants of patients, studies have fortunately indicated that there is difference between the wants of the patients and what is done in the case of occurrence of an error and its disclosure (Beyranvand et al, 2014). Hospital errors are one of the major challenges in health systems of all countries (Manjughi et al, 2012). It is necessary to emphasize on nursing ethical training and increase the nurses' knowledge of the error reporting system (Ghol Afrooz, 2014). Errors reporting culture among nurses has not been promoted and managers should take serious action to eliminate and reduce the barriers of errors reporting and make their bests to improve the patient safety culture, which encourages medical errors reporting (Zaboli et al, 2015). Iran's health system authorities should pay special attention to ethics training triangle in hospitals, strategic attitude (ethics in the health system), and fair compensation of services as the key to improve and develop ethics in the health system (Khodayari Zarnagh et al, 2013). Serious actions need to be taken to institutionalize ethical values in hospitals by recognizing the importance of values and their relationship with culture (Khodayari Zarnagh et al, 2016).

As human behaviors originate from values gained during his or her life, effort to improve the status of ethical values in hospitals, a strategic approach to ethical values in the organization and predicting the mechanisms to disclose non-ethical behaviors in the organization through formal procedures can be helpful in this path (Khodayari Zarnagh et al, 2013). As acquisition and internalization of professional values in nursing improve the conditions of care in patients and increase the job satisfaction of nurses, the

development of professional values training is considered as one of the important aspects of nursing training (Razmjuei et al, 2016). Nurses are obliged to make their efforts to advance the methods of accessing the safe, desirable, and high quality care (Ghalei & Shohudi, 2013). Viewpoint of the nurses on reporting nursing errors can be helpful for community and the health system of the country. Despite the emphasis of Ministry of Health to report the errors based guidelines of active errors reporting system; various studies have shown that this goal has not been achieved for various reasons. In addition, no research has been conducted on the effect of ethical values training on error reporting from the viewpoint of nurses. The objective of this research was to evaluate the effect of ethical values training on the viewpoint of nurses in the error reporting to provide a basis for conducting more extensive studies and improving the quality of care and enhancing the trust of the patients in the health care system.

Methodology

The current research was a quasi-experimental study with pre-test and post-test design and control group. The research population included all nurses working in the Hazrat-e Ali Hospital and Fatematol Zahra Hospital of Eshtehard city, affiliated to Alborz University of Medical Sciences. The research samples included 70 nurses working in these hospitals who met the inclusion criteria of the research. The inclusion criteria of the research included having least an associate degree in anesthesia or operating room and having bachelor degree in nursing, working in one of the wards of Fatematol Zahra Hospital or Teaching Hospital of Hazrat-e Ali (A), having employment history of at least 3 months at the hospital. The research criteria included participating in less than 2 sessions in the training program and simultaneous participation in similar studies. The samples were non-randomly and equally divided into intervention and control groups. The number of male and female subjects was equal in two groups. The sample size was obtained using the following equation in each group.

$$n \geq 2 \frac{\left(z_{\alpha/2} + z_\beta\right)^2 \sigma^2}{\left(\mu_1 - \mu_2\right)^2}$$

Where,

$$\alpha = 0.05 \Rightarrow z_{\alpha/2} = 1.96$$

The probability of first type error

$$\beta = 0.20 \Rightarrow z_\beta = 0.85$$

The probability of first type error

$$1 - \beta = 0.80$$

power

The size of effect observed

$$(\mu_1 - \mu_2)/\sigma = 0.70$$

μ_1, μ_2, and σ are respectively mean of scores in two groups of intervention and control, and SD of scores.

The minimum sample was considered to be 35 people in each group (a total of 70 people) considering the probability of drop out and using the formula of n = 2(1.96 + 0.85)2 $\left(\frac{1}{0.70}\right)^2$ = 32.

In this sampling, all hospital nurses working in morning, evening and night shifts were considered. With the probability of sample drop out, 80 questionnaires were distributed in the pre-intervention phase, which 75 of them were returned. Five of them were excluded due to defect in their completion. Finally, 70 questionnaires were used the same subjects were also re-examined in post-test stage. Finally, 140 questionnaires were analyzed and evaluated. The data collection tool in this research included two sections: 1- demographic information questionnaire including: age, gender, marital status, education level, employment history, organizational post, type of service, work shift, simultaneous employment other center a history of participating in training workshop or nursing errors and ethics seminar. 2- Error reporting from nurses' viewpoint questionnaire: This tool was derived from the "Patient Safety Assessment in Hospital Questionnaire", developed by the American Agency for Research and Quality of Health in the United States in 2004. It includes 39 items and 4 questions. It was translated into Persian language (1390) has was translated into Persian by Raesi et al (2011) and its validity and reliability were confirmed several times (Raeisi & Abbaspour, 2011). A questionnaire was developed in this study, in which the dimensions of "communication feedback with regard to errors", "non-punitive responses to error", "rate of frequency of reported events" from patient safety culture assessment in hospital questionnaire was used. After confirming their validity, the questions in the dimension of "rate of frequency of reported events" were converted into items and in the dimension of "communication in feedback with regard to errors", 4 items were added, and in the dimension of "non-punitive responses to error", one item was added. This questionnaire is scored on 5-point Likert scale. Scores 0 (for option of never) to 4 (for option of always) are given to its questions. The questions with negative load are scored reversely, in a way that never option takes the highest score of 4.

In this questionnaire, items 8, 9, 10, and 15 were considered as items with negative load. The scoring the questionnaire was as follows: the score of each of the items constituting each of three dimensions of was first calculated. Then, it was divided by the number of items of each dimension. The mean value of 2 for each dimension represents moderate status, the mean value of 0 to 2 represents low status, and mean value of 2 to 4 represents high status of that dimension. Content validity and face validity method was used to confirm the validity of the tool. Accordingly, research tools were provided to 10 faculty members of Faculty of Nursing and Midwifery of Tehran Islamic Azad University of Medical Sciences, Karaj Islamic Azad University of Medical Sciences, and Alborz University of Medical Sciences and they were asked to provide their feedback with regard to relevance of items with the studied goals, observing the grammar criteria, using proper words, appropriate placement of items in place, and appropriate scoring. The required reforms were applied after concluding the views of experts.

The questionnaires were also provided to 10 nurses working in similar wards. They were asked to investigate the level of difficulty in understanding the items, the appropriateness of the items of tool with the subject of the questionnaire, and the ambiguity, and write down their views. After collecting their views, the required reforms were applied on data collection tools items after consulting with supervisor. The internal consistency was also used to examine the reliability. For this purpose, the questionnaire was provided to 10 subjects and the internal consistency of each dimension and the whole tool was examined. These samples were excluded from the main study. The results of Cronbach's alpha in the whole tool and its dimensions are presented in the following [Table 1]. As shown in table, Cronbach's alpha of whole tool was obtained 0.84, which is more than 0.7, so the tool has appropriate internal consistency.

Table 1. Cronbach's alpha of error reporting from nurses' viewpoint questionnaire and its dimensions

Tool and its dimensions	Cronbach's alpha value
Communication feedback with regard to errors	0.68
Non-punitive responses to error	0.76
Rate of frequency of reported events	0.90
Whole tool	0.84

After approving the research project and obtaining license from the Tehran Islamic Azad University of Medical Sciences and the Alborz University of Medical Sciences, the researcher referred to the considered hospitals. Sampling began with providing the introduction letter and obtaining the license from hospital officials.

After giving adequate explanation on research objectives and obtaining informed consent and providing brief explanation of the questionnaires and ensuring the confidentiality of the information obtained, the demographic questionnaire and the researcher-developed error reporting from the viewpoint of nurses questionnaire were presented to the intervention and control groups The error reporting was reviewed from viewpoint of nurses.

In the next step, a training program was implemented for the intervention group. The training was provided for the subjects in the conference hall of Fatematol Zahra Hospital in three one-hour sessions for 3 weeks with teaching aids, including pamphlets and educational slides. The first session, the importance of reporting errors in improving the level of patient safety and definitions of ethical values were trained for the subjects. In the next sessions, twelve ethical values, defined by Shahriari et al (2014) from the viewpoint of the Quran and Islamic texts were taught (Shahryari et al, 2014). The relevant questionnaire was provided again for intervention and control groups in the fourth week and it was collected at the same day and total score of the tool and its dimensions, including " communications feedback with regard to errors", "non-punitive response to error", " the rate of frequency of reported events" were compared in two stages in two intervention and control groups using statistical methods. Data were analyzed using SPSS20 software and independent t-test and paired T-test were used for analyzing the data.

Results

Majority of the participants in the intervention and control groups are female with a frequency of 80%. It should be noted that the number of male and female subjects was equal in both groups. Nurses participating were at age group of 31-40 years (60%) in the intervention group and at age group of 22-30 years (57.1%) in the control group. Majority of the participants in the intervention and control groups were married. In addition, majority of the nurses participating in the research had bachelor degree in the intervention group (85.7%) and all nurses had bachelor degree (100%) in the control group. Two groups showed significant difference in terms of the mean age and they were homogeneous in terms of variables of gender, education, marital status in [Table 2].

Table 2. Frequency distribution of nurses of selected hospitals affiliated to Alborz University of Medical Sciences based on demographic variables

Variable		Intervention group		Control group	
		f	%	f	%
gender	male	7	20	7	20
	female	28	80	28	80
	22-30 years	10	28.6	20	57.1
	21-40 years	21	60	12	34.3
age	41-50 years	4	11.4	1	2.9
	No response	0	0	2	5.7
Marital status	single	15	42.9	11	31.4
	married	20	57.1	23	65.7

	divorced	**0**	**0**	**I**	**2.9**
	associate	**3**	**8.6**	**0**	**0**
Education level	bachelor	**30**	**85.7**	**35**	**100**
	Master	**2**	**5.7**	**-**	**-**

The pretest mean and standard deviation of the nurses' viewpoint of error reporting was 1.90 + 0.47 in the intervention group, indicating that the nurses' viewpoint of error reporting is at the low level. The pre-test mean and standard deviation of the nurses' viewpoint of error reporting was 2.46+ 0.47 in the pretest control group, indicating the nurses' viewpoint of error reporting is at the low level [Table 3]. Comparing the dimensions of the error reporting variable in the intervention and control groups indicated that all dimensions in the pre-test stage had higher mean in control group compared that in the pre-test stage in intervention group. Independent T-test results indicated a significant difference between the mean scores of nurses' viewpoint of error reporting between the two groups of intervention and control before the intervention (95% confidence) [Table 3].

Table 3. Comparing viewpoint of nurses of error reporting and its dimensions in selected hospitals affiliated to Alborz University of Medical Sciences in 2018 in two groups of intervention and control in pre-test stage

Variable and dimensions of tool	Pre-test mean (SD)		Independent t test	
	Intervention group	Control group	T value	Significance value
Nurses' viewpoint of error reporting	**(0.47)1.90**	**(0.47)2.46**	**-4.95**	Pvalue<**0.001**
Dimension of communication feedback with regard to errors	**(0.69)2.23**	**(0.52)2.87**	**-4.42**	Pvalue<**0.001**
Dimension of non-punitive responses to errors	**(0.51)1.38**	**(0.66)1.56**	**-1.32**	**0.193**
Dimension of rate of frequency of reported events	**(0.54)1.86**	**(0.68)2.64**	**-5.25**	Pvalue<**0.001**

The results of comparing the nurses' viewpoint of error reporting in intervention and control groups revealed that the mean of nurses' viewpoint of error reporting in the intervention group were 2.87 + 0.43 in post-test stage, indicating that it is at high level and it is greater than that in the control group. The mean and standard deviation of the nurses' viewpoint of error reporting in the control group was 2.40 ± 0.43 in the post-test stage. While it decreased compared to pre-test stage, it still has a high level [Table 4].

Table 4. Comparing nurses' viewpoint of error reporting and its dimensions in selected hospitals affiliated to Alborz University of Medical Sciences in 2018 in two groups of intervention and control in post-test stage

Variable and dimensions of tool	Pre-test mean (SD)		Independent t test	
	Intervention group	Control group	Intervention group	Control group
	(0.43)2.87	(0.43)2.40	4.57	Pvalue<**0.001**
Nurses' viewpoint of error reporting	(0.42)3.10	(0.52)2.85	2.20	**0.031**
Dimension of communication feedback with regard to errors	(0.84)2.19	(0.63)1.52	3.77	Pvalue<**0.001**
Dimension of non-punitive responses to errors	(0.55)3.14	(0.62)2.49	4.63	Pvalue<0.**001**

The paired t-test results revealed a significant difference between the mean scores of the error reporting variable from the nurses' viewpoint in the intervention group in pre-test and post-test stage (with 95% confidence). In all dimensions, the post-test mean scores were higher that mean pre-test scores in intervention group (P value <0.001). Thus, it can be concluded that training error reporting had a positive effect on nurses' view of points. The paired t-test results in the control group showed that the mean scores of the nurses' viewpoint were reduced in post-test stage compared to those in pre-test stage (Pvalue=0.002). In addition, in dimension of "rate of frequency of reported events", a significant difference was found between the mean scores of pre-test and post-test, so that the mean scores of post-tests decreased compared to means scores of pre-test (Pvalue = 0.001) [Table 5].

Table 5. Comparing nurses' viewpoint of error reporting and its Dimensions in hospitals affiliated to Alborz University of Medical Sciences in 2018 in the intervention and control groups before and after the test in pre-test and post-test stages

Variable and dimensions of tool	Intervention group		paired t test result in intervention group	Control group		paired t test result in control group
Nurses' viewpoint of error reporting	Pre-test	Post-test		Pre-test	Post-test	
	Mean and SD	Mean and SD		Mean and SD	Mean and SD	
Dimension of communication feedback with regard to errors	1.90+0.473	2.87+0.43	' t=-**9/34** ' df=**34** Pvalue<**0/001**	2.46+0.47	2.40+0.430	' t=**3/38** ' df=**34** P=**0.002**

Dimension of non-punitive responses to errors	2.23+0.69	3/10+0.42	، t=**-7.05** ، df=**34** Pvalue<**0.001**	2/87+0/52	2.85+0.52	، t=**1.71** ، df=**34** P=**0.096**
Variable and dimensions of tool	1.38+0.51	2.19+0.845	، t=**-4.89** ، df=**34** Pvalue<**0.001**	1.56+0.66	1.52+0.63	، t=**1.64** ، df=**34** P=**0.110**
	1.87+0.558	3.14+0.55	، t=**-10.33** ، df=**34** Pvalue<**0.001**	2.64+0.68	2.49+0.62	، t=**3.56** ، df=**34** P=**0.001**

Discussion and Conclusion

The present research results showed the mean score of the tool is 2, so nurses' viewpoint from the error reporting were at low level in pre- test stage and high level in post-test stage in intervention group. In addition, nurses' view of points of the error reporting was at high level in pre-test stage in the control group, but this mean was reduced significantly in post-test stage. In this regard, in a study conducted by Beyranvand et al (2014) in teaching hospitals of Khorramabad city, results showed that the total mean attitude of nursing staff towards the disclosure of medical errors was significantly higher than that in those who were not willing to report this error (Beyranvand et al, 2014). The result of this research is consistent with that of this study and the results showed that nurses' attitude is not at desirable level.

In comparing the nurses' viewpoint of error reporting before training ethical values in the intervention group and the first stage in the control group, the research results revealed that the mean and standard deviation of the error reporting in pre-test stage were less in the intervention group than those of nurses' viewpoint in the control group. Comparing the dimensions of the error reporting in the intervention and control groups also showed that mean scores of all dimensions in the control group in the first stage were higher than those in intervention group before the test, which this difference was significant based on the statistical results. In addition, comparing the nurses' viewpoint of error reporting after training ethical values in the intervention group and the second stage in the control group suggests that the mean and standard deviation of the error reporting from the nurses' viewpoint in the intervention group after the test were higher than those in the control group.

Comparing the dimensions of nurses' viewpoint in the two groups revealed that mean of all dimensions in the intervention group was higher than that of control group after the training, which the difference is significant with confidence coefficient of 95%. In this regard, the research conducted by Pourteymur et al (2018) showed that the mean score of attitude in the intervention group increased significantly compared to that of the control group. A significant difference was found between the intervention and control groups in terms of mean of variations in performance score after intervention. Their research results showed an improvement in attitude and performance of students in preventing medicinal errors in the pediatric ward after training (Pourteymur et al, 2018). This result was in line with the result of present study. In a research carried out by Hasanpour et al. (2011), the results revealed no significant difference between the means of ethical sensitivity in decision making of nurses in the intervention and control groups before the intervention (Hasanpour et al, 2011). This result was not in line with that of present study. In a research carried out by Khatibian et al (2017) entitled "the effect of evidence-based learning on general standards of nosocomial infection control on the attitudes of nurses working in the intensive care unit: a clinical trial", the results

revealed a significant increase in the attitude of nurses of trained group two weeks and six week after intervention. It was concluded that training sessions had positive effect on level of attitude of nurses of general standards of nosocomial infection control in intensive care unit. Hence, training interventions recommended observing the general standards of infection control by using a variety of methods (Khatibiyan et al, 2017). The results of this study are consistent with the present research.

In addition, after comparing the nurses' viewpoint of error reporting before and after training ethical values in the intervention group, comparing nurses' viewpoint of error reporting in the first and second stages in the control group, and evaluation of the effect of training on the change in viewpoint and lack of intervention in the control group, it was concluded that there is a significant difference between the mean and standard deviation of error reporting from nurses' viewpoint in the intervention group in pre-test and post-test stages with 95% confidence. In all dimensions, the mean of post-test scores was higher than that of pre-test in the intervention group. In the control group, the mean score of nurses' viewpoint of error reporting in the second stage decreased compared to that in the first stage. Thus, training affected the error reporting from nurses' viewpoint.

In a research carried out by Abeer et al (2016) entitled "evaluation of the effectiveness of training programs on ethical issues, ethical behaviors and ethical stress in nurses working in the emergency department of Mansour Hospital in Egypt", it was concluded that there is a strong relationship between ethical knowledge of nurses and ethical behavior after the training program. The results revealed that the general level of knowledge of nurses was improved immediately and 3 months later. It was concluded that ethical training programs have an effect on enhancing the nurse knowledge, such as ethical principles, including s charity, satisfaction, independence, honesty, judgment, loyalty, and training ethics can help nurses improve their knowledge, trust and ethical behavior (Abeer et al, 2016). In another research carried out by Kantek et al (2017) entitled "The effects of nursing training on professional values: a longitudinal study" in Turkey, results showed that the students obtained the highest scores in sub-scales of responsibility, security, and independence in first year of their education and obtained the highest scores in sub-scales of dignity and independence in the fourth year of their education.

The results indicated that nursing training has a high impact on the development of professional values (Kantek et al, 2017). The results of these studies are consistent with those of present study. In addition, in a quasi-experimental study conducted by Raesi et al (2011), entitled "the impact of training medical errors reporting on the rate and type of error reporting by burses in Mirza Kuchek Khan Hospital in Tehran in 2011", the rate of reporting the medical errors by nurses was 3.14% before the training, which it increased to 6.84% after training. The research results suggest that development of error reporting systems in hospitals and training and encouragement of people in the area of error reporting can increase the rate of error reporting and learning from errors and reducing the similar errors. Hence, they increase the patient safety (Raeisi & Abbaspour, 2011). The training and intervention led to an increase in the rate of error reporting, which is line with the result of this study.

Conclusion

The research results revealed that the mean score of nurses' viewpoint of error reporting in selected hospitals affiliated to Alborz University of Medical Sciences in 2018 in the intervention group was lower than the mean standard of researcher-developed questionnaire, meaning that it is at low level. However, the mean score of nurses' viewpoint of error reporting increased to high level after completing the training course on ethical values. The improvement occurred in all dimensions of the questionnaire and suggests a significant difference in the intervention group in pre-test and post-test stages. Based on the research hypothesis, training the ethical values has an impact on nurses' viewpoint of error reporting.

Acknowledgment

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