

Effect of Mobile-Based Education of Patient's Privacy Protection Principles on the Knowledge, Attitude and Performance of Operating Room Staff

Fardin Amiri^{1*}, Arash Neshati², Sedigheh Hannani³, Namamali Azadi⁴

^{1*}Assistant Professor of Nursing, Department of Operating Room, School of Allied Medicine, Iran University of Medical Sciences, Tehran, Iran.

²Masters Student of Operating Room Technology, Department of Operating Room, School of Allied Medicine, Iran University of Medical Sciences, Tehran, Iran.

³Instructor of Nursing Education, Department of Operating Room, School of Allied Medicine, Iran University of Medical Sciences, Tehran, Iran.

⁴Department of Biostatistics, School of Public Health, Iran University of Medical Sciences, Tehran, Iran.

ABSTRACT

Introduction: Respecting the privacy of the patient during health care, as one of the fundamental human rights, is mandatory to maintain the dignity and mutual trust between the treatment staff and the patient. The aim of this study was to determine the effect of mobile-based education of patient's privacy principles on the knowledge, attitude and performance of operating room staff in Iran University of Medical Sciences.

Methods: This quasi-experimental study was conducted on 125 operating room staff of Iran University of Medical Sciences in 2020. The stratified method with proportional allocation was used for sampling. Data was obtained through demographic information form and researcher-made questionnaires of knowledge and attitude and checklist of operating room staff performance. The performance of the samples was observed and recorded by the researcher using a checklist before the training. Then, teaching the principles of patient's privacy was presented for 4 sessions using mobile phone. Two weeks after the last session, a post-test was taken as a pre-test and compared with each other. ANOVA test was used to analyze the data.

Results: The results of the present study showed that mobile-based education of patient's privacy principles led to a significant increase in the mean score of knowledge, attitude and performance of operating room staff ($P < 0.001$).

Conclusion: According to the results obtained, it is suggested to use the method of mobile-based education of patient's privacy principles for operating room staff.

KEYWORDS

Principles of Privacy Protection, Mobile-Based Education, Knowledge, Attitude, Performance, Operating Room Staff.

Introduction

Privacy is a fundamental human right that people have the right to keep secret and others are obliged to respect this secrecy (1). Privacy is the ability of an individual or group to seclude themselves or information about themselves (2). Privacy has physical, informational and social dimensions (3). The physical dimension of privacy is related to such things as maintaining personal distance, patient coverage, and touch. In therapeutic measures, there is a great focus on the physical protection of the patient by providing appropriate coverage, preventing unnecessary exposure of the patient and observing ethical considerations in physical examinations. The information dimension of privacy is related to the confidentiality of the patient's personal information and its social dimension is related to the environmental control around the patient (4). Privacy as an important principle in the history of the nursing profession leads to respect for individuals, their dignity and independence. Privacy is one of the basic human rights that has been considered for a long time and introduced in all social and legal systems over time (5). Because of the importance of privacy, some governments in recent decades have enacted laws to protect the privacy of individuals, including the privacy laws of Canada and other developed countries. These laws have played a very important role in raising awareness and respect for privacy among medical researchers (6). Patient privacy protection is of great importance in Western societies as well as in Iran. Based on the necessity of conforming medical affairs with the standards of the holy Sharia of Islam, a new and clear view on the issue of patients' privacy is highly emphasized in order to observe it by the medical staff (7). By protecting the patient's privacy, the person will have complete freedom to answer the questions; while the person refuses to give appropriate answers outside of his / her privacy (2). About a quarter of patients admitted to the hospital state that their privacy has not been respected in the hospital (8).

The goal of all patient privacy studies was to improve standards of care. Studies showed that the realization of

privacy in patients is associated with the creation of a culture in this field in the medical staff (2). Edwards reports unnecessary physical touch and encroachment on the patient's privacy and loneliness as the main factors influencing patient privacy (9). Studies by Kusu et al. (10) have shown that patient's privacy is protected in 68.1% of cases (10). However, the findings of a 2009 study found that the privacy of some patients was violated (11). Leino-Klipi (12) in a survey of patient's rights stated that only about 30% of patients believed that their information was kept confidential. In Iran, the findings of studies in this field indicate that about one third of patients' privacy has not been observed (13) and also respect for privacy of 50.6% of patients has been moderate (14). Although Wikblad and Black (15) stated that female reported higher degrees of privacy than males, another study found no significant relationship between patient's gender and privacy (3). Results of a study by Vaskoei Eshkevari (16) showed that the patient's privacy and the confidentiality of information were observed in 55% and 56% of cases, respectively. Moving the patient's equipment without permission, not introducing staff to patients, and revealing her/his secrets to others were among the cases of non-observance of patient privacy in the hospital (3). Respect for privacy as part of comprehensive care allows patients to express themselves and creates favorable conditions for emotional and physical well-being (17). Violation of privacy can lead to many problems such as increased anxiety and stress, loss of trust in the medical staff, aggression, concealment of medical history, and refusal of physical examinations (18). Since the operating room is one of the most stressful wards for patients and the treatment performed in this ward is very sensitive, so proper privacy is very important to observe by the treatment team. Operating room staff as individuals who easily enter the patient's privacy to provide care should be aware that this can cause discomfort and stress to patients (4). Based on his clinical and educational background, the researcher believes that, the standards and principles of professional ethics in the field of privacy and respect for the patient's privacy in dealing with the patient in clinical settings, especially in the operating room are sometimes ignored by medical staff. On the other hand, since the medical staff may not be familiar with the existing professional rules in the field of privacy, the first step to achieve this is to raise knowledge and attitude of medical staff using training in this field. Therefore, the aim of this study was to investigate the effect of mobile-based education of the principles of patient privacy on the knowledge, attitude and performance of operating room staff in the educational centers of Iran University of Medical Sciences.

Methods

Participants

The present quasi-experimental study was conducted as an educational intervention in 2020. A total of 125 operating room staff in 10 hospitals affiliated to Iran University of Medical Sciences in Tehran were enrolled in a stratified method with proportional allocation. The number of samples was calculated using the formula for determining the number of samples with alpha 0.05 and power 0.8. Inclusion criteria included operating room and anesthesia technologists with associate degree and above, non-participation in any workshop on patient privacy principles during the past year, and having a work experience of at least 6 months, and exclusion criteria included a defect in the questionnaire. Consent form was obtained from all the samples to participate in the research and they were assured that the results of this project will be used only for research work.

Educational Interventions

First, a pre-test was taken from the samples so that the knowledge and attitude questionnaires about the principles of patient privacy were completed by individuals before the training. The performance of staff was observed by the researcher and recorded in the checklist (to eliminate the effect of the researcher's presence on the performance of staff, they were informed that their performance was observed three times and recorded only once). Then, the principles of patient's privacy were taught via mobile phone by messengers (Soroush, Bale, iGap) in 4 sessions with one week intervals from each other. Finally, two weeks after the end of the last training session, a post-test was taken and the results obtained were compared with the pre-test results.

Data Collection Tools

Data collection tools included a demographic characteristics form, a researcher-made questionnaire on the level of knowledge and attitude, and a researcher-made checklist to evaluate the performance of operating room staff on the principles of patient privacy protection. The first part of the questionnaire includes demographic information of the

samples such as age (year), gender (male or female), marital status (single, married, deceased and divorced spouse), income level (sufficient, not sufficient), field of study (operating room technology, anesthesia), college degree (associate, bachelor, master). The second part of the questionnaire included questions to assess the knowledge and attitude of operating room staff about the principles of patient privacy and a researcher-made checklist to examine the performance of operating room staff on the principles of patient privacy protection. The questionnaire section consisted of 35 questions in the field of knowledge and 14 questions in the field of attitude. The questions were designed based on the Millman checklist and were approved by the specialized members of the operating room group in terms of content validity. The reliability of the instrument was confirmed by calculating Cronbach's alpha and obtaining a score of 0.89. The operating room staff performance evaluation checklist consisted of 16 questions, its validity and reliability of which was confirmed by the consensus of field experts and simultaneous evaluation, respectively.

Statistical Analysis

The total sampling time was about 6 months. Statistical analysis was performed using SPSS software version 16 at two levels of descriptive (mean and standard deviation) and inferential (ANCOVA test). The significance level of the test was considered less than 0.05.

Ethical Considerations

This research has been approved by the ethics committee of Iran University of Medical Sciences (Ethics code: IR.IUMS.REC/1398.1333) and all ethics requirements were observed related to research.

Results

Table 1. Frequency distribution of demographic variables of the subjects

Variable		N	%
Age group (year)	20-27	30	24.0
	28-36	48	38.4
	37-43	39	31.2
	44 ≤	8	6.4
	Total	125	100
	Means ± SD	33.22 ± 6.23	
Gender	Male	51	40.8
	Female	74	59.2
	Total	125	100
Marital status	Single	59	47.2
	Married	62	49.6
	Divorced	4	3.2
	Deceased spouse	0	0
	Total	125	100
Level of education	Operating room - associate	8	6.4
	Operating room- bachelor	62	49.6
	Anesthesiology - associate	7	5.6
	Anesthesiology- bachelor	48	38.4
	Total	125	100
Income	Sufficient	52	41.6
	Insufficient	73	58.4
	Total	125	100
Work experience (year)	1-5	46	36.8
	6-10	32	25.6
	11-15	28	22.4
	16 ≤	19	15.2
	Total	125	100
	Means ± SD	9.48 ± 6.04	

Work field	General	21	16.8
	ENT	19	15.2
	Neurology	16	12.8
	Dermatology	18	14.4
	Orthopedics	17	13.6
	Ophthalmology	7	5.6
	Gynecology	6	4.8
	Cardiology	13	10.4
	Urology	0	0
	Pediatrics	8	6.4
	Total	125	100

This study was conducted in the operating room (General, Neurology, Dermatology, Orthopedics, Ophthalmology, Gynecology, ENT, Pediatrics, Urology and Cardiology) affiliated to Iran University of Medical Sciences. Out of 125 participants in the present study 51 (40.8%) were male and 74 (59.2%) were female. Most of the people in the study (49.6%) had a bachelor's degree in operating room. The mean age of the subjects was 33.22 ± 6.23 . Also, the mean work experience of the participants was 9.48 ± 6.04 . The variables of age, gender, marital status, level of education, income, work experience, and field of work are presented in Table 1. Table 2 shows that the average scores obtained from knowledge questions for surgical technologists was 17.40 ± 6.38 in the pre-test, which increased to 29.14 ± 3.31 after the intervention. Also, the average scores obtained from the attitude questions for surgical technologists were 35.63 ± 4.68 in the pre-test, which increased to 37.59 ± 3.38 after the intervention. The mean scores obtained from performance questions for surgical technologists were 9.59 ± 2.18 and 11.14 ± 1.89 in pre-test and after intervention, respectively. The average scores obtained from the questions of knowledge, attitude and performance for anesthesiologists and all operating room staff in the pre-test and post-test stages are given in Tables 3 and 4, respectively. The results of the present study indicated the effect of mobile-based education on increasing the knowledge, attitude and performance of operating room staff ($P < 0.001$).

Table 2. Average scores obtained from the questions of knowledge, attitude and performance of operating room technologists in relation to the principles of patient privacy before and after training

Questions	Stage	N	Means \pm SD	Statistics	P-Value
Knowledge	Before training	70	17.40 ± 6.38	$t = -20.04$	<0.001
	After training	70	29.14 ± 3.31		
Attitude	Before training	70	35.63 ± 4.68	$t = -5.90$	<0.001
	After training	70	37.59 ± 3.38		
Performance	Before training	70	9.59 ± 2.18	$t = -9.30$	<0.001
	After training	70	11.14 ± 1.89		

Table 3. Comparison of the mean scores obtained from the questions of knowledge, attitude and performance of anesthesiologists in relation to the principles of patient privacy before and after training

Questions	Stage	N	Means \pm SD	Statistics	P-Value
Knowledge	Before training	55	16.02 ± 5.72	$t = -19.84$	<0.001
	After training	55	28.53 ± 3.13		
Attitude	Before training	55	34.31 ± 4.18	$t = -8.35$	<0.001
	After training	55	36.98 ± 3.10		
Performance	Before training	55	9.16 ± 2.26	$t = -7.78$	<0.001
	After training	55	11.05 ± 2.28		

Table 4. Comparison of the mean scores obtained from the questions of knowledge, attitude and performance of operating room staff in relation to the principles of patient privacy before and after training

Questions	Stage	Means \pm SD	Statistics	P-Value
Knowledge	Before training	16.79 ± 6.11	$t = -28.14$	<0.001
	After training	28.87 ± 3.23		
Attitude	Before training	35.05 ± 4.50	$t = -9.69$	<0.001
	After training	37.32 ± 3.26		
Performance	Before training	9.40 ± 2.22	$t = -11.97$	<0.001
	After training	11.10 ± 2.07		

Discussion

Based on the results obtained from the present study, the mobile-based education method improved the level of knowledge, attitude and performance of operating room staff. Consistent with the present study, Niknami et al. (19) also emphasized the use of mobile-based education to promote health behaviors in nurses. Also in agreement with our results, the study by Wang et al. (20) showed that mobile-based education has increased the learning and knowledge of students. Also, the results of Hartnell et al. (21) showed that the use of mobile has positive and desirable results in learning and raising knowledge. The results of another study showed that e-learning is a way to increase the knowledge of nursing students in order to respect patient's rights (22). Also, the study of Masoomi et al. (23) showed that training staff is a way to increase the observance of client's rights and increase their satisfaction. Several studies have confirmed the effect of mobile-based education on attitude improvement (24, 25). A study by Javadi et al. (26) showed that virtual education is a method to increase the attitude of emergency nursing staff regarding disaster preparedness. To the best of our knowledge, no study was found to compare the effect of mobile-based education on operating room staff performance. A 2007 study on mobile-based education was conducted by Kumar et al. (27) in India. The results of their study showed that 69.2% of participants considered mobile as an immediate tool in their effective learning and 72.2% considered mobile learning as a new opportunity and 66.2% of participants considered mobile learning as fast feedback. 73.4% of the respondents believed that the mobile learning method has flexibility in time and space and is more inclusive. Therefore, it can be said that the path of learning is expanding through distance learning to e-learning and from e-learning to mobile learning (m-learning). Mobile phones have been able to change the traditional method of face-to-face training and provide a new definition of training. It has also provided learners with opportunities to learn at home, at work, and travel, and has overcome many limitations. Research has shown that learners are interested in learning by mobile and think that mobile learning is one of the hopeful programs of the future (28).

Conclusion

Mobile-based education of patient's privacy protection principles due to availability, convenience, attractiveness, and low cost seems to raise knowledge, awareness, attitude, and subsequently improve the performance of operating room staff in relation to patient privacy principles. Therefore, it is suggested that this educational method be used to improve the knowledge, attitude and performance of operating room staff in relation to the principles of patient privacy.

Acknowledgments

This paper extracted from the research dissertation with the registered code of ethics IR.IUMS.REC/1398.1333. We would like to thank all the participants and officials who cooperated with this study.

Authors Contributions

All authors participated in the initial writing or revision of the article and accept responsibility for the accuracy of the content.

Conflict of Interest

The authors state that there is no conflict of interest in the present study.

References

- [1] Mehrabi N. The importance of privacy protection and confidentiality of patient's secrets by medical staff. *Journal of Army Paramedical School of Medical Sciences-Fall and Winter* 88. 2011.
- [2] Hydari MR, Anushe N, Azad T, Mohamadi E. The process of patient privacy: foundations of a theory of data. *Journal of Shahid Sadoughi University of Medical Sciences*. 2011; 19(5):644-54.

- [3] Nayeri ND, Aghajani M. Patients' privacy and satisfaction in the emergency department: a descriptive analytical study. *Nursing ethics*. 2010; 17(2): 167-77.
- [4] Karimi RO, Dehghan Nayeri N, Daneshvar Ameri Z, Mehran AB, Sadeghi TA. Nurses and Inpatient Adolescents' perceptions on Observance of privacy and its Importance. *Journal of hayat*. 2009; 15(1):21-30.
- [5] Miles SH. *The Hippocratic Oath and the ethics of medicine*. Oxford University Press; 2005.
- [6] Yura H, Walsh MB. *The nursing process Appleton-century-crofts*. Norwalk: Conn. 1983.
- [7] Ghasemi MR, Behnam Vashani HR. *Assessment respect to territory and patients right from view of patients in Sabzevar hospitals*. In Articles's abstract of the 1st congress of patient right. Iran: Fasa University of Medical Science 2004.
- [8] Whitehead J, Wheeler H. Patients' experiences of privacy and dignity. Part 1: a literature review. *British Journal of Nursing*. 2008 Mar 27;17(6):381-5.
- [9] Christine Edwards S. An anthropological interpretation of nurses' and patients' perceptions of the use of space and touch. *Journal of advanced nursing*. 1998 Oct; 28(4): 809-17.
- [10] Kuzu N, Ergin A, Zencir MJPh. *Patients' awareness of their rights in a developing country*. 2006; 120(4): 290-6.
- [11] Erdil F, Korkmaz F. Ethical problems observed by student nurses. *Nursing ethics*. 2009; 16(5): 589-98.
- [12] Leino-Kilpi H, Nyrhinen T, Katajisto J. Patients' rights in laboratory examinations: do they realize? *Nursing Ethics*. 1997;4(6):451-64.
- [13] Rasti Emadabadi R, Jahanpour F, Ravanipour M, Hosseini S. *Survey of patient's attitudes toward privacy protection during nursing care*. Research Quarterly of Zabol University of Medical Sciences .; 2.
- [14] Roudi RO, Borhani F, Abbaszadeh A. *Nurse' Knowledge of Patients' Bill of Rights, Level of Observation and Determining Effective Factors on them from their Viewpoints in Kerman University Hospitals*.
- [15] Bäck E, Wikblad KJ Joan. *Privacy in hospital*. 1998; 27(5): 940-5.
- [16] Vaskooei Eshkevari K, Karimi M, Asnaashari H, Kohan N. The assessment of observing patients' right in Tehran University of Medical Sciences' hospitals. *Iranian Journal of Medical Ethics and History of Medicine*. 2009 Oct 10;2(4):47-54.
- [17] Woogara J. Human rights and patients' privacy in UK hospitals. *Nursing Ethics*. 2001 May; 8(3): 234-46.
- [18] Ebrahimi H, Torabizadeh C, Mohammadi E, Valizadeh S. Patients' perception of dignity in Iranian healthcare settings: a qualitative content analysis. *Journal of medical ethics*. 2012 Dec 1; 38(12): 723-8.
- [19] Absavaran M, Niknami Sh, Zareban I. The effect of education through lectures and mobile phones on breast self-examination in nurses. *Monitoring*. 2015; 14 (3): 363-73.
- [20] Wang L. *Effectiveness of text-based mobile learning applications: case studies in tertiary education: a thesis presented to the academic faculty, submitted in partial fulfilment of the requirements for the degree of Master of Information Sciences in Information Technology*, Massey University (Doctoral dissertation, Massey University).
- [21] Hartnell-Young E, Heym N. *How mobile phones help learning in secondary schools*. Coventry: Becta. 2008.
- [22] Varaei S, Nasr PA, Bahrani N, Mohamadi K. The Comparison of the Effects of Electronic Education with Workshop Education on Knowledge of Nursing Students About Patient's Rights. *Scientific Journal of Hamadan Nursing & Midwifery Faculty*, 2018 Apr 10;2008:2819.
- [23] Niazi Z, Shayan A, Bakht R, Roshanaei G, Zahra Masoomi S. Effect of education of pregnant women's bill of rights on midwives function and satisfaction of pregnant women referred to Imam Reza hospital, Kaboudarahang, 2015. *The Iranian Journal of Obstetrics, Gynecology and Infertility*. 2017; 20(2): 50-9.
- [24] Kashfi M, Khani Jeyhoun A, Yazdankhah M. Effect of breast self-examination education on knowledge,

attitude and practice of women Nurabad Mamasani health centers. University of Medical Sciences *Quarterly Journal*, 2012; 10: 40-4.

- [25] Hacıhasanoğlu R, Gözümlü S. The effect of training on the knowledge levels and beliefs regarding breast self-examination on women attending a public education centre. *European Journal of Oncology Nursing*. 2008 Feb 1;12(1):58-64.
- [26] Javadi N., Mohammad Aliha J, Najafi Ghezeljeh T, Haqqani H. *Investigating the effect of education using virtual social network on the knowledge and attitude of emergency nurses regarding disaster preparedness*.
- [27] Kumar B. *The international review of research in open distance learning*, India, Open University. 2007.
- [28] Varney H, Kriebs JM, Gegor LC. Varney 'S *Midwifery*. 4th Edition, Sudbury Mass: Jones and Bartlett: Uk, 2004.