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DETERMINING THE ANXIETY OF PATIENTS UNDERGOING SPINAL SURGERY BEFORE AND AFTER MOBILE-BASED TRAINING

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ABSTRACT

Introduction and aim: Surgery is one of the most anxious events that may occur during each person's life on the other hand, spinal anesthesia is one of the methods in which time, quality and outcome are superior to other methods. Therefore, regarding the destructive effects of anxiety on mental conditions on one hand and the physical effects of anxiety on the other hand, the aim of the present study is to determine the anxiety of patients undergoing spinal surgery before and after mobile-based training.
Methods: In this research, which is a quasi-experimental study, the samples were divided into two groups including a test group (mobile training group) and control group (routine training) (each group contains 40 people) Data collection tools included demographic profile, disease data form and Spielberger situational anxiety inventory questionnaire were completed in both groups the night before the surgery (before the training in the experimental group), the morning of the day of the surgery (after training in the experimental group) and two hours after surgery in both of the experimental and control groups.
Findings: The result of covariance analysis indicated that, by controlling the anxiety score before surgery, the mean of anxiety score was significantly lower in the mobile training group than in the control group. (P<0/001)
Discussion and Conclusion: Mobile-based training before surgery has been effective in reducing the anxiety of patients undergoing surgery by the spinal method. Due to the effectiveness of this method in retention and saving time, it is recommended to use this method in training.
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Introduction

Anxiety is a pathological condition that is defined as a sense of fear associated with somatic symptoms caused by the activation of the auto nerve system, in patients who are hospitalized for any reason, an anxiety outbreak is reported to be between 30% - 10%. The pre-surgery stages, the day of surgery, and the concern about its results all make anxiety, Fugit showed that the pre-surgery stage is the most anxious one. The anxiety begins at the time of patient's awareness of the need for surgical treatment and reaches its peak at the time of hospitalization(1)
An ideal anesthetic method should ensure the safety and satisfaction of patients at the optimum level and provides a very good surgical conditions for the surgeon and allowing rapid recovery and preventing post-surgical complications, as well as having a low cost and allowing transfer or early discharge from post-anesthetic unit(2)Regional area anesthesia (spinal cord, epidural, caudal) is selected when maintaining alertness during surgery and regarding the advantages and disadvantages of each method, and that spinal anesthesia compared to the other two methods (epidural, caudal) is done more as it has some advantages: 1- It takes less time. 2- It can result in faster, better quality and more effective anesthesia. 3- It has less pain during the surgery (2)Although there is very little neurological damage due to spinal anesthesia, the patient's concern is generally far beyond

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clinical reality and it is sometimes based on unfounded and unapproved stories about paralysis. Therefore, one of the most important causes of anxiety is that training in this field can reduce this anxiety and worry (2)

Training is one of the main activities in the field of health and presents an activity to serve the community so as to enable individuals and society to maintain and promote health and to adapt the individual in any situation (3)Mobile phone technology is one of the cornerstones of information and communication technology, which, like other communication technologies, has come into the field of education as a mobile-based education. This communication device has been able to change the traditional way of in-service training and provide a new definition of education, also in terms of time and place, it has facilitated the learning process of learners at home, at work, in travel, and has met many limitations and inefficiencies. Mobile-based education is a subset of e-learning that has been prevalent in organizations, institutions, and schools since 2000 (4)

Kato has researched about education through mobile technology in Japan, he believes that many people in the world think that learning through mobile is one of the programs of hope for the future. Now in Japan, mobile learning is developing with a powerful movement, and most companies, schools, organizations and individuals find their success bound to mobile-based learning. The need for knowledge leads children, young people, and even adults into mobile-based learning in the twenty-first century and Japan because of its high hardware capabilities is pioneering in running mobile-based training and claims to be the world leader in mobile training(5)

Accordingly, and according to the above mentioned and few studies on the effect of mobile-based education on anxiety, we decided to determine the anxiety of patients undergoing spinal surgery before and after mobile-based training.

Methods:

To conduct this research, which is a quasi-experimental study, the samples were divided into two groups: the test group (mobile phone training group) and the control group (routine training) (each group was 40). In order to prevent the patients of two groups from contacting each other and exchanging information between them, control group data were first collected and then one week after the last sampling in the control group, the sampling was started in the experimental group. The statistical population of this study was formed by all referral patients from specialized clinic of Imam Khomeini hospital and the office of general and orthopedic surgeons those patients who were in the surgical ward and undergo spinal surgery volunteer. Data collection tools included demographic profile, disease data form and Spielberger situational anxiety inventory questionnaire were completed in both groups the night before the surgery (before the training in the experimental group), the morning of the day of the surgery (after training in the experimental group) and two hours after surgery in both of the experimental and control groups. A demographic questionnaire includes a demographic profile and disease data form, containing questions about age, sex, level of education, marital status, background history, number of children, income adequacy, medications (especially anti-anxiety drugs). This form was completed before the intervention by examining the patient's case or questioning the patient. The test group was formed by mobile-based training and lectures including photographs, videos, animations, slides and PDFs, which include content from medical books, valid papers, and validated medical and nursing sites approved by anesthesiologists and counseling practitioners which includes subjects about the operating room, the type of anesthesia and its care, the spinal cord, the post-spinal actions, the surgical procedure and its consequences, the patient's behavior and actions during and after spinal surgery, possible complications, the program of rehab and treatment. In this study, the Spielberger positional anxiety inventory was used. The severity of mental anxiety is determined by a four-point Likert scale (very low, low, high, very high). The anxiety score between 20 to 31 indicates low anxiety, the anxiety score between 32 to 42 shows medium to low anxiety, the anxiety score between 43 to 53 demonstrates medium to high anxiety, the anxiety score between 54 to 64 are relatively strong anxiety scores, the anxiety scores between 65 to 75 are severe anxiety scores and the anxiety score between 76 to 80 are very severe anxiety scores. In this scale, low scores representing a sense of tranquility, moderate scores representing moderate levels of stress and anxieties and high scores, reflecting fear, close to fright and panic. Content validity was used to determine the validity of educational materials. For analysis of statistical descriptive data (numerical indices, chart, and table) and inferential (ANCOVA test), SPSS software version 21 was used, and the significance level was less than 0.05.

Research findings:

Determining the anxiety of the patients undergoing spinal surgery in the control group before and after the study

Table (1-4) shows that in the control group, the mean anxiety score before, the morning of the day of the surgery and two hours after the operation had a statistically significant difference.($P<0/001$) Bonferroni paired comparison indicates that the mean anxiety score two hours after surgery is significantly less than before surgery.

Table 1. Distribution of Frequency, Mean and Standard Deviation of Anxiety in the Controlled units in the Control Group and the Results of the Test-Mean Comparison Year 1396

Controlled Group / Anxiety	Two hours after surgery		Morning of the day of the surgery		Before surgery	
	percentage	frequency	percentage	frequency	percentage	frequency
Low	55	22	25	10	20	8
Low to medium	37/5	15	30	12	42/5	17
Medium to high	7/5	3	22/5	9	25	10
Relatively strong	0	0	15	6	10	4
Sever	0	0	7/5	3	2/5	1
Total	100	40	100	40	100	40
Mean ±Standard Deviation	8/96±31/17		12/6±43/12		10/49±40/97	
Analysis of variance with duplicate sizes	$F =$ 33/07 P <*0/001*					

Determining the anxiety of patients undergoing spinal surgery before and after mobile-based education

Table (2-4) shows that in the mobile-based group, the mean anxiety score before, the morning of the day of the surgery and two hours after the operation had a statistically significant difference.(P<0/001) Bonferroni paired comparison indicates that the mean of anxiety score after intervention was significantly lower.

Mobile-based Group / Anxiety	Before intervention		Morning of the day of the surgery (after intervention)		Two hours after surgery (after intervention)	
	percentage	frequency	percentage	frequency	percentage	frequency
Low	2/5	1	27/5	11	75	30
Low to medium	30	12	37/5	15	20	8
Medium to high	32/5	13	30	12	2/5	1
Relatively strong	22/5	9	5	2	0	0
Sever	10	4	0	0	2/5	1
Total	100	40	100	40	100	40
Mean ±Standard Deviation	12/28±49/62		9/58±38/17		7/81±30/05	
Analysis of variance with duplicate sizes	$F =$ 63/29 P <*0/001*					

Mobile-based training before the surgery is effective in reducing the anxiety of patients undergoing spinal surgery method." As shown in Table (3-4), the mean score of anxiety before training in two groups has statistically significant difference.(P=0/001) The result of the analysis of covariance showed that, by controlling the anxiety score before surgery, the mean of anxiety score was significantly lower in the mobile education group than in the control group. The study of changes before and after training also indicated that the changes in the anxiety score in the mobile group were significantly higher than the control group.

Table 4-3. Indicators of anxiety in the studied units in the mobile-based training group and control group and test results of Mean comparison - Year 1396

Group / Anxiety	Mobile-based		Control		Test Result
	Standard Deviation	Mean	Standard Deviation	Mean	
before	12/28	49/62	10/49	40/97	$t =$ 3/38 df=78 P <0/001
Morning of the day of the surgery (after intervention)	9/58	38/17	12/61	43/12	$F =$ 17/87 P <0/001
Two hours after surgery (after intervention)	7/81	30/05	8/96	31/17	$F =$ 10/224 P = 0/002
Changes before and after	10/95	-19/57	6/61	-9/8	$t =$ 4/83 df=78 P <0/001

Discussion and conclusion:
The results of the preliminary study showed that the studied groups in terms of mean age (value =p-0/346), gender (P =0/873), education (P =0/787); occupation (P =0/ 290), marital status (P = 112), insurance status (P = 0.134), type of phone operating system (P = 0.179), surgical type (P = 0.79), history of surgery (P = 0.640) care training after surgery (P = 0.547) the method of training after surgery among patients who had previous post-surgery care training (P = 0.570), the financial problem for the cost of surgery (P = 0.486) and the anxiety reduction methods had no significant statistical difference. The results of the study showed that there was a significant difference between the mean score of anxiety before training in two groups (P = 0.001). The result of covariance analysis indicated that, by controlling the anxiety score before the surgery, the mean of anxiety score was significantly lower in the mobile-based training group than in the control group. The study of changes before and after training also indicated that the changes in the anxiety score in the mobile-based training group were significantly more than the control group (P <0.001). These findings in the discussion suggest that health through mobile is more effective than non-intervention. In line with these findings, Frey et al. (2013) examined the effectiveness of mobile-based technology in changing health behaviors or disease management interventions systematically and pointed out that mobile-based mobile technologies are powerful tools to support patients' health. The researchers, using MEDLINE, EMBASE, PsycINFO, Global Health, the Web of Science, the Cochrane Library, and the UK NHS HTA, concluded that the intervention was effective in sending messages to viral patients, as well as in quitting smoking, and should be included in the services(6). Of course, the evidence on the effectiveness and usefulness of this approach in other areas is available, but more powerful research efforts with optimal interventions are required to assess the effects on objective implications. Noting that various experimental studies have shown that techniques and training methods are effective in reducing pain and anxiety and virtual reality is considered as an effective technique in distraction, which is mostly used in hospital context to reduce pain, but few studies have investigated this method in surgery. These researchers in a controlled, randomized study called using the mobile phone in reducing anxiety during surgery of patients under anesthesia, full anesthesia, and local anesthesia, evaluated the amount of surgical anxiety in the control and experimental groups. The researchers concluded that the mobile phone approach is a promising way of reducing anxiety during surgery, but more studies are required to evaluate the efficacy of this technique in a variety of patients. The above study, in terms of mobile phone approach in reducing anxiety, can be helpful in this study. This discussion is consistent with the findings of Farshi et al. (2011). Concerning the lack of professional forces and the need to train specialist personnel with the aim of comparing the effect of nursing care education through two ways of lecturing and e-learning on nurses learning levels, a significant difference was not seen between two groups in post-test stage. But in the stage of retention the effectiveness of the software method was determined. The researchers concluded that due to the effectiveness of the multimedia software in the retention and time-saving phase, it is suggested to use this method in education and training(7). Mobile education is a subset of e-learning that has spread to organizations, institutions and schools since 2000. This communication and information device can play a significant role in teaching due to its specific features including transmitting technology, miniaturization, accumulation and reception, display and control, spatial and spatial flexibility, decentralization and insecurity(8) The limitation of the study was that the failure to implement a training program designed in a number of mobile phone models has left a number of subjects out of research.

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