

## The Effect of Electronical Film on the Anxiety of Patients Candidate for Lumbar Disc Surgery

### Abstract

**Background:** This study aimed at investigating the effect of showing surgery educational documentary film on the anxiety of patients candidate for lumbar disc surgery. **Materials and Methods:** This study, as a randomized clinical trial, was conducted in 2018 on 60 patients undergoing lumbar disc surgery, Iran. The patients were divided into two groups of intervention and control ( $N = 30$ ). An educational film was shown to the patients of the intervention group for 20 min and the control group was provided with the ward's routine trainings. All patients completed demographic characteristics questionnaire and the Spielberger State-Trait Anxiety Inventory (SSTAI) on the admission day, 1 day before the surgery, and 2 h before the surgery. SSTAI was recompleted by the patients. Data analysis was performed using independent  $t$ -test, Chi-square, Mann-Whitney test, and paired  $t$ -test. **Results:** Before the intervention, the mean score of the state (obvious) and trait (hidden) anxieties was not significantly different between the two groups, but after the intervention, the mean [standard deviation (SD)] score of the state anxiety in the intervention group was significantly lower than that of the control group [mean (SD) = 40.78 (10.34) vs. 47.45 (10.33),  $F_{10,33} = 58$ ,  $p = 0.01$ ]. In addition, after the intervention, the mean (SD) anxiety score of the patients in the intervention group was significantly lower than that of the control group [mean (SD) = 38.65 (11.01) vs. 44.71 (10.34),  $F_{10,34} = 58$ ,  $p = 0.03$ ]. **Conclusions:** The results showed that educational film reduces the patients' level of anxiety before the surgery. As such, it is recommended that these trainings be included in preoperative nursing practices.

**Keywords:** Anxiety, film protocol, intervertebral disc, Iran, surgery

### Introduction

Lumbar disc herniation is a problem that mankind has been struggling with from the very beginning of the history.<sup>[1]</sup> In addition, the pressure of daily life, inappropriate position of the body, lack of daily exercise, and obesity are among the factors which can cause back pain.<sup>[2]</sup> Lumbar disc herniation surgery is one of the most prevalent surgeries in the world. Each year, about 500,000 lumbar spine surgeries are performed in the United States to treat lumbar disc herniation.<sup>[3]</sup> This problem is the main cause of disability among people.<sup>[3]</sup> As different studies have shown, direct and indirect costs of back pain are as high as the costs of other diseases such as headache, cardiovascular disease, depression, and diabetes. Although this complication usually begins with a mild and restraining pain, the pain sometimes gradually becomes severe, to the extent

that about 15% of people become cripple because of disease progression.<sup>[4]</sup> This complication is the main cause of disability in workers, increased compensation, and reduced labor productivity in industrialized and developing countries. Lack of attention to lumbar damage not only results in physical problems in workers in terms of their occupational health and safety but also, from an economic point of views, leads to more financial losses.<sup>[5]</sup> The costs of back pain in the US industrial environments have been estimated to be about US\$18.5 billion to US\$ 28.2 billion.<sup>[6]</sup>

As surgery is always a great experience for patients and their family, and any kind of surgery can be considered a threat to the integrity of the body and life,<sup>[7]</sup> anxiety is one of the most prevalent preoperative problems, and despite the advances in surgical techniques, most patients suffer a kind of preoperative anxiety.<sup>[8]</sup> Anxiety is known as a major complaint in most patients referring to hospitals as well as

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an inhibitor and effective factor that makes patients resist surgery. High levels of anxiety can increase the risk of death up to three times.<sup>[9]</sup> Anxiety is a shared feeling in all patients, and so about 60% of people who have undergone a selective surgery have experienced it.<sup>[10]</sup> Anxiety starts when the patient becomes aware of the need for surgical treatment and culminates at the time of hospitalization. Patients may think about their day of surgery as the most dangerous and most threatening day of their life.<sup>[11]</sup> Most patients waiting for surgery are anxious and afraid of surgery. The level of this fear depends on many factors such as the severity of the surgery, the adaptability of the patient, cultural expectations, and previous surgical experience.<sup>[12]</sup>

The prevalence of preoperative anxiety in adults differs from 11% to 80%.<sup>[13]</sup> In a study on preoperative anxiety, Farmahini Farahani *et al.* found out that 10% of patients suffer low anxiety, 30% suffer moderate anxiety, and 60% have severe anxiety.<sup>[9]</sup> Preoperative anxiety affects patients psychologically and physiologically<sup>[14]</sup> and may cause adverse postoperative conditions such as fatigue, nausea, urinary retention, restlessness, insomnia, pain, increased analgesic demand, and increased length of hospitalization.<sup>[15]</sup> Moreover, high levels of preoperative anxiety can prevent postoperative recovery. High preoperative anxiety entails high prevalence of postoperative pain, decreased ability of resistance to infection, delay in wound healing, negative effects on patient's mood, and increased hospitalization period.<sup>[16]</sup> The importance of anxiety is such that many surgeons postpone the surgery of the patients with levels of anxiety.<sup>[17]</sup> One of the most important factors in the emergence of anxiety and concern in patients is their lack of information about the process of treatment. In this regard, Izadi-Tameh *et al.* believe that providing patients with too much information not only does not help them reduce their anxiety but also exacerbates it.<sup>[18]</sup> Since fear of unknowns and postoperative pain are one of the first causes of anxiety, this fear can be somewhat relieved by knowing what will happen.<sup>[10]</sup> The main purpose of nursing is to maximize preoperative physiologic and psychological health of patients. For this reason, one important responsibility of nurses, particularly psychiatric nurses, is to help patients adapt to this condition and reduce the anxiety caused by it.<sup>[9]</sup> On the other hand, the benefits of reduced anxiety and the effect of this reduction on the use of drugs during the anesthesia process, easier pain toleration, and earlier discharge of the patient from the hospital have been proven to ultimately reduce the costs and postoperative complications.<sup>[13]</sup> Therefore, management of anxiety is an important nursing-related factor when compared with other members of the therapeutic team; these are nurses who spend more time with patients in clinical centers. For this reason, they are in the particular position to relieve patients' anxiety and can easily use nonpharmacological treatments to reduce anxiety of patients.<sup>[19]</sup>

One of the nonpharmacological methods is the use of different available training aids that can be used in educating patients. Currently, information about postoperative situation is given routinely to patients during the presence of a nurse on their bedside or through a written instrument such as a pamphlet during a preoperative training session.<sup>[19]</sup> Showing an educational film is another method that increases awareness and reduces the unknown-related anxiety, and through which a relatively large number of patients can be educated in a relatively short time. Film, as one of the visual and auditory training aids, can facilitate education of the patients and their family.<sup>[20]</sup> Although studies have been conducted to reduce anxiety in patients undergoing surgery and provide them with required information through using different training tools, the most ideal method for giving this information has remained still unknown.<sup>[21]</sup> Several teaching aids are used in educating patients. The results of a study showed that educating through lecture can provide patients with the required information and reduce their anxiety. Video Compact Disk (VCD) is another appropriate tool for educating patients.<sup>[20]</sup> For example, Momeni *et al.* showed that education through VCD and training manual does not have a significant effect on the preoperative anxiety of the patients candidate for coronary artery bypass graft.<sup>[22]</sup> In contrast, Tou *et al.* showed in their study that visual education (two-dimensional animation) reduces preoperative anxiety.<sup>[23]</sup> Advancement of communication technology and expansion of different communication tools have made it possible to use education through video CDs. The advantages of video training include the ability of storage, information continuity, ease of use, and cost-effectiveness.<sup>[24]</sup> However, besides these advantages, one of the most important disadvantages of this method is virtuality and nonexistence of an active instructor whose real and active communication with patients plays an effective and indisputable role in achieving the educational goals.<sup>[25]</sup> In spite of these issues, bridging the information and communication gap between patients and medical staff not only helps improve the disease but also prevents the development and spread of other related diseases that in some cases may lead to the death of the patients.<sup>[26]</sup> In our country, despite the high prevalence of lumbar disc herniation, it seems that these patients do not have enough information about their surgical procedure. This has caused many problems such as concern, confusion, and anxiety in these patients. During his several years of experience with such patients in medical centers, the researchers encountered two views about providing complete information to patients: first, in some patients, giving enough information reduces their anxiety; second, in some other patients, giving enough information not only increases their anxiety but also makes them refrain from surgery. This challenge together with the little study in this area and consideration of the fact that showing a documentary film and development of an educational program are among the

physical and psychological interventions of the psychiatric nurses made the researcher conduct a research aimed at investigating the effect of showing a lumbar disc surgery film on the anxiety of the patients candidate for lumbar disc surgery.

## Materials and Methods

This study is a two-group randomized clinical trial (IRCT20180531039926N1) with pretest and posttest design. The study was conducted from February 2018 to May 2018. The population of the research consisted of all the patients candidate for discectomy who had referred to Isfahan teaching hospitals such as Al-Zahra and Kashani Hospitals. To calculate the number of samples, considering the 95% confidence coefficient and 80% test power, the mean anxiety score was considered to be at least 0.7 to show the significant difference between two groups. Accordingly, 30 participants were selected for each group. The eligible participants were selected using convenient sampling method, and those patients who had the inclusion criteria were entered into the study after obtaining their written consent. To prevent the patients of the two groups from facing each other, the patients of one hospital (Al-Zahra Hospital) were selected randomly as the control group and those of another hospital (Kashani Hospital) as the intervention group. The most important inclusion criteria were having the ability to read and write, having a medical record with a diagnosis of the lumbar disc in that center, being aware of their illness and interested in participating in the study, age between 18 and 64 years, not attending other training programs simultaneously, willingness to participate in the study and being included in one of the groups, no cognitive impairment, no known mental illness confirmed by the physician and according to the medical records of the intended hospitals, no previous lumbar disc surgery, and the patient should not be one of the medical staff. The most important exclusion criteria were the patient's unwillingness to continue participation in the study, the sudden occurrence of a stressful event such as divorce, the death of the first-degree relatives of the participants, and the use of sedative or anxiolytic drugs during the study.

Data collection tool in this study was a two-part questionnaire. The first part was related to the participants' demographic characteristics such as age, gender, marital status, level of education, occupation, duration of the illness, and the drugs used by them. The second part included Spielberger State-Trait Anxiety Inventory. This questionnaire has two parts that measure state and trait anxieties. State anxiety scale consists of 20 questions measuring individual's feelings and emotions "at this moment and at the time of responding." Trait anxiety scale also includes 20 questions measuring the general and ordinary emotions of individuals. Examples of the scales have been presented at the end of the discussion. In

responding to the state anxiety scale, there are a number of options for each item and the subjects must select the option that best describes the severity of their feeling. These options are as follows: (1) not at all, (2) somewhat, (3) moderately so, and (4) very much so. In responding to the trait anxiety scale, subjects should choose the option that represents their ordinary and dominant feeling through a 4-point scale as follows: (1) almost never, (2) sometimes, (3) often, and (4) almost always. Each of the items of STAI test, based on the given response, is scored between 1 and 4. Score 4 shows a high presence of anxiety that 10 scales of state anxiety and 11 scales of trait anxiety are scored on this basis. To score other items, a high rank for each item represents the absence of anxiety that 10 items of state anxiety and 9 items of trait anxiety are scored in this way.<sup>[27]</sup>

This standardization questionnaire has a high level of validity and reliability. In the study by Khanipour *et al.*, the coefficient of consistency of this test was obtained to be 0.66 using Cronbach's alpha. Using internal consistency method, its reliability has been reported to be 0.86–0.96 in working with adults, students, and military recruits, and using test–retest method its reliability has been 0.77 for students and 0.70 for university students. In the standardization of the test in Iran, the reliability of test–retest for the trait anxiety scale was calculated to be 0.65–0.86 and Cronbach's alpha coefficient for the state anxiety was 0.92.<sup>[28]</sup> Sampling was performed such that the patients of one hospital (Al-Zahra Hospital) were selected randomly as the control group and those of another hospital (Kashani Hospital) as the intervention group to prevent the patients of the two groups from facing each other. After receiving the permission of the Ethics Committee and obtaining the written consent of the patients in the two groups and assuring them about the confidentiality of the collected information, the selected patients, 1 day before the surgery and after completing demographic information, completed Spielberger Anxiety Inventory to determine the level of anxiety. The questionnaires were completed by patients themselves at appropriate time intervals between their resting time and when no specific action was taken for them. In the intervention group, 1 day before the surgery, an educational film whose content had been modified and confirmed by several neurosurgery specialists and psychiatric experts was shown to the patients. This 20-min film contained several sections including the introduction of a disc disease, animation, and how the disc is dislodged, different treatment methods, how the patient is anesthetized in the surgery room, scenes from the surgery, and finally, a postoperative interview with the patient. In this method, the electronic film was shown to the patient and his or her family individually and then the researcher responded to the questions of the patient and his or her family. No education was provided to the control group by the researcher. Indeed, routine educations were presented to



the patients of the control group as usual. To comply with the ethics of the research, the control group finally received educational pamphlets and CDs. Then, 2 h before the surgery, the Spielberger Anxiety Inventory was recompleted by the patients. After being collected and encoded, the data were entered into the computer, and after ensuring the accuracy of entry of the data, the data were analyzed using SPSS-19 (SPSS, Inc., Chicago, IL, USA), independent *t*-test, Chi-square, Mann–Whitney test, and paired *t*-test.

### Ethical consideration

After receiving the permission of the Ethics Committee (IR.MUI.REC.1396.3.840) and obtaining the written consent of the patients in the two groups and assuring them about the confidentiality of the collected information, they were submitted to Kashani and Alzahra Hospitals on March 8, 2018. The purposes and processes of this study were explained to the patients.

### Results

Of the 60 patients, 56.70% patients of the control group and 70% patients of the intervention group were male and the rest were female. The duration of the disease was 12.07 months in the intervention group and 11.03 months in the control group. The result of the independent *t*-test showed that the mean age and duration of the disease were not significantly different between the two groups. Other demographic characteristics and information about the disease of the research subjects and the result of their homogeneity in the two groups, which were investigated using Chi-square and Mann–Whitney tests, are shown in Table 1. With regard to the state anxiety, there was no significant difference between the two groups in the preintervention stage. At this stage, the mean [standard deviation (SD)] anxiety score was 46.40 (11.52) in the intervention group and 47.26 (11.37) in the control group. However, after the intervention, this score became

40.78 (10.34) in the intervention group and 47.45 (10.33) in the control group. The results of the independent *t*-test indicated that preintervention mean score of the state anxiety was not significantly different between the two groups ( $p = 0.77$ ), but after the intervention, it was significantly lower in the intervention group than the control group ( $p = 0.01$ ).

Similarly, with regard to the trait anxiety, there was no significant difference between the two groups in the preintervention stage. The mean (SD) score of trait anxiety was 45.01 (12.69) in the intervention group and 44.97 (8.49) in the control group. However, after the intervention, this score became 38.65 (11.01) in the intervention group and 44.71 (10.34) in the control group. The results of the independent *t*-test showed that preintervention mean score of the trait anxiety was not significantly different between the two groups ( $p = 0.99$ ), but after the intervention, it decreased significantly in the intervention group compared to the control group ( $p = 0.03$ ) [Table 2].

Paired *t*-test also showed that the mean score of both state ( $p = 0.001$ ) and trait anxieties ( $p < 0.001$ ) in the intervention group after the intervention was significantly lower than before the intervention. However, the mean score of these two anxieties in the control group was not significantly different before and after the intervention ( $p > 0.05$ ) [Table 3].

### Discussion

This study aimed at determining the effect of showing surgery educational documentary film on the anxiety of the patients candidate for lumbar disc surgery. The results showed that after the intervention, the state and trait anxieties of the patients in the intervention group were significantly lower than those of the control group. In addition, in both control and intervention groups, the state and trait anxieties were significantly decreased after

**Table 1: Frequency distribution of sex, occupation, marital status, and education level in the two groups**

Variable		Intervention group No. (%)	Control group No. (%)	Chi-square		
				$\chi^2$	df	<i>p</i>
Sex	Male	12 (40.00)	13 (43.30)	0.07	1	0.79
	Female	18 (60.00)	17 (56.70)			
Occupation	Housewife	12 (40.00)	13 (43.40)	0.37	2	0.83
	Employed	16 (53.30)	16 (53.30)			
	Unemployed	2 (6.70)	1 (3.30)			
Marital status	Single	3 (10.00)	5 (16.70)	4.68	3	0.20
	Married	25 (83.30)	24 (80.00)			
	Divorced	0 (0.00)	1 (3.30)			
	Widow/widower	2 (6.70)	0 (0.00)			
				Mann-Whitney test		
				<i>Z</i>	<i>p</i>	
Education level	Under the diploma	18 (60.00)	18 (60.00)	0.10		0.92
	Diploma	7 (23.30)	6 (20.00)			
	Academic	5 (16.70)	6 (20.00)			

**Table 2: Comparison of the mean scores of state and trait anxieties between the two groups before and after the intervention**

	Intervention group Mean (SD)	Control group Mean (SD)	Independent <i>t</i> -test		
			<i>t</i>	df	<i>p</i>
State anxiety					
Before the intervention	46.40 (11.52)	47.26 (11.37)	0.29	58	0.77
After the intervention	40.78 (10.34)	47.45 (10.33)	2.50	58	0.01
Trait anxiety					
Before the intervention	45.01 (12.69)	44.97 (8.49)	0.01	58	0.99
After the intervention	38.65 (11.01)	44.71 (10.34)	2.19	58	0.03

SD: Standard deviation

**Table 3: Comparison between the pre- and post intervention mean scores of state and trait anxieties in the two groups**

	Before the intervention Mean (SD)	After the intervention Mean (SD)	Paired <i>t</i> -test		
			<i>t</i>	df	<i>p</i>
Intervention group					
State anxiety	46.40 (11.52)	40.78 (10.34)	3.86	29	0.001
Trait anxiety	45.01 (12.69)	38.65 (11.01)	4.37	29	<0.001
Control group					
State anxiety	47.26 (11.37)	47.45 (10.33)	0.12	29	0.91
Trait anxiety	44.97 (8.49)	47.45 (10.33)	0.18	29	0.86

SD: Standard deviation

the intervention.<sup>[29]</sup> In the study by Saleh-Moghaddam *et al.*, conducted to investigate the effect of educational films on preoperative anxiety in patients undergoing open heart surgery without a pump, it was shown that teaching through educational films 1 day before the surgery can reduce state and trait anxieties in the patients.<sup>[19]</sup> These results are consistent with the results of this study. This is maybe due to the fact that information can more easily be transformed to patients through educational films and multimedia. On the other hand, this technique is more understandable for the patients with lower level of education.<sup>[19]</sup> Given that in this study also most patients had elementary education and all of them were homogeneous in this regard, the effectiveness of the educational film in decreasing preoperative anxiety in the intervention group compared with the control group was not unexpected.

The results of the study by Ruffinengo *et al.*, aimed at investigating the effect of educational films on the satisfaction and anxiety level of patients under coronary angiography, showed that education through films can reduce the level of anxiety and increase the satisfaction of patients.<sup>[30]</sup> Tou *et al.* also conducted a research entitled "effect of preoperative two-dimensional animation information on perioperative anxiety and knowledge retention in patients undergoing bowel surgery."<sup>[23]</sup>

In this study, increasing the information and knowledge of the patients about the physical environment and personnel of the operating room, the method of anesthesia, surgery, surgical complications and preoperative and postoperative care, and management of anxiety through educational films can reduce the state and trait anxieties of the patients.

However, in this study, the state and trait anxieties of the patients in the control group (pamphlet and face-to-face education) were also significantly reduced after the intervention. This shows that if new educational tools such as educational films are not available, written tools can also help reduce the anxiety of patients, especially their state anxiety. Accordingly, it seems that the use of film in preparing patients and increasing their awareness before initiating therapeutic interventions has a significant effect on reducing their fear and anxiety during the treatment process. However, in Momeni *et al.*'s study, it was shown that showing film 6 days before the surgery could reduce the anxiety of patients; in contrast, showing it 1 day before the surgery increased their anxiety. Momeni *et al.* believed that the cause of this increase has been the overconcentration of the patients on complications and surgical outcomes.<sup>[22]</sup>

These results are not consistent with the results of our research. Perhaps this difference is related to the educational content, showing different surgery films, the duration of the film, and different environmental conditions. However, the results of a study conducted by Najafi *et al.* indicated that neither education through lectures nor through CDs can reduce anxiety level of patients before echocardiography. In this study, Najafi *et al.* argued that this lack of anxiety reduction is due to the inadequate educational content and the time of the education.<sup>[31]</sup>

These results also are not in line with the results of this study. The disagreement of the researchers regarding the effect of film and lecture on the preoperative anxiety of patients can be attributed to the difference in the method of education, the age and gender of the participants, and the

type of the educational content. Among the limitations of the research, mention may be made of the small size of the sample and receiving education from a source other than the researchers that, with regard to the latter, the required recommendations were given to the patients before the research.

## Conclusion

Given the more reduction in the preoperative anxiety in the patients of the educational film group, the use of educational film as a low-cost and effective tool is recommended in teaching patients candidate for lumbar disc surgery. Watching educational film, patients may obtain more required information to take care of themselves and get more familiar with the environment and the conditions of the operating room and postoperative care. Future researchers are recommended to minimize the mentioned limitations and the insufficiencies of this study using larger sample sizes.

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## Conflicts of interest

Nothing to declare.

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