

# Effect of Preoperative Visitation by Operating Room Staff on Preoperative Anxiety in Patients Receiving Elective Hernia Surgery

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**Purpose:** The purpose of this study was to evaluate the effect of preoperative visitation on preoperative anxiety in patients receiving elective hernia surgery.

**Design:** Quasi-experimental study.

**Methods:** Seventy patients undergoing hernia surgery were selected and assigned to the experimental group ( $N = 35$ ) and the control group ( $N = 35$ ). In the intervention group, the surgical technologist visited the patient in the surgical ward the night before surgery and after transferring the patient to the waiting room in the operating room department. The control group received only routine preoperative care by nurses in the surgical ward and operating room department. For both groups, the Spielberger State-Trait Anxiety Inventory was completed in two stages, on the night before surgery and on arrival time in the operating room.

**Findings:** Average age was  $41.2 \pm 13.4$  years. Statistical tests showed a significant reduction in anxiety after intervention ( $42.3 \pm 9.2$ ) compared with before intervention ( $45.6 \pm 9$ ) and between the two groups after intervention ( $50.9 \pm 10.7$  in the control group vs  $42.3 \pm 9.2$  in the intervention group).

**Conclusions:** Using an anxiety evaluation approach in preoperative training programs to manage anxiety in surgical patients is recommended.

**Keywords:** preoperative visiting, operating room staff, preoperative anxiety, hernia.

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**PREOPERATIVE ANXIETY**, A common phenomenon in preoperative patient evaluation, is a process that starts from the date of planning an operation and progressively intensifies until it is performed. It can be generally described as a highly disturbing condition for patients.<sup>1</sup> The symptoms of preoperative anxiety are stress and discomfort. The sympathetic, parasympathetic, and endocrine systems are known to be involved in this reaction.<sup>2</sup>

Anxiety, like pain, has a negative impact on tissue improvement and repair. Moreover, expending an immense amount of spiritual and physical energy during anxiety and pain episodes can lead to exhaustion, which results in a series of biochemical activities in the body causing stimulation of the autonomic (nervous) system, muscle tension, and increased production of corticosteroids.<sup>3</sup> Because of these reactions, attention should be focused on reducing anxiety via adequate hospital care that includes a timely and efficient preanesthetic consultation and appropriately preparing the patient both psychologically and pharmacologically.<sup>4</sup>

Studies have revealed that the lack of guidance regarding surgery and lack of support from health staff, such as preventing the establishment of a proper therapeutic relationship, cause patients to remain anxious and in a depressed state throughout hospitalization.<sup>5</sup> Rosiek et al<sup>6</sup> revealed that some patients reported a poor relationship with medical personnel and said that some nurses dismiss their concerns and do not treat them as patients who are going to surgery, with 42% of the elective surgical patients experienced preoperative anxiety. This rate shows that patients lack adequate training, psychological support, and information on surgery. According to Vermişli et al,<sup>7</sup> 74.5% of the elective surgical patients communicated that they received inadequate preoperative information and 87.8% asked for preoperative information about the surgical process they were going to undergo. It can be concluded that the lack of information regarding the field of surgery and anesthesia can cause anxiety in patients who are about to undergo surgery. Conventionally, medicines can be used to treat this anxiety<sup>8</sup>; however, they produce disconcerting results and effects.<sup>9</sup>

Although surgical and anesthetic procedures are nowadays more successful and associated with

less complications, preoperative anxiety regarding the same still remains<sup>10</sup> and varies with time. Different studies have demonstrated that the lack of appropriate nursing interventions for anxiety reduction causes a greater level of anxiety in patients when approaching the time of surgery, demonstrating the necessity of using nonpharmacologic methods for easing anxiety.<sup>11</sup> Given that most of the factors pertaining to preoperative anxiety in elective surgical patients (younger age, female gender, no history of previous surgery, and type of surgery) are nonmodifiable, providing surgery-related information to these patients is the only modifiable preoperative anxiety-related factor.<sup>12</sup>

Presently, there is a growing interest in studies on nonpharmacologic interventions that can be used to reduce unwanted complications of antidepressants.<sup>13</sup> Many techniques, such as providing psychological counseling sessions and educational videos,<sup>14,15</sup> visiting patients who have already had surgery before,<sup>16,17</sup> managing preoperative interventions based on music therapy,<sup>18,19</sup> and familiarizing patients with the staff and surgical equipment,<sup>9</sup> have been examined to evaluate their impacts on preoperative anxiety in elective surgical patients. In some cases, the aforementioned methods proved to be very aggressive, costly, and needed a host of equipment to be used for anxiety reduction.<sup>20</sup>

Although previously conducted studies demonstrate the positive effects of training and other methods (mentioned previously) on the reduction of preoperative anxiety in elective surgical patients, no study was found examining the effect of preoperative visitation by operating room staff on preoperative anxiety.

### *Aim of the Study*

This study was conducted to evaluate the effect of visitation by the operating room staff on preoperative anxiety in elective surgical patients.

### **Methods**

#### *Sample and Setting*

This is an interventional study with a quasi-experimental design. It was conducted to evaluate

the effect of visitation by the operating room staff on preoperative anxiety in patients who are candidates for hernia surgery. Seventy patients receiving elective hernia surgery were purposefully selected on the basis of previous studies.<sup>9</sup> The inclusion criteria were hospitalization for elective ventral hernia repair (inguinal [direct and indirect], femoral, and umbilical hernia), age group of 15–65 years, and could speak Persian. Patients with previous history of surgery conducted in an operating room, psychiatric disorders, dependence on antidepressants and analgesics, and those who were members of the medical or paramedical profession were excluded.

### **Data Collection and Measures**

During the evening preceding surgery, the surgical technologist went to the surgical ward and after selecting patients based on entry criteria, obtained their consent to participate in the study. The demographic questionnaire and the State-Trait Anxiety Inventory (STAI) were completed by a nurse expert according to the patients' responses by talking to them. Finally, the patients were assigned to the experimental group (N = 35) and the control group (N = 35) based on the patient's time of arrival for the study. The first patient was assigned to the experimental group and next patient to the control group and so on. In this study, the intervention was conducted in two stages:

#### **Step 1: Patient Visit in the Surgical Ward the Night Before Surgery**

In the intervention group, the surgical technologist, after introducing himself and explaining the research objective and methodology, provided brief information about the surgeon, type of surgery, place of surgery, time of surgery, duration of surgery, operating room setting, and duration of postanesthesia care unit stay using simple and understandable language. The patients in the intervention group were also reassured that the researcher (surgical technologist) would be present in the operating room on the day of surgery. Through this interaction, the patients in the intervention group had the opportunity to ask the surgical technologist questions regarding the surgery and receive answers from the technologist.

#### **Step 2: Patient Visit in the Operating Room Department Immediately Before Surgery**

After transferring the patient to the waiting room in the operating room department, the surgical technologist visited the patients in the intervention group and completed the STAI questionnaire according to the patients' responses. The surgical technologist remained at the bedside of the experimental patients until the induction of anesthesia.

The control group did not receive the intervention of study and received only routine preoperative care by nurses in the surgical ward and operating room department. It is worth mentioning that both groups received similar routine care (preoperative medications, surgical site preparation, type and method of anesthesia, anesthetic depth, and type and method of endotracheal intubation) starting from the night preceding surgery until the morning on the day of surgery.

For both groups, the Spielberger STAI was completed in two stages, the night before surgery and the arrival time in the operating room by a nurse expert who was unaware of the research intervention.

### **Ethical Considerations**

This study was approved by the Research Committee of Shahrood University with IR.SH-MU.REC.1395.11 code of ethics.

### **Data Analysis**

The data were analyzed using descriptive-inferential statistics (independent *t* test, paired *t* test,  $\chi^2$  test, Pearson correlation coefficient, one-way analysis of variance, and Kolmogorov-Smirnov test) using SPSS 19 (IBM, Armonk, NY).

### **Results**

The mean age of participants was  $41.2 \pm 13.4$  years. The Kolmogorov-Smirnov test determined a normal distribution of research variables ( $P > .05$ ). The demographic characteristics of the two groups are presented in [Table 1](#).

The mean scores of preoperative state and trait anxiety of all the subjects (N = 70) were

**Table 1. Socio-Demographic Characteristics of Patients (N = 70)**

Personal Characteristics	Frequency	Percent
Age (y)		
< 50	44	62.9
50-60	19	27.1
>60	7	10
Sex		
Male	60	85.7
Female	10	14.3
Marital status		
Single	12	17.1
Married	58	82.9
Education		
Illiterate	14	20
Below diploma	50	71.5
Diploma	6	8.6
Graduate		
Occupation		
Employee	5	7.1
Worker	3	4.3
Farmer	4	5.7
Housewife	13	18.6
Self-employment	40	57.1
Retired	3	4.3
Unemployed	2	2.9

$47.1 \pm 9.4$  and  $48 \pm 10.6$ , respectively (Figure 1). Most subjects had state anxiety (44.3%) and trait anxiety (38.6%).

Table 2 shows the mean and standard deviation of anxiety before and after intervention for both groups. The independent *t* test showed a significant difference between the experimental and control groups in terms of state anxiety difference

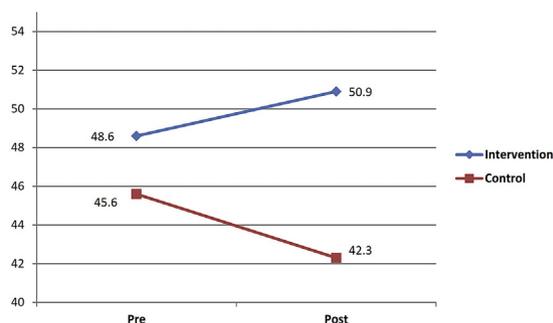


Figure 1. Comparison of state-anxiety before and after treatment in both groups. This figure is available in color online at [www.jopan.org](http://www.jopan.org).

( $-3.3$  vs  $2.3$ , respectively) and trait anxiety difference ( $-7.1$  vs  $0.9$ , respectively).

The mean score of anxiety significantly decreased in the intervention group after the intervention, whereas this score significantly increased in the control group after the intervention. The paired *t* test also confirmed this significant difference in the mean score of anxiety before and after the intervention ( $P < .05$ ) (Figure 1).

With respect to the demographic characteristics of the subjects, the independent *t* test showed a significant difference in the mean anxiety before randomization (N = 70) between males and females ( $P < .05$ ). Women scored higher than men in both state anxiety ( $55.5 \pm 8.4$  vs  $45.7 \pm 8.8$ ) and trait anxiety ( $57.5 \pm 8.6$  vs  $46.4 \pm 10.1$ ). The Pearson correlation coefficient demonstrated a significant correlation ( $P < .05$ ) between age, and both state anxiety ( $r = -0.308$ ) and trait anxiety ( $r = -0.340$ ). In other words, the level of both state and trait anxiety of the subjects reduced with age (Figures 2 and 3).

## Discussion

This study aimed to investigate the effect of preoperative visitation by the operating room staff on preoperative anxiety in patients receiving elective hernia surgery. Other studies conducted on this population of patients were not found, and hence the results of this study have been compared with studies conducted on patients who underwent different surgeries (other than hernia surgery) using other types of interventions.

In this study, the mean score of state anxiety was measured as  $47.1 \pm 9.4$  in all the subjects (N = 70). Accordingly, 44.3% and 22.9% of the subjects suffered from moderate and severe preoperative state anxiety, respectively. Other relevant studies support these findings. Ghanei-Gheshlagh et al<sup>21</sup> investigated the correlation of preoperative anxiety with postoperative nausea and vomiting in 110 patients visiting the surgical ward. They concluded that 29.1%, 19.1%, and 12.7% of these subjects had deep state anxiety, severe trait anxiety, and nausea and vomiting, respectively.

Gonçalves et al<sup>22</sup> also evaluated anxiety in elective surgical patients and concluded that 59.4% and

**Table 2. The Mean and Standard Deviation of Anxiety Before and After Intervention in Both Groups**

	Preintervention		Postintervention		P Value
	Control $\mu$ (SD)	Intervention $\mu$ (SD)	Control $\mu$ (SD)	Intervention $\mu$ (SD)	
State anxiety	48.6 $\pm$ 9.7	45.6 $\pm$ 9	50.9 $\pm$ 10.7	42.3 $\pm$ 9.2	< .05
Trait anxiety	50.9 $\pm$ 9.3	45.1 $\pm$ 11.1	51.8 $\pm$ 9.4	43.3 $\pm$ 10.4	< .05

19.8% of them had mild and severe preoperative anxiety, respectively. Fathi et al<sup>23</sup> reported a moderate level of preoperative state and trait anxiety in elective surgical patients. In line with this, Pokharel et al<sup>12</sup> evaluated the need for information on the surgical procedure for elective surgical patients. They also measured their preoperative anxiety and concluded that the need for information regarding the surgical procedure is higher before surgery than in the operating room. They also reported a significantly higher level of anxiety in patients before entering the operating room and during their presence in the operating room. Nazari-Vanani et al<sup>10</sup> investigated preoperative anxiety-provoking and stress-causing factors, and ways to quell them according to the opinions of the patients in the operating room. They concluded that the highest levels of anxiety were caused by preoperative concerns (13.15%), health

care-related stressors (12.19%), operating room staff-related stressors (10.35%), and stressors related to the operating room environment (7.625%).

This study showed a significant difference between the experimental and control groups in terms of the mean difference of state anxiety ( $-3.3$  vs  $2.3$ ) and trait anxiety ( $-7.1$  vs  $0.9$ ). In other words, the mean score of anxiety significantly decreased in the intervention group after the intervention, whereas the anxiety scores significantly increased in the control group.

Comparing these results with the findings of other researchers revealed a consistency regarding the reduction in preoperative anxiety in patients who are candidates for surgery.<sup>6,24-29</sup> Karama Özlü et al<sup>30</sup> investigated the effect of preoperative

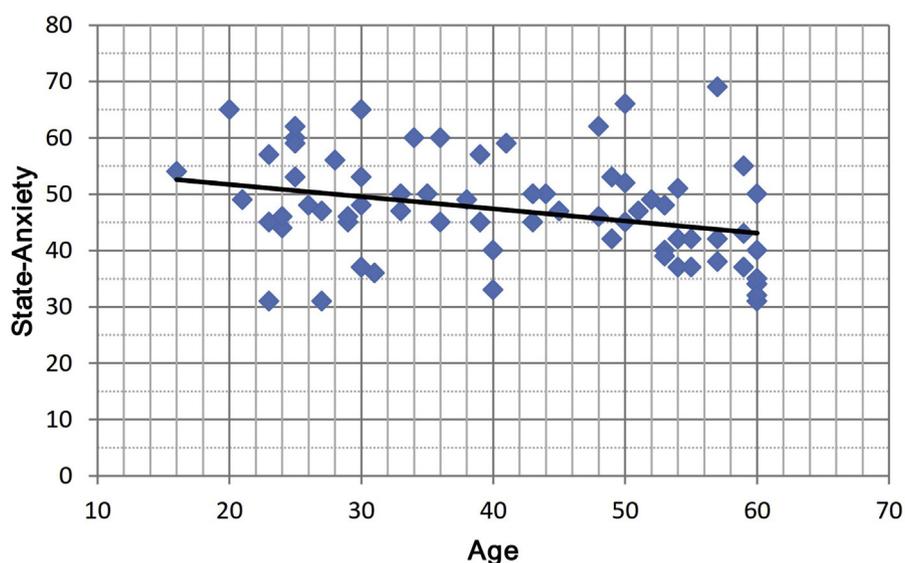


Figure 2. Relationship between state anxiety and age. This figure is available in color online at [www.jopan.org](http://www.jopan.org).

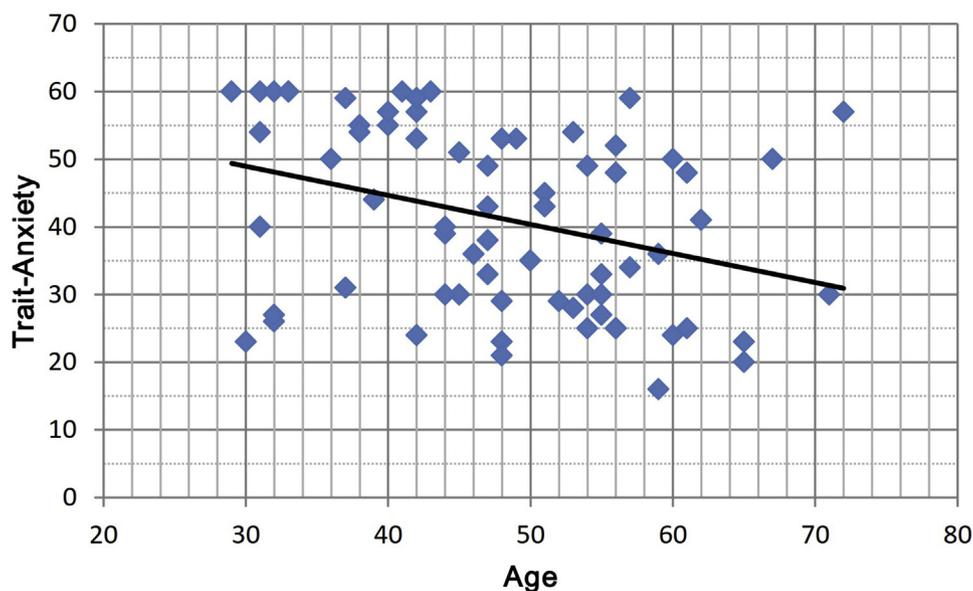


Figure 3. Relationship between trait anxiety and age. This figure is available in color online at [www.jopan.org](http://www.jopan.org).

provision of information on the anxiety level of elective surgical patients and found that, on the basis of the Spielberger STAI, preoperative training resulted in a significant reduction in anxiety in the intervention group (27.54) in comparison to the control group (49.22). Zakerimoghadam et al<sup>31</sup> investigated the effect of training on preoperative anxiety in patients undergoing abdominal surgery and observed a significant reduction in the same for the intervention group compared with the control group.

In an experimental study, Dehghani et al<sup>32</sup> investigated the effect of familiarizing patients with the procedure of cardiac surgery on their anxiety and revealed that providing such information before the surgery significantly decreased postoperative anxiety ( $37.54 \pm 6.20$ ) compared with preoperative anxiety ( $47.90 \pm 6.49$ ). In this study, the mean preoperative anxiety scores for both groups were at the medium level. Donker et al<sup>33</sup> investigated the effect of preoperative visitation by ward nurses on the anxiety of elective surgical patients. They found that providing preoperative surgical information to patients by the ward nurse significantly decreased their anxiety.

The study conducted by Sawangarom<sup>34</sup> and Hughes<sup>35</sup> showed results that were similar to the findings of this study. They observed that preoper-

ative visitation of patients by nurses decreased the level of anxiety when entering the operating room compared with the level at the time of admission. However, in the control group, the level of anxiety was higher when entering the operating room compared with the level at admission.<sup>34</sup> The truth regarding the significance of preoperative provision of information to patients and its positive effects on anxiety reduction has been posited by other researchers,<sup>36</sup> such as Gou et al<sup>37</sup> and Miguel and Sagardoy et al.<sup>38</sup> The Spielberger STAI, which was used in this study, showed a significant reduction in anxiety in the intervention group in comparison to the control group. Other studies, which used other types of instruments to measure a patient's anxiety, also reported a significant reduction in anxiety.<sup>9,39-42</sup>

Areas of concern in surgery may be pain and fear of the unknown, disability, or death,<sup>43</sup> which may cause anxiety. Familiarizing patients with surgical procedures not only improves their awareness and knowledge, but also is helpful in reducing psychological stress resulting from surgery.<sup>44</sup> Today, familiarization and training are fundamental health care programs in the medical and health care systems. Moreover, training patients is considered to be the best method to respond to their needs.<sup>45</sup> Through preoperative training and interpersonal relationships focusing on patient needs, they are

given the chance to express their concerns and fear of surgery. This measure results in the stimulation of anxiety-reduction mechanisms and the creation of a sense-of-control.<sup>46</sup>

With respect to the individual characteristics of the subjects, the results revealed that the mean level of state anxiety was  $55.5 \pm 8.4$  in women and  $45.7 \pm 8.8$  in men. In addition, the mean level of trait anxiety was  $57.5 \pm 8.6$  in women and  $46.4 \pm 10.1$  in men. To confirm this result, Gonçalves et al<sup>22</sup> measured the anxiety of elective surgical patients and found a higher level in women. Fathi et al<sup>23</sup> concluded that the mean levels of preoperative state and trait anxiety were higher among the elective surgical female patients than male patients. Shoar et al<sup>47</sup> also obtained similar results. In this study, a significant correlation was observed between age and state ( $r = -0.308$ ) and trait anxiety ( $r = -0.340$ ). In other words, the level of both state and trait anxiety of the subjects reduced with increasing age. Basak et al<sup>48</sup> reported female gender, aged less than 35 years, and at least 2-day hospitalization as anxiety predictors.

## Conclusions

This is a novel study on the effect of preoperative visitation by the operating room staff on preoperative anxiety in patients who are candidates for hernia surgery. The participants of this study were selected from elective surgical patients and received the intervention on the day preceding surgery, when their need of acquiring information about the unknown surgical procedure was at the

maximal level. As a strong point, this study used a systematic approach on the basis of the patients' involvement and needs, and their willingness to participate, which may be effective in preoperative anxiety reduction. These findings not only emphasize the great need of elective surgical patients for support, training, and information about the surgery and surgical care, but also highlight the necessity of interventions that affect the development of caring skills and techniques. However, there were some limitations, such as the relatively small sample size. Future studies on the effect of preoperative visitation by the operating room staff on preoperative anxiety in elective surgical patients are recommended to use a larger sample size.

Preoperative visitation, as a nonaggressive intervention, can be effective in decreasing anxiety in elective surgical patients. Consequently, it is recommended to include an anxiety evaluation approach in preoperative training programs and other behavioral and mental interventions to manage anxiety in elective surgical patients.

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## Supplementary Data

Supplementary data related to this article can be found at <https://doi.org/10.1016/j.jopan.2018.04.005>.

## References

1. Ay AA, Ulucanlar H, Ay A, Ozden M. Risk factors for perioperative anxiety in laparoscopic surgery. *JSLs*. 2014;18:e2014.00159.
2. Jawaid M, Mushtaq A, Mukhtar S, Khan Z. Preoperative anxiety before elective surgery. *Neuroscience*. 2007;12:145-148.
3. Roohy GR, Rahmany A, Abdollahy AA, Mahmoody GHR. The effect of music on anxiety level of patients and some of physiological responses before abdominal surgery. *J Gorgan Univ Med Sci*. 2005;7:75-78.
4. Ruiz-López E, Muñoz-Cuevas J, Olivero-Vásquez Y, Islas-Saucillo M. Preoperative anxiety at the General Hospital of Mexico. *Rev Med Hosp Gen Mex*. 2000;63:231-236.
5. Silva MEM, Zakir NSA. Instructional control and relaxation procedure as psychological preparation for pre-surgery patients with heart disease. *Estud Psicol*. 2011;28:371-379.
6. Rosiek A, Kornatowski T, Rosiek-Kryszewska A, Leksowski Ł, Leksowski K. Evaluation of stress intensity and anxiety level in preoperative period of cardiac patients. *Biomed Res Int*. 2016;1248396.
7. Vermişli S, Çukurova İ, Baydur H, Yılmaz E. [Relationship between preoperative patient learning need and anxiety of patients hospitalized at Ear Nose Throat and Head Neck Surgery clinic for surgical treatment]. *Kulak Burun Bogaz Ibtis Derg*. 2015;26:79-91.
8. Wiebe E. A randomized trial of aromatherapy to reduce anxiety before abortion. *Eff Clin Pract*. 1999;3:166-169.
9. Talaei A, Toufani H, Hojat S, Jami AZ. Effect of familiarizing the patient with the personnel and operating room on the day before surgery for preoperative anxiety. *Q J Fundam Mental Health*. 2004;6:57-61.

10. Nazari-Vanani R, Rahimi-Madiseh M, Drees F. Evaluation of preoperative anxiety and stress, and ways to modify it, the patients in Kashani hospital operating room in 2013. *J Clin Nurs Midwifery*. 2014;2:53-60.
11. Johansson K, Nuutila L, Virtanen H, Katajisto J, Salanterä S. Preoperative education for orthopaedic patients: Systematic review. *J Adv Nurs*. 2005;50:212-223.
12. Pokharel K, Bhattarai B, Tripathi M, Khatiwada S, Subedi A. Nepalese patients' anxiety and concerns before surgery. *J Clin Anesth*. 2011;23:372-378.
13. Binns-Turner PG, Wilson LL, Pryor ER, Boyd GL, Prickett CA. Perioperative music and its effects on anxiety, hemodynamics, and pain in women undergoing mastectomy. *AANA J*. 2011;79:21-27.
14. Ayrál X, Gicquere C, Duhalde A, Boucheny D, Dougados M. Effects of video information on preoperative anxiety level and tolerability of joint lavage in knee osteoarthritis. *Arthritis Care Res*. 2002;47:380-382.
15. Philippe F, Meney M, Larrazet F, et al. [Effects of video information in patients undergoing coronary angiography]. *Arch Mal Coeur Vaiss*. 2006;99:95-101.
16. Brumfield VC, Kee CC, Johnson JY. Preoperative patient teaching in ambulatory surgery settings. *AORN J*. 1996;64:941-952.
17. Lindén I, Engberg IB. Patients' opinions of information given and postoperative problems experienced in conjunction with ambulatory surgery. *Ambul Surg*. 1996;4:85-91.
18. Sili A, Fida R, Proietti D, Vellone E, Alvaro R. [Decreasing preoperative anxiety by music: Experimental study in a vascular surgery unit]. *Assist Inferm Ric*. 2012;32:13-19.
19. Wang SM, Kulkarni L, Dolev J, Kain ZN. Music and preoperative anxiety: A randomized, controlled study. *Anesth Analg*. 2002;94:1489-1494.
20. Bahrami N, Soleimani MA, Sharifnia H, Shaigan H, Sheikhi MR, Mohammad-Rezaei Z. Effects of anxiety reduction training on physiological indices and serum cortisol levels before elective surgery. *Iran J Nurs Midwifery Res*. 2013;18:416.
21. Ghanei Gheshlagh R, Dastras M, Fazlali Pour Miyandoab M, Naseri O. The relationship between preoperative anxiety and postoperative nausea and vomiting. *Med Sci J Islam Azad Univ*. 2014;23:269-274.
22. Gonçalves KKN, Silva JID, Gomes ET, Pinheiro LLDS, Figueiredo TR, Bezerra SMMDS. Anxiety in the preoperative period of heart surgery. *Rev Bras Enferm*. 2016;69:397-403.
23. Fathi M, Alavi SM, Joudi M, et al. Preoperative anxiety in candidates for heart surgery. *Iran J Psychiatr Behav Sci*. 2014;8:90.
24. Zhang CY, Jiang Y, Yin QY, Chen FJ, Ma LL, Wang LX. Impact of nurse-initiated preoperative education on postoperative anxiety symptoms and complications after coronary artery bypass grafting. *J Cardiovasc Nurs*. 2012;27:84-88.
25. Asilioglu K, Celik SS. The effect of preoperative education on anxiety of open cardiac surgery patients. *Patient Educ Couns*. 2004;53:65-70.
26. Furze G, Dumville JC, Miles JN, Irvine K, Thompson DR, Lewin RJ. "Prehabilitation" prior to CABG surgery improves physical functioning and depression. *Int J Cardiol*. 2009;132:51-58.
27. Garbossa A, Maldaner E, Mortari DM, Biasi J, Leguisamo CP. Effects of physiotherapeutic instructions on anxiety of CABG patients. *Rev Bras Cir Cardiovasc*. 2009;24:359-366.
28. Shuldham CM, Fleming S, Goodman H. The impact of pre-operative education on recovery following coronary artery bypass surgery. A randomized controlled clinical trial. *Eur Heart J*. 2002;23:666-674.
29. Goodman H, Peters E, Matthews R, Geraghty A, Godden J, Shuldham C. A pilot study using a newly devised manual in a programme of education and support for patients waiting for coronary artery bypass surgery. *Eur J Cardiovasc Nurs*. 2003;2:27-37.
30. Karaman Özlü Z, Tuğ Ö, Çay Yayla A. Inevitable problems of older people: Presurgery information effect on anxiety levels in patients undergoing cataract surgery. *J Clin Nurs*. 2016;25:1388-1394.
31. Zakerimoghadam M, Aliasgharpoor M, Mehran A, Mohammadi S. Effect of patient education about pain control on patients' anxiety prior to abdominal surgery. *Hayat*. 2010;15:13-22.
32. Dehghani H, Dehghani K, Nasiriani K, Banaderakhshan H. The effect of familiarization with cardiac surgery process on the anxiety of patients undergoing coronary artery bypass graft surgery. *Mod Care J*. 2014;10:257-263.
33. Donker JM, de Vries J, de Lepper CC, et al. A novel finding: The effect of nurse practitioners on the relation to quality of life, anxiety, and depressive symptoms in vascular surgery. *Ann Vasc Surg*. 2014;28:644-650.
34. Sawangarom C. Effect of Preoperative Phone Call on Anxiety in Patients Undergoing Outpatient Diagnostic Gynecologic Laparoscopy. [master's thesis] Thailand: Mahidol University; 2007.
35. Hughes S. The effects of giving patients pre-operative information. *Nurs Stand*. 2002;16:33-37.
36. Scruth EA, Page K, Cheng E, Campbell M, Worrall-Carter L. Risk determination after an acute myocardial infarction: Review of 3 clinical risk prediction tools. *Clin Nurse Spec*. 2012;26:35-41.
37. Guo P, East L, Arthur A. A preoperative education intervention to reduce anxiety and improve recovery among Chinese cardiac patients: A randomized controlled trial. *Int J Nurs Stud*. 2012;49:129-137.
38. Miguel RM, Sagardoy ML. [Effects of using an information leaflet in reducing perioperative anxiety and pain in patients undergoing urological surgery]. *Enferm Clin*. 2013;24:233-240.
39. ElBardissi AW, Aranki SF, Sheng S, O'Brien SM, Greenberg CC, Gammie JS. Trends in isolated coronary artery bypass grafting: An analysis of the Society of Thoracic Surgeons adult cardiac surgery database. *J Thorac Cardiovasc Surg*. 2012;143:273-281.
40. McKenzie LH, Simpson J, Stewart M. A systematic review of pre-operative predictors of post-operative depression and anxiety in individuals who have undergone coronary artery bypass graft surgery. *Psychol Health Med*. 2010;15:74-93.
41. Rymaszewska J, Kiejna A. [Depression and anxiety after coronary artery bypass grafting]. *Pol Merkur Lek*. 2003;15:193-195.
42. Koivula M, Tarkka MT, Tarkka M, Laippala P, Paunonen-Ilmonen M. Fear and anxiety in patients at different time-points in the coronary artery bypass process. *Int J Nurs Stud*. 2002;39:811-822.
43. Brunner LS, Smeltzer SCC, Bare BG, Hinkle JL, Cheever KH. *Brunner & Suddarth's Textbook of Medical-*

*Surgical Nursing*. Philadelphia, PA: Lippincott Williams & Wilkins; 2010.

44. Arthur HM, Daniels C, McKelvie R, Hirsh J, Rush B. Effect of a preoperative intervention on preoperative and postoperative outcomes in low-risk patients awaiting elective coronary artery bypass graft surgery: A randomized, controlled trial. *Ann Intern Med*. 2000; 133:253-262.

45. Fredericks S. Timing for delivering individualized patient education intervention to coronary artery bypass graft patients: An RCT. *Eur J Cardiovasc Nurs*. 2009;8: 144-150.

46. Kalogianni A, Almpani P, Vastardis L, Baltopoulos G, Charitos C, Brokalaki H. Can nurse-led preoperative education reduce anxiety and postoperative complications of patients undergoing cardiac surgery? *Eur J Cardiovasc Nurs*. 2016;15:447-458.

47. Shoar S, Naderan M, Aghajani M, Sahimi-Izadian E, Hosseini-Araghi N, Khorgami Z. Prevalence and determinants of depression and anxiety symptoms in surgical patients. *Oman Med J*. 2016;31:176.

48. Basak F, Hasbahceci M, Guner S, et al. Prediction of anxiety and depression in general surgery inpatients: A prospective cohort study of 200 consecutive patients. *Int J Surg*. 2015;23: 18-22.

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