

Comparison of anxiety level in patients under uterine fibroid treatment by myomectomy and uterine artery embolization (UAE) and its relationship with pain and duration of postoperative hospitalization in Ahvaz educational hospitals in 2018

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ABSTRACT

Introduction: Uterine fibroids are the most common benign tumors in women. Preoperative anxiety is due to concerns about the consequences of surgery and prevents recovery and high prevalence of postoperative pain and increases the length of stay in the hospital. In this study, we tried to investigate the level of anxiety in patients who are candidates for uterine artery embolization (UAE) and myomectomy surgery and its relationship with the length of hospitalization and postoperative pain. **Methods:** The present descriptive-analytical study was performed on candidates for uterine fibrinoid treatment referred to Ahvaz educational hospitals in 2018. A total of 41 candidates for uterine fibroid treatment were segmented into two groups of 24 candidates for myomectomy surgery and 17 for UAE treatment considering the inclusion and exclusion criteria after informed consent. Data were analyzed by SPSS VER 20 software using Mann-Whitney test, multiple regression, and Chi-square. **Results:** Myomectomy surgery group recorded more overt and covert anxiety, followed by a longer hospital stay and more postoperative pain ($P < 0.05$). The demographic criterion of age was significantly associated with overt and covert anxiety ($P < 0.05$). The level of education was significantly associated with overt anxiety ($P < 0.05$) and marital status and BMI were not significantly associated with overt and covert anxiety levels ($P > 0.05$). **Conclusion:** According to the results of the study, overt and covert preoperative anxiety in women undergoing myomectomy surgery for symptomatic uterine fibroids is longer than in UAE treatment. And have more pain after surgery.

Keywords: Preoperative anxiety, Spielberger's overt and covert anxiety questionnaire, uterine artery embolization (UAE), uterine fibroid surgery

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Introduction

Uterine fibroids are the most common benign tumors in women. Their prevalence varies from 70% in Caucasian women to

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80% in African-Americans. Although many of these tumors are asymptomatic, about 25% to 30% of women in their 30s and 50s are symptomatic. These include excessive and irregular menstrual bleeding, anemia, pelvic pain, bladder and bowel dysfunction, pain during intercourse, infertility, and recurrent miscarriage.^[1-4] There are two hypotheses about the cause of these two factors, one of them is genetics and other factors include hormonal factors. Hormonal hypotheses include risk factors such as obesity, menstrual cycles longer than 30 days, and menstrual cycles longer than 6 days, premature menarche, longer premenopausal years, and uterine infections including pelvic inflammatory disease. Chlamydia infections and infections caused by intrauterine device and injuries to the uterus. Factors such as having a history of one or two deliveries, smoking, and the use of progesterone contraceptives have been reported in some protective studies.^[5-10] Ultrasound imaging along with the patient's bedside is the criterion for diagnosing uterine fibroids. Also, ultrasound screening is not cost-effective for asymptomatic fibroids.^[11] In women with symptomatic uterine fibroids, pharmacotherapy is recommended, from minimally invasive organ maintenance surgery to hysterectomy and other interventions such as uterine artery embolization (UAE) and focused ultrasound (FUS).^[12-14] Traditional treatment for symptomatic fibroids is hysterectomy. But many women associate their uterus with their femininity and gender and seek alternative therapies. With the uterine preservation approach, two treatments including myomectomy, removal of fibroid surgery, laparotomy, laparoscopy, hysteroscopy, or UAE are available.^[15]

In cases of indication for laparotomy myomectomy, the laparoscopic approach can be substituted, although this approach is suitable only for some patients. Myomectomy in infertile patients is performed only in significant dislocation of the uterine wall or endometrial cavity or dislocation of the fallopian tubes or in symptomatic fibrinoids in those who wish to maintain the uterus. In both cases, the fibrinoids are probably large and numerous. Laparoscopy is indicated only when the uterine restoration is similar to or better than laparotomy.^[15,16]

The UAE replaces surgical and drug-based methods and focuses on ultrasound regardless of the size and number of previous surgery fibroids. Success in UAE treatment is mainly defined as the improvement or complete elimination of fibroid-related symptoms by the patient and to a lesser extent as a reduction in the volume of dominant fibroids or the entire uterus after treatment. This block reduces blood flow to the fibroids and infarction and alleviates its symptoms.

Anxiety is a distressing mental state or feeling helpless in a threatening situation or anticipating an unknown threat to oneself or others and is considered the most common experience of all human beings. Preoperative anxiety syndrome is an emotional state with psychological and emotional components. Fear is defined as uncertainty, unpleasant feeling, and the ambiguous nature associated with insecurity and the presence of two feelings, fear and anxiety. Anxiety is a common phenomenon in almost all

patients waiting for surgery. Surgery is a risk that threatens the patient's health and can provoke anxiety. All types of surgeries, whether large or small, elective or emergency, are considered an anxious experience and pose a threat to the whole body and sometimes to the individual. Anxiety is due to worrying about the outcome of the operation, feeling the danger of death, changing the perception of the body and its function, increasing dependence on others, possible changes in lifestyle, fear of pain and anesthesia, and preventing recovery and high prevalence of postoperative pain. Decreased ability to resist infection, delayed wound healing, negative impact on patient mood, and increased length of hospitalization.^[17-26]

In this study, the aim was to investigate the level of anxiety in patients who are candidates for UAE and myomectomy and its relationship with the length of hospital stay and postoperative pain.

Methods

The present descriptive-analytical study was approved by the ethics committee of Ahvaz Jundishapur University of Medical Sciences with ethics code IRAJUMS.REC.1397.346 on 41 patients who were candidates for uterine fibrinoid treatment referred to Ahvaz educational hospitals with this ward in 2018. Conscious consent was obtained. The volume of available samples for 1 year was studied by easy and nonprobability sampling method.

Inclusion criteria included women of childbearing age of 15–55 years with minimal literacy. Exclusion criteria included unwillingness to continue cooperation, incomplete completion of the questionnaire, dependence on substances other than caffeine and nicotine, emergency surgery, previous surgical history, having first-degree relatives of hospital staff, severe surgical complications such as bleeding and need for hospitalization, intensive care unit, history of chronic diseases including diabetes, hypertension, heart disease, thyroid, asthma and seizures, history of psychiatric disorder, history of dementia and mental retardation, continuous use of painkillers, benzodiazepines, antipsychotics, psychedelics, and drugs were considered.

Data were collected using two questionnaires, one including demographic information and the other Spielberger overt and covert anxiety questionnaire. Demographic information including age, body mass index, marital status, and education level was completed with information obtained from the patient as well as the contents of the file at the time of admission, and the Spielberger Anxiety Questionnaire was filled out by patients before surgery. Also, the information on receiving analgesics according to the nurse's report in the first 24 h after the operation was recorded as a measure of the amount of postoperative pain and the length of hospitalization days based on the contents of the file.

The state and trait anxiety inventory (STAI) overt and covert anxiety questionnaire includes separate self-assessment scales

Table 1: Frequency distribution of demographic characteristics in the two groups

Table 1		Frequency (percent)		P ^z
Variable	Level	Group		
		Embolization	Surgery	
Age (year)	15-25	0 (0.0%)	2 (8.3%)	0.529
	26-35	6 (35.3%)	8 (33.3%)	
	36-45	9 (52.9%)	13 (54.2%)	
	46-55	2 (11.8%)	1 (4.2%)	
BMI (kg/m ²)	Low weight	0 (0.0%)	1 (4.3%)	0.371
	Normal weight	1 (5.9%)	5 (21.7%)	
	Over weight	12 (70.6%)	14 (60.9%)	
	Obese	4 (23.5%)	3 (13.0%)	
Marital status	Married	12 (70.6%)	23 (95.8%)	0.024
	Single	5 (29.4%)	1 (4.2%)	
Education	High school	12 (70.6%)	16 (66.7%)	0.824
	Diploma	3 (17.6%)	6 (25.0%)	
	Bachelor	2 (11.8%)	2 (8.3%)	
	>Bachelor	0 (0.0%)	0 (0.0%)	

^zP conducted from Chi-square (exact) test

Table 2: Frequency distribution of overt and covert anxiety in the two groups

Table 2		Frequency (percent)	
Variable	Level	Group	
		Embolization (n=17)	Surgery (n=24)
Manifest anxiety	Mid	2 (11.8%)	0 (0.0%)
	Mid to Moderate	14 (82.4%)	2 (8.3%)
	Moderate to High	1 (5.9%)	2 (8.3%)
	Almost High	0 (0.0%)	10 (41.7%)
	High	0 (0.0%)	10 (41.7%)
Hidden Anxiety	Very High	0 (0.0%)	0 (0.0%)
	Mid	4 (23.5%)	0 (0.0%)
	Mid to Moderate	13 (76.5%)	1 (4.2%)
	Moderate to High	0 (0.0%)	2 (8.3%)
	Almost High	0 (0.0%)	8 (33.3%)
	High	0 (0.0%)	12 (50.0%)
	Very High	0 (0.0%)	1 (4.2%)

Table 3: Comparison of overt and covert anxiety in the two groups

Table 3 Variable	Mean (SD)		P ^t
	Group		
	Embolization (n=17)	Surgery (n=24)	
Manifest anxiety	36.12 (3.87)	60.67 (8.91)	<0.001
Hidden anxiety	35.53 (3.71)	61.08 (8.09)	<0.001

^tP value conducted from Mann–Whitney U test

for measuring overt and covert anxiety. The overt anxiety scale (Form Y-1 of the STAI), which consists of 20 sentences that assess a person’s feelings at the moment and at the time of responding. Anxiety scale Hidden (form y-2 from STAI) also contains 20 sentences that measure the general and ordinary feelings of individuals. Spielberger’s overt and covert anxiety questionnaire, designed for self-administered use, can be used individually or in groups. This questionnaire has no time limit.

College students need about 6 min to complete each of the two scales. Individuals with lower education or emotional distress may need 10 min to complete each scale. A score of 4 indicates a high presence of anxiety, on which 10 terms of overt anxiety scale and 11 terms of latent anxiety scale are scored. To score other expressions, a high ranking for each expression indicates nonanxiety, which includes 10 expressions in overt anxiety and nine expressions on the latent anxiety scale. To obtain a person’s score on each of the two scales—given that some phrases are scored in reverse—the sum of the scores of the 20 phrases in each scale is calculated. Therefore, the scores of each of the two scales of overt and covert anxiety can be in the range of 80–20. The reliability of the Spielberger test was calculated to be 89% and 90%, respectively.^[27]

To observe the ethical considerations, the objectives of the research and the method of implementation were communicated to the subjects. Their right to not to participate in the project was emphasized. No additional costs were imposed on the individuals. No patient in this project was harmed. All subjects were assured that their information would be kept confidential and the results would be presented to the entire sample population, with anonymous patient profiles and confidentiality fully maintained. The informed consent of all participants was obtained.

Data were analyzed using SPSS VER 20 software and statistical tests of Chi-square, Mann–Whitney, multiple regression, correlation coefficient, and descriptive statistics. Less than 0.05 of P value was considered.

Results

In this descriptive-analytical study, 41 patients aged 15–55 years who had been referred to Ahvaz educational and medical hospitals for treatment of uterine myoma were included in the study. A total of 17 candidates were for treatment of UAE and 24 were candidates for myomectomy surgery. A questionnaire including demographic information and Spielberger’s overt and covert anxiety questionnaire was completed before the treatment procedure for both groups. In the next step, information on the duration of hospitalization and the amount of analgesic required in the first 24 h after surgery for each patient as a postoperative pain scale was recorded. The results were presented separately using statistical methods.

Demographic data

The results of the Table 1 show that except for marital status, which was different in the two treatment groups ($P < 0.05$), other variables in the two groups were the same in terms of frequency distribution ($P > 0.05$). Frequency distribution of overt and covert anxiety in the two groups in Table 2.

Due to the lack of normality hypothesis for overt and covert anxiety variables, so the nonparametric Mann–Whitney test to compare the average of these two variables in the two groups of myomectomy surgery and UAE was used that statistically, the

mean of these two variables in the two groups was statistically significant ($P < 0.05$) [Table 3].

The results show that there is a significant positive relationship between overt anxiety and hospital stay ($r = 0.580$) as well as latent anxiety and hospital stay ($r = 0.514$), ($P < 0.05$). In other words, with each of the overt and covert anxieties, the length of hospital stay increases.

Mann–Whitney test shows that the length of hospital stay in the two treatment groups shows a statistically significant difference ($P > 0.05$). According to the results, the average length of hospital stay in the myomectomy surgery group was longer.

Results of correlation test analysis to investigate the effect of each of the variables of latent and overt anxiety on the variable of postoperative pain show that there is a significant positive relationship between postoperative pain and overt and covert anxiety ($P < 0.05$). In other words, with increasing overt and covert anxiety, the amount of postoperative pain increases.

The Chi-square test shows that there is a relationship between the amount of pain and the study group ($P < 0.05$). The results show that the amount of pain in the myomectomy surgery group is higher than in the UAE treatment group.

According to the collected data [Table 4], the demographic criterion of age (in the age range of 26–45 years) was significantly associated with overt anxiety ($P < 0.05$). This means that in this age range, significantly more obvious anxiety was observed than in other age groups. According to the results, the level of education of individuals (in the undergraduate range) was significantly associated with overt anxiety ($P < 0.05$). This means that patients experienced more overt anxiety in the undergraduate education range. The results show that the three variables of the study group, age and education affect the level of overt anxiety ($P < 0.05$). Other variables of BMI and marital status did not have a significant relationship with overt anxiety ($P > 0.05$).

According to the results of demographic criteria [Table 5], age (in the range of 15–45 years) had a significant effect on latent anxiety ($P < 0.05$). This means that patients in this age range had more latent anxiety than in the age range of 45–55 years. The results show two variables; group and age that affect the degree of latent anxiety ($P < 0.05$). Other variables of marital status, education, and BMI were not significantly associated with latent anxiety ($P > 0.05$).

Discussion

Uterine fibroids are the most common benign tumors in women. In women with symptomatic uterine fibroids, surgery is recommended, from minimally invasive organ-holding surgeries to hysterectomy and other interventions such as UAE and FUS. Preoperative anxiety syndrome is defined as an emotional

state with psychological components and with feelings of fear, uncertainty, unpleasant feelings, and ambiguous nature associated with insecurity and the presence of two feelings, fear and anxiety. Anxiety is due to worrying about the outcome of the operation, feeling the danger of death, changing the perception of the body and its function, increasing dependence on others, possible changes in lifestyle, fear of pain and anesthesia and prevents recovery, and high prevalence of postoperative pain decreases the ability to resist infection, delays wound healing, negative impact on the patient's mood, and increases hospitalization period.

The present study is a descriptive-analytical study that examines the level of anxiety in women candidates for uterine myoma treatment with two different methods including myomectomy and UEA. Our data showed that anxiety is significantly different among the two groups ($P < 0.001$). In other words, according to the Spielberger's questionnaire, overt anxiety, which is situational anxiety that occurs depending on stressful situations, and latent anxiety, indicates individual differences in responding to stressful situations with different degrees of overt anxiety, both. In the candidate group, myomectomy was more common. In the continuation of the study, by recording the length of hospitalization period and postoperative pain of patients, the effect of anxiety was significantly revealed. According to the results, women who experienced higher preoperative anxiety had longer hospital stays ($P < 0.05$). They also recorded more postoperative pain and the need for more painkillers than women with less anxiety. Studies focusing on the effect of anxiety recorded similar results.

In the study of Lígia Pereira *et al.* (2016)^[28] the results showed that patient-centered empathy interviews reduce patients' preoperative anxiety and in the consequence of that increase recovery and reduce postoperative pain.

In addition, in the study of Yangfan Xiao *et al.* (2018),^[29] The level of anxiety before and after surgery in the intervention groups was significantly reduced compared with the control group ($P < 0.05$). These groups showed a significant reduction in postoperative pain ($P < 0.05$). The results indicate that aromatherapy and music intake are recommended to reduce preoperative and postoperative anxiety and postoperative pain.

Also, in the study by Öztürk *et al.* (2018)^[30] in a sample of 63 women candidates for abdominal hysterectomy with an average age of 43–51 years in the two control groups and reflexology intervention, anxiety based on Spielberger questionnaire and postoperative pain based on analog scale, visual monitoring was significantly different in the intervention group compared with the control group in the 3-day monitoring. ($P < 0.05$). The results of reflexology intervention have been suggested to reduce anxiety and consequently reduce postoperative pain.

On the other hand, research in this regard has yielded other results. Also, in the study by Palmer *et al.* (2015)^[31] in a sample

Table 4: Results of multiple regression analysis to investigate the effect of each of the independent variables on overt anxiety

Parameter	Parameter Estimates (Manifest anxiety)					
	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test	
			Lower	Upper	Wald Chi-Square	Sig.
(Intercept)	48.320	6.4705	35.638	61.002	55.766	0.000
Embolization	-24.163	2.2453	-28.564	-19.762	115.811	0.000
Surgery	0	-	-	-	-	-
Age 15-25	7.796	6.4213	-4.790	20.381	1.474	0.225
Age 26-35	11.862	3.9876	4.046	19.677	8.849	0.003
Age 36-45	10.048	3.8692	2.465	17.632	6.744	0.009
Age46-55	0	-	-	-	-	-
Married	-4.349	3.2906	-10.799	2.100	1.747	0.186
Single	0	-	-	-	-	-
High school	9.733	3.7383	2.406	17.059	6.778	0.009
Diploma	5.241	3.9429	-2.487	12.969	1.767	0.184
Bachelor	0	-	-	-	-	-
Low weight	1.740	7.4152	-12.793	16.274	0.055	0.814
Normal weight	4.203	4.1404	-3.912	12.318	1.031	0.310
Over weight	-3.566	2.7846	-9.024	1.891	1.640	0.200
Obese	0	-	-	-	-	-

Table 5: Results of multiple regression analysis to investigate the impact of each independent variable on hidden anxiety

Parameter	Parameter Estimates (Hidden Anxiety)					
	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test	
			Lower	Upper	Wald Chi-Square	Sig.
(Intercept)	48.679	5.9999	36.919	60.439	65.825	0.000
Embolization	-24.051	2.0820	-28.132	-19.970	133.447	0.000
Surgery	0	-	-	-	-	-
Age 15-25	16.468	5.9543	4.797	28.138	7.649	0.006
Age 26-35	9.269	3.6975	2.021	16.516	6.283	0.012
Age 36-45	11.024	3.5878	3.992	18.055	9.440	0.002
Age 46-55	0	-	-	-	-	-
married	-2.328	3.0513	-8.309	3.652	0.582	0.445
single	0	-	-	-	-	-
High school	3.696	3.4664	-3.097	10.490	1.137	0.286
Diploma	2.571	3.6561	-4.595	9.737	0.494	0.482
Bachelor	0	-	-	-	-	-
Low weight	6.055	6.8759	-7.421	19.532	0.776	0.379
Normal weight	2.577	3.8392	-4.947	10.102	0.451	0.502
Over weight	0.317	2.5821	-4.744	5.377	0.015	0.902
Obese	0	-	-	-	-	-

of 207 female patients undergoing breast cancer surgery in three intervention groups: receiving preoperative live music or recorded music and routine preoperative anxiety care in two intervention groups. It was lower than the control group ($P < .001$) and had a shorter recovery time ($P = 0.018$). However, the amount of analgesia used was not significantly different from the control group. According to the results, by suggesting receiving live or recorded music as a factor in reducing preoperative anxiety, it has been stated that they reduce recovery time. However, the amount of analgesia consumed did not have a significant result.

In the study of Arango-Gutiérrez *et al.* (2019)^[32] in a sample of 80 patients undergoing orthopedic surgery, in both control and systolic hypertension, sonotherapy intervention was considered

as an indicator of preoperative and postoperative anxiety, and the intervention group significantly reduced systolic blood pressure. However, no differences were observed in the need for analgesia among the control and intervention groups. According to the results, it cannot be said that by reducing anxiety with sonotherapy intervention, the need for analgesia can be reduced in patients.

Also, in the study by Jiang *et al.* (2019)^[33] in a sample of 62 patients with radical thyroidectomy in two control groups, acupuncture stimulation intervention was performed. Preoperative anxiety was lower in the intervention group than in the control group. The time of the first anal defecation and getting out of bed after surgery in the intervention group was improved. The length of

hospital stay was not significantly different among the two groups. Despite the acceleration of getting out of bed and the first anal excretion in the acupuncture stimulation group, it cannot be considered a strategy to reduce the duration of hospitalization by reducing anxiety.

In addition, in the study of Boitor *et al.* (2018)^[34] in a sample of 83 patients after heart surgery in the two groups of control and with hand massaging for 20 min before the surgery by recording the severity of the pain, anxiety, muscle tension, and vital signs 30 min before and after the intervention, it was found that the intervention had a significant difference in the level of anxiety and muscle tension, but did not cause a significant difference in vital signs. In the results, hand massaging was not considered an effective factor to improve vital signs by reducing anxiety.

In similar reviews the results are as follows:

In Hassanpour's (2015) study, the level of anxiety of women referred to mammography clinics in Ahvaz in a sample of 600 women was performed using the Beck Anxiety Questionnaire. According to the results, the score of women's anxiety was significantly related to age ($P < 0.05$) and among the participants in the age range of 30–70 years, the highest anxiety was recorded in the age group of 35–39 years (3.21 ± 13.84). The results also showed a significant relationship between anxiety scores and education. ($P < 0.05$) and according to it, the most anxiety was observed in illiterate women. (1.23 ± 12.85) The results showed that anxiety score is also significantly related to marital status ($P < 0.05$), and women with the deceased husband experienced the most anxiety (2.59 ± 15.50), and married people had the lowest scores in the three groups of married, single, and widows (0.39 ± 9.35) according to the results. According to our study, age and education can affect the level of anxiety in people. Marriage has been reported to have a significant relationship with anxiety, which was not proven in our study.^[35]

Also, Jalali's (2015) study was conducted to assess the level of anxiety and its relationship with body mass index (BMI) using the depression, anxiety and stress scale (DASS)-21 questionnaire in a sample of 126 people. The results showed that stress and anxiety were not significantly related to BMI in our study. ($P > 0.05$) However, this study also showed that age had no significant relationship with anxiety ($P > 0.05$).^[36]

Since the results of the present study showed that the amount of preoperative anxiety is effective on the length of hospital stay and postoperative pain, it is recommended helpful reducing anxiety methods such as aromatherapy, listening to music, empathy-centered patient interviews to reduce patients' anxiety to be one of the protocols for preparing patients for surgery. Also, training the staff in this regard and hiring a psychologist colleague in the surgery team to perform the necessary interventions can be effective.

Since latent anxiety refers to individual differences in responding to stressful situations with varying degrees of overt anxiety

and can be effective at the level of overt anxiety, it is suggested that future studies use individuals with similar latent anxiety levels to examine overt anxiety more closely. As it was found in the sampling, the level of education of the participants in the two groups was low and there is a possibility of the effect of sampling error in this study, which to eliminate it, it is recommended to select patients from private and public hospitals. The difference between the two groups in terms of marital status may be due to the selection of pregnant women prone to pregnancy for the myomectomy surgery treatment group due to the risk of reduced fertility in the uterine artery embolization method. In other studies, being married or single can be considered as the inclusion criteria. Since this study was limited on overt and covert preoperative anxiety about length of hospital stay and postoperative pain, it is suggested to investigate the effect of postoperation anxiety on these two components. Also, considering the possible effect of waiting time for surgery on patients' anxiety, it is suggested to add this variable to the variables studied in future studies to determine the effect of waiting time.

Conclusion

The results of the present study showed that overt and covert preoperative anxiety in women undergoing myomectomy surgery for symptomatic uterine fibroids is higher than in UAE treatment. They also have more postoperative pain and hospitalization period. There was also a significant relationship between age and education level with anxiety, whereas the relationship between anxiety with BMI and marital status was rejected in this study.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

References

1. Bardella C, Olivero M, Lorenzato A, Geuna M, Adam J,

- O'Flaherty L, *et al.* Cells lacking the fumarase tumor suppressor are protected from apoptosis through a hypoxia-inducible factor-independent, AMPK-dependent mechanism. *Mol Cell Biol* 2012;32:3081-94.
2. Farhi J, Ashkenazi J, Feldberg D, Dicker D, Orvieto R, Ben Rafael Z. Effect of uterine leiomyomata on the results of in-vitro fertilization treatment. *Hum Reprod* 1995;10:2576-8.
 3. Geva T, Meagher S, Healy DL, MacLachlan V, Breheny S, Wood C. Effect of intramural, subserosal, and submucosal uterine fibroids on the outcome of assisted reproductive technology treatment. *Fertil Steril* 1998;70:687-91.
 4. Surrey ES, Lietz AK, Schoolcraft WB. Impact of intramural leiomyomata in patients with a normal endometrial cavity on *in vitro* fertilization-embryo transfer cycle outcome. *Fertil Steril* 2001;75:405-10.
 5. Flake GP, Anderen J, Dixon D. Etiology and pathogenesis of uterine Leiomyomas: A Review. *Environ Health Perspect* 2003;111:1037-54.
 6. Wise LA, Palmer JR, Harlow BL, Spiegelman D, Stewart EA, Adams-Campbell LL, *et al.* Reproductive factors, hormonal contraception, and risk of uterine leiomyomata in African American women: A prospective study. *Am J Epidemiol* 2004;159:113-23.
 7. Wise LA, Palmer JR, Spiegelman D, Harlow BL, Stewart EA, Adams-Campbell LL, *et al.* Influence of body size and body fat distribution on risk of uterine leiomyomata in U. S. black women. *Epidemiology* 2005;16:346-54.
 8. Faersein E, Szklo M, Rosenshein N. Risk factors for uterine leiomyoma: A practice based case control study. I. African American heritage, reproductive history, body size, and smoking. *Am J Epidemiol* 2001;153:1-10.
 9. Stewart EA, Faur AV. Future treatments for fibroids. *Contemp Ob/Gyn* 2000;45:26.
 10. Baird DD, Dunson DB. Why is parity protective for uterine Fibroids? *Epidemiol J* 2003;14:247-50.
 11. Stewart EA. Uterine fibroids. *Lancet* 2001;357:293-8.
 12. Ciavattini A, Clemente N, Delli Carpini G, Di Giuseppe J, Giannubilo SR, Tranquilli AL. Number and size of uterine fibroids and obstetric outcomes. *J Matern Fetal Neonatal Med* 2014;5:1-5.
 13. Shavell VI, Thakur M, Sawant A, Kruger ML, Jones TB, Singh M, *et al.* Adverse obstetric outcomes associated with sonographically identified large uterine fibroids. *Fertil Steril* 2012;97:107-10.
 14. Capmas P, Levallant JM, Fernandez H. Surgical techniques and outcome in the management of submucous fibroids. *Curr Opin Obstet Gynecol* 2013;25:332-8.
 15. McPherson K, Manyonda I, Lumsden MA, Belli AM, Moss J, Wu O, *et al.* A randomised trial of treating fibroids with either embolisation or myomectomy to measure the effect on quality of life among women wishing to avoid hysterectomy (the FEMME study): Study protocol for a randomised controlled trial. *Trials* 2014;15:468.
 16. Kröncke T, David M. Uterine artery embolization (UAE) for fibroid treatment: Results of the 6th radiological gynecological expert meeting. *Geburtshilfe Frauenheilkd* 2017;77:689-92.
 17. Ghanei R, Rezaei K, Mahmoodi R. The relationship between preoperative anxiety and post operative pain after cesarean section. *Iran J Obstet Gynecol Infertil* 2013;15:16-22.
 18. Suriano MLF, Lopes DCF, Macedo GPOS, Michel JLM, Barros ALBL. Identificação das características definidoras de medo e ansiedade em pacientes programadas para cirurgia ginecológica. *Acta Paul Enferm* 2009;22:928-34.
 19. Zakeri Moghadam M, Ali Asgharpour M, Mehran A, Sakineh M. Effect of patient education about pain control on patient's anxiety prior to abdominal surgery. *Hayat* 2010;15:13-22. [In Persian].
 20. Wetsch WA, Pircher I, Lederer W, Kinzl JF, Traweger C, Heinz-Erain P, *et al.* Preoperative stress and anxiety in day-care patients and in patients undergoing fast-track surgery. *Br J Anaesth* 2009;103:200-5.
 21. Basampour SS, Niknakht Nasrabadi AR, Mehran A, Pouresmaeil Z, Valiei S. Effect of acupressure on patients anxiety and vital sign before abdominal surgeries. *Hayat* 2008;14:23-34. [In Persian].
 22. Kim WS, Byeon GJ, Song BJ, Lee HJ. Availability of preoperative anxiety scales as a predictive factor for hemodynamic changes during induction of anesthesia. *Korean J Anesthesiol* 2010;58:328-33.
 23. Wang SM, Kain ZN. Preoperative anxiety and postoperative nausea and vomiting in children: Is there an association? *Anesth Analg* 2000;90:571-5.
 24. Beiramijam M, Anoosheh M, Mohammadi E. Effect of designed self-care educational program on anxiety, stress, and depression in patients with benign prostatic hyperplasia undergoing prostate surgery. *Chronic Dis J* 2013;1:55-62.
 25. Neeman E, Zmora O, Ben-Eliyahu S. A new approach to reducing postsurgical cancer recurrence: Perioperative targeting of catecholamines and prostaglandins. *Clin Cancer Res* 2012;18:4895-902.
 26. Mahmoudi KM. The effect of music on the level of anxiety in school-age children admitted to Taleghani Hospital in Gorgan. *Sci J Gorgan Univ Med Sci* 2002-2003;7:69.
 27. 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 Midwife* 2014;2:53-60.
 28. Pereira L, Figueiredo-Braga M, Carvalho IP. Preoperative anxiety in ambulatory surgery: The impact of an empathic patient-centered approach on psychological and clinical outcomes. *Patient Educ Couns* 2016;99:733-8.
 29. Xiao Y, Li L, Xie Y, Xu J, Liu Y. [Effects of aroma therapy and music intervention on pain and anxious for breast cancer patients in the perioperative period]. *Zhong Nan Da Xue Xue Bao Yi Xue Ban* 2018;43:656-61.
 30. Öztürk R, Sevil Ü, Sargin A, Yücebilgin MS. The effects of reflexology on anxiety and pain in patients after abdominal hysterectomy: A randomised controlled trial. *Complement Ther Med* 2018;36:107-12.
 31. Palmer JB, Lane D, Mayo D, Schluchter M, Leeming R. Effects of music therapy on anesthesia requirements and anxiety in women undergoing ambulatory breast surgery for cancer diagnosis and treatment: A randomized controlled trial. *J Clin Oncol* 2015;33:3162-8.
 32. Arango-Gutiérrez AS, Buitrago-Cifuentes LJ, Medina-Hinestroza AM, Molina-Paniagua SA, Moreno E, Rivera-Diaz JS, *et al.* Sonotherapy in the reduction of anxiety and postoperative pain in patients with regional anesthesia as a sole technique: Randomized, controlled clinical trial. *Cir Cir* 2019;87:545-53.
 33. Jiang Q, Mo YC, Jin D, Jin WJ, Pan YY, Wang YF, *et al.* Effect of acupoint stimulation on the quality of recovery in

patients with radical thyroidectomy under the concept of enhanced recovery after surgery: A randomized controlled trial. *Zhongguo Zhen Jiu* 2019;39:1289-93.

34. Boitor M, Martorella G, Maheu C, Laizner AM, Gélina C. Effects of massage in reducing the pain and anxiety of the cardiac surgery critically ill- A randomized controlled trial. *Pain Med* 2018;19:2556-69.
35. Hassanpour Niloufar (2018). Evaluation of anxiety in women referring to mammography clinics of Ahvaz hospitals. General medicine dissertation (general doctorate). Ahvaz Jundishapur University of Medical Sciences.
36. Jamali Mohammad (2018). Study of stress and anxiety level and its relationship with body mass index (BMI) in the staff of Ahvaz Jundishapur University School of Medicine. Dissertation in General Medicine (General Doctorate). Ahvaz Jundishapur University of Medical Sciences.