

## Original Article

# The Effect of Meditation and Music Listening on the Anxiety Level, Operation Tolerance and Pain Perception in People who Were Performed Colonoscopy

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## Abstract

**Background:** This study was conducted to determine the effect of meditation and music concert practices on the anxiety levels, operation tolerance and pain perception in the people who were performed colonoscopy.

**Objective:** The study was conducted at Gastroenterology Science Department, Endoscopy Unit of a University Hospital.

**Methods:** Total 60 people, as 30 for study, 30 for control group, constituted of sample of the study. Consent was taken from the endoscopy unit and also verbal and written consents from the participants were taken before the study. In the study group, meditation was performed for 10-15 minutes before colonoscopy and the music which they choose, was listened during the operation.

**Results:** It is seen that the people in study group need less sedative medicine, they were more compliant and their pain score means after the operation were less ( $p>0.05$ ). Also, it is found that the state and trait anxiety scores of the study group were less from the control group after the operation, as significantly ( $p<0.01$ ).

**Conclusion:** It is found that when patients were listened music that they like during colonoscopy and yoga exercises were effective on relaxing, decreasing their anxiety, having operation without pain, decreasing medicine doses, getting shorter of operation.

**Key Words:** Colonoscopy, Anxiety Level, Pain, Music, Nursing .

## Introduction

Colorectal cancer (CRC) is the third most commonly diagnosed cancer and the third leading cause of cancer death in both men and women in the US. (Colorectal Cancer Facts & Figures 2014-2016). According to data belong to 2014, 71.830 men, 65.000 women were diagnosed as colorectal cancer (Siegel, Desantis, & Jemal, 2014).

Forty percent of CRC patients could be diagnosed in their early stage (stage of localized disease). The prognosis of CRC is associated with its stage which in diagnosis time (Kronborg, 2000; Wilson, 2010).

The American Gastroenterology College suggested that the colonoscopy is a screening test which is preferred in approachable places. The most important subject of screening programs is protecting from potential hazard, redundant anxiety and morbidity because of CRC screening. (Rex, et al. 2009).

Anxiety is a common problem in patients who exposure to invasive medical interventions. Also, colonoscopy is an operation that could cause anxiety in patients (Sargin et al., 2016). For decreasing the anxiety related to colonoscopy, relieving patients and their accommodating to the operation, informing before operation and some relaxation techniques as music concert and yoga are among basic nursing practices (McCaffery, & Good 2000; Thoma et al., 2013; Uedo, et al., 2004; Schiemann et al., 2002; Lee et al., 2002; Smolen, Topp, & Singer 2002; Harikumar et al, 2006).

Ylinen et al found that the patients who were performed colonoscopy before, had more anxiety and could accommodate this situation hard; anxiety was effective on pain; except from medicine as informing patients before the operation and counselling could help patients with or without anxiety for decreasing pain (Ylien, Vehviläinen-Julkunen & Pietilä, 2009). Besides this, Arabul et al. (Arabul, et al, 2012) divided patients as video group and verbal group for decreasing anxiety level in patients at the colonoscopy day. They found that informing by using video before the colonoscopy affected the success of operation and anxiety as positively.

Again, in another study of El-Hassan et al (El-Hassan, McKeown, & Muller, 2009), one group patients were listened music in order to decrease the anxiety during endoscopy. It is found that the

anxiety level in control group who listened music was less than the control group.

Costta et al (Costaa, et al., 2010) determined that pain score and sedative dose that used in patients who listened music before and during colonoscopy was less. In a meta-analysis study of Tam et al. (Tam, Wong & Twinn, 2008), it is seen that time of process and used sedation amount was less in the group who listened music.

Thoma et al (Thoma et al., 2013) suggested that relaxation education with musical support was effective on decrease in anxiety, depression and stress levels.

This study was conducted to determine the effect of meditation and music concert on the anxiety level, operation tolerance and pain perception in people who were performed colonoscopy.

## Methodology

This experimental study was conducted at Gastroenterology Science Department, Endoscopy Unit of a University Hospital. The sample of the study was constituted of total 60 people, as 30 for study, 30 for control group. Cronbach alpha was 0.78. Between study and control groups; the characteristics of gender, age, education status and number of operation are similar.

### The instrument of data collection are:

A questionnaire formed by the researchers and constituted of 19 questions that are aimed to determine the sociodemographic characteristics of patients. 2.

**Visual Analogue Scale (VAS):** This scale is suggested as more sensitive and reliable in measuring pain intensity according to other single dimensional scales. It is used for measuring the pain related to the operation in study and control groups of the study.

**McGill- Pain Questionnaire:** It is a pain questionnaire that used for evaluating individual pain as multiple measured or multidimensional. Questionnaire was performed by face-to face with patients after operation. It is used for taking detailed information about their pain related to the operation for patients in study and control group.

**State-Trait Anxiety Inventory (STAI):** It is used to determine anxiety levels of patients in study and control groups, before and after colonoscopy. State-Trait Anxiety Inventory was

developed by Spielberger et al. (Spielberger, Gorsuch, & Luschene, 1970). The behavior/quality that is measured by inventory is state trait anxiety level. It is evaluated as with increasing score show anxiety level was high, and decreased score show decreased anxiety level.

**Yoga and Music Concert:** Before the study, the researchers took education and consultant training for yoga and meditation from an expert. The researcher performed yoga practice for 5 hours with trainer and he corrected the deficits and wrong things. Before the study, music that will be used for the study was chosen by taking expert advices and downloaded in a CD player. The patients were listened music style that was chosen between Turkish Classical Music, Turkish Folk Music, Pop Music and Classical Music by them.

In the study, written consent was given to the participants and colonoscopy was told by the researcher. Before the colonoscopy, individual information form was filled by study and control group and State-Trait Anxiety Inventory was performed by face-to face method. After the colonoscopy, their anxiety levels and pain intensities were measured with State-Trait Anxiety Inventory and Pain scales. Meditation was performed to the study group for 10-15 minutes, they made to feel relax and their chosen music from CD player was listened in operation room from beginning to end of the operation. Any intervention was not performed to the control group except routine treatment. Before and after the operation, state-trait anxiety inventory and after the study, pain degree during the operation was measured.

### Data Evaluation

In the study, the sociodemographic characteristics were accepted as independent variables, STAI, McGill- Pain Questionnaire and VAS were taken as dependent variables. Anxiety scoring was done by hand. For two group comparing independent two sample t test and dependent two sample t test were used. For three and more groups comparing, one-way Variance analysis was used and in the groups that have difference, multiple comparing was conducted with Tukey test.

### Ethics

Permission to carry out the study was granted according to the University hospital approval

process. Oral and written informed consent from all subjects was obtained.

### Results

The present study results are presented bellow. In study and control group, 56.7% of the participants were women. Of the study group participants; 36.7% were between 40-49 years old, 53.5% were graduated from primary school, 80.0% were married, 61.1% took information from doctor. These rates in control group as 16.7%, 56.7%, 70.0% and 69.2%, respectively.

Also, it is found that 43.4% of the study and control group participants were performed colonoscopy the first time and 66.7% of them were outpatient. It is determined that %33.0 of the study group participants and 36.7% of the control group participants came for colonoscopy operation because of CA pre-diagnosis.

When their anxiety levels were investigated, it is found that the state anxiety scores of control group patients was higher than the study groups before and after the operation ( $p>0.05$ ). It is determined that anxiety level decreased in study group after operation as statistically ( $p<0.01$ ) (Table 2).

In the study group, patients had less pain score mean during operation ( $p>0.05$ ) (Table 3). According to Mc Gill Pain Questionnaire, 56.7% of the study group and 43.3% of the control group lived a little difficulty during operation and 16.7% of control group participants lived more difficulty and they suggested that operation gave them trouble. Patients in the study group told that they lived pain as more throbbing and giving trouble; patients in control group said that their pain was like more throbbing, performing-tearing, straining, tension, bored and with trouble. In the study, with the effect of music and yoga exercises, state and trait anxiety levels in study group decreased after the operation. It is found that anxiety levels in patients who were performed colonoscopy as the second time was less than the patients who were performed colonoscopy at the first time (Table 4).

It is found that meperidine and midazolam doses that were given to the study group were less than the doses of control group ( $p<0.05$ ), and time of the operation was shorter in the study group than the others ( $p>0.05$ ). Also time of reaching cecum was short in the study group according to the control group ( $p>0.05$ ) (Table 5).

**Table 1. The distribution of informative characteristics of participants**

Informative Characteristics	Study (n=30)		Control (n=30)		Test
	Number	%	Number	%	
<b>Gender</b>					
Men	13	43.3	13	43.3	$\chi^2$ : 0.000 p:1.0000
Women	17	56.7	17	56.7	
<b>Age</b>					
30-39 years	5	16.7	6	20.0	$\chi^2$ : 3.833 p:0.429
40-49 years	11	36.7	5	16.7	
50-59 years	6	20.0	9	30.0	
60-69 years	8	26.7	10	33.4	
<b>Education Status</b>					
Illiteracy	3	10.0	6	20.0	$\chi^2$ : 2.141 p:0.544
Graduated from primary school	16	53.3	17	56.7	
Graduated from secondary school	6	20.0	3	10.0	
Graduated from high school and over	5	16.7	4	13.3	
<b>Marital status</b>					
Single	6	20.0	9	30.0	$\chi^2$ : 1.867 P:0.393
Married	24	80.0	21	70.0	
<b>Taking information</b>					
Yes	12	40.0	13	43.3	$\chi^2$ : 0.069 P:0.793
No	18	60.0	17	56.7	
<b>Person who give information*</b>					
Doctor	11	61.1	9	69.2	$\chi^2$ : 9.451 P:0.024
Nurse	6	33.3	2	15.4	
Friend and neighbor	1	5.5	2	15.4	

\* Answer more than one was given.

**Table 2. The mean of state anxiety scores of the study and control group participants before and after the operation**

Groups	n	State Anxiety		p
		Before operation <i>X ±SD</i>	After operation <i>X ±SD</i>	
Study	30	47.86 ±9.11	41.46 ±7.73	<b>&lt;0.01</b>
Control	30	49.53 ± 8.79	47.23 ± 7.28	>0.05

**Table 3. The mean of pain level scores of the study and control group participants after the operation, according to VAS**

Groups	Pain level <i>X ± SD</i>	P
Study (n=30)	2.7 ± 2.8	<b>&gt;0.05</b>
Control (n=30)	4.9 ± 2.7	

**Table 4. Distribution of the number of colonoscopy operation according to the mean of state anxiety scores in study and control group participants before and after the operation**

	State anxiety	
	Before operation ( <i>X ±SD</i> )	After operation ( <i>X ±SD</i> )
First operation	49.11±10.29	<b>45.17±8.12</b>
Second operation	46.23±7.37	<b>36.61±3.40</b>
F	1.028	12.159
P	0.319	0.002

**Table 5. The mean scores of operation outcomes in the study and control group patients**

Operation Outcomes	Study Group (n=30) <i>X ±SD</i>	Control Group (n=30) <i>X ± SD</i>	<i>p</i>
Meperidine(mg)	36.07 ± 6.85	37.50 ± 9.44	<0.05
Midazolam(mg)	3.64 ± 0.62	4.17 ± 1.16	<0.05
Time of reaching the cecum (min)	7.76 ± 4.21	7.32 ± 4.21	>0.05
Time of operation (min)	14.03 ± 7.91	14.86 ± 6.81	>0.05

### Discussion

Invasive medical interventions are common problems that cause to anxiety. Music is used in health care areas from past to present. The aims of music therapy are to compose a behavioral change by decreasing in psychological stress, pain, anxiety with isolation and supply to change sense situation. Besides this, it could supply a lot of benefits as improving quality of life, increasing stating himself, learning relaxation and helping coping skills (Thoma et al.,2013; Augustin, & Hains,1996; Winter, Paskin, & Baker, 1994; McCaffrey, & Good, 2000). Also, relaxation techniques with music could supply to decrease pain and anxiety of the patients and relaxation of them.

It is suggested that the music that is listened by the patient during colonoscopy could decrease cortisol synthesis with its neurobiological effect, increase synthesis of endorphin which is a natural myorelaxant and so it has got pain killer and relaxing effects (Uedo et al.,2004).

In the study, it is found that state anxiety scores of the study group before and after the operation was found less than the control group patients ( $p<0.01$ ) (Table 2). Also, in other studies, anxiety scores of the group which listened music during the colonoscopy was found as less than the others (Schiemann et al., 2002; Ylinen, Vehviläinen-Julkunen,& Pietilä 2009).

Moreover, it was revealed that in the group which listened music, women's state and trait anxiety levels decreased; the anxiety levels of patients who were performed colonoscopy as

second time decreased according to the patients who had colonoscopy at the first time and men had got less pain perception and midazolam dose than the women ( $p<0.05$ ). As a supportive finding for our study, Bjorkman et al. (2013) found that the women in the study group that listened music had less anxiety than the others during the colonoscopy and the men in the study group stated that they felt more comfort. Similarly in the study of Matthew et al. (2006) it was found that the anxiety level of the women who listened to music and the group who was performed colonoscopy before was less.

Music therapy is used in treatment of acute and chronic pain, commonly. In a study of Jeffrey A. Klassen et al. (Klassen et al, 2008) that 19 studies about music therapy practices for treatment of pain and anxiety were investigated, it is determined that music was effective for decreasing pain and anxiety. In the present study, the mean of pain scores of the study group was found less than the scores of control group because of the effect of the music and yoga exercises (Table 3). Similar to the study, in the studies of Ovayolu et al. (2006) and Hariikumar et al., (2006) the pain level of the group who listened music was less than that of the control group . Again, Uedo et al. 2004) found that music concert for the patients under colonoscopy decreased pain level and cortisol level excreted from salivary.

Colonoscopy is an operation that generally could be painful and pain is among the factors that affect the success of operation. Although colonoscopy is shown as it could be performed

without sedation, it is standard to perform this by supplying enough Sedation, relaxation, cooperation and amnesia through using intravenous pre-medications (Ovayolu et al., 2006; Fanti et al., 2003). In the study of Lee et al., (2002) patients were divided in three groups. Sedation was performed and music was listened to the first group. For the second group, sedation was performed and for the third group only music was listened and colonoscopy was performed. It is seen that the least anesthetic dose during colonoscopy and more patient satisfactory were in the group who listened music and were performed anesthetic.

Earlier research (Lee et al., 2002; Ovayolu et al., 2006) found that sedative dose less in the group who listened music during colonoscopy. Also, in the study of Harikumar et al. (Harikumar et al., 2006) it was found that midazolam dose that was used during colonoscopy was less in the study group, as similar. Again, in the study of Costa et al. (2010) it was also found that pain perception decreased, time of operation got shorter and satisfaction increased in the group that listened music during colonoscopy. In the meta-analysis of Tam et al., (2008) it was determined that the time of operation and sedation amount decreased in the group that listened music during colonoscopy.

Besides the positive effects of music during colonoscopy on pain and anxiety, as opposite to our study, some studies found that music was not effective on colonoscopy (Bechtold et al., 2006).

### Implications

It is found that when patients were listened music that they like during colonoscopy and yoga exercises were effective on relaxing, decreasing their anxiety, having operation without pain, decreasing medicine doses, getting shorter of operation. It is suggested to have some relaxation techniques as music listening and yoga made before operation in endoscopic tests. It is suggested to conduct the study with a large sample group.

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