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ORIGINAL RESEARCH

Impact of Music Listening and Information Training Provided Prior to Coronary Angiography on Physiological Parameters and Anxiety

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Abstract:
Objective: Individuals often experience anxiety prior to the coronary angiography procedure (CAG) and this condition affects physiological parameters negatively. The purpose of this study was to determine the impact of music listening and information training provided prior to CAG on anxiety level and physiological parameters.
Materials-Methods: The study was conducted as a randomized controlled intervention study. The sample number was randomized to the intervention 1 (music listening), intervention 2 (information training) and control group (routine care). Each group had 34 individuals. The study assessed the data via the Introductory Characteristics Form, Spielberg's State-Trait Anxiety Inventory, blood pressure, heart rate, respiratory rate and pain level in the SPSS (25.00) program.
Findings: The mean state anxiety scores had the highest decrease in the music listening group ($\bar{X}$=57.59, $\bar{X}$=38.93) and the lowest decrease in the control group ($\bar{X}$=52.57, $\bar{X}$=52.43) compared to before the CAG procedure (p<0.05). Comparing the groups; the lowest anxiety score was in the music listening group ($\bar{X}$=32.7) and then respectively in the information training group ($\bar{X}$=38.93) and the control group ($\bar{X}$=52.43) after the CAG procedure. The physiological parameters created a significant difference (p=0.001) in the music listening and information training group before and after the CAG procedure. However, the parameters created no difference in the control group (p>0.05). There was no difference between the groups in terms of the physiological parameters (P>0.05).
Conclusion: Listening to music and information training provided prior to coronary angiography significantly reduced the blood pressure, heart rate, respiratory rate and anxiety level after the procedure.
Keywords: Coronary Angiography, Training, Music Theraphy, Anxiety, Physiological Parameters

INTRODUCTION

Cardiovascular diseases (CVD) are common and non-contagious diseases involving blood vessels and heart-related diseases[1]. It is the leading cause of death worldwide. 17.9 million people lose their lives each year due to these diseases and this figure constitutes 31% of all deaths[1]. CVDs are also the leading cause of death in our country. The number of deaths due to circulatory system diseases as of 2018 was reported as 161,920. Of this figure, 39,629 were mainly due to Ischemic Heart Disease whereas 26,777 were mainly due to Acute Myocardial Infarction (AMI)[2,3,4]. Coronary artery disease (CAD), on the other hand, is one of the most common encountered CVDs in both men and women in the world and in our country[5,6.] The main cause of Coronary Artery Disease is the decreased coronary arterial blood flow due to atherosclerosis in the coronary arteries[6]. The incidence of CAD is gradually increasing and a delay in the diagnosis causes many problems for the individual such as feeling different from others, anxiety, depression, recurrent stress, fear of surgical intervention and death, work-related problems as well as financial and family-related problems[7]. This is an indication that CAD affects individuals in many ways and its diagnosis is crucial.

Coronary angiography (CAG) is one of the most commonly used methods in diagnosing the disease. CAG procedure also has some complications, as with any invasive procedure. The patient may also suffer accompanying mental problems such as anxiety, depression and stress in addition to physiological complications such as myocardial infarction, stroke, injury to the artery where the

catheter is located, arrhythmia, allergy to opaque material, kidney damage, excessive bleeding and infection[8,9]. Anxiety, one of the most common problems encountered before and during coronary angiography, may cause an increase in blood pressure and heart rate and subsequently increase the risk of complications during the procedure[10]. Research have revealed that high anxiety level before CAG and waiting time further increase pre-procedural anxiety[11,12].

Individuals who will undergo CAG procedure may encounter psychological symptoms such as anxiety, irritability, difficulty in concentration as well as physical effects such as dry mouth, difficulty in swallowing, tenderness in the epigastric region, tachypnea, tachycardia, pain or discomfort on the heart [16]. Anxiety is also known to increase the risk of myocardial infarction[14,15]. Changes in physiological parameters may further cause complications such as rhythm changes during CAG procedure. It may cause respiratory distress in the patient before the procedure and delay the initiation of the CAG procedure and prolong the withdrawal of the femoral catheter after the procedure due to bleeding[16].

Physiological problems that may be experienced by the patients after the procedure, in addition to the possible problems that are likely to be encountered before the CAG procedure, include arrhythmia, retroperitoneal bleeding, hematoma, thrombus, stroke, excessive bleeding, kidney problems, pseudo aneurysm and vascular occlusion. It is therefore recommended to monitor and manage the patient's vital signs such as blood pressure, heart rate, pain level and respiratory rate before and after the CAG procedure in order to detect all these possible complications in advance[16].

Literature review revealed that listening to music, reflexology[17], massage[18] and informative trainings[19] are among the methods applied to reduce the anxiety experienced by individuals. Studies revealed that the visual and auditory trainings to be provided in advance about the intervention to be applied reduces the psychological and physiological problems that may be experienced after the procedure[20,21,22]. These results indicate that the nurses, responsible for preparing individuals for CAG intervention, should not only be limited to this technical step alone but also provide education about the procedure and its results in order to reduce patient's level of anxiety. Nurses are recommended to inform patients and their relatives about the procedure and support them in reducing their fear and anxiety[20]. A study evaluating nurses' ability to understand patients' fears associated with CAG states that nurses should be more careful when assessing patients' fears before CAG intervention and consider the fear-inducing situations[23]. Another study emphasizes that the anxiety levels of individuals who will undergo CAG intervention should be evaluated by nurses with reliable and valid scales, and care protocols should be established to reduce the anxiety levels of individuals[24].

In line with all this information, it is obvious that CAG intervention is likely to trigger psychological and physiological effects on individuals. Individuals, therefore, are likely to experience anxiety before the procedure and to encounter physiological changes in blood pressure, heart rate, respiratory rate and pain level both due to this anxiety and the effect of the procedure. For this reason, non-pharmacological methods such as providing informative training, massage, music listening, reflexology techniques and relaxation exercises are used to reduce the anxiety that may be experienced before the CAG intervention. Music therapy is an effective method on many conditions such as blood pressure, heart rate, oxygen saturation, pain and anxiety levels of patients. Literature review revealed that music therapy is the most frequently preferred method due to relatively shorter period of application, being applicable in accordance with patient preferences and ease of application by nurses to reduce pain and anxiety. Informative trainings, on the other hand, have been determined to provide improvement in physiological parameters[25,26-28]. Based on this information, it is essential to scientifically determine the effects of music therapy and informative training on anxiety and physiological parameters of individuals who will undergo CAG procedure. Furthermore, this study is anticipated to contribute to evidence-based practices on music therapy.

MATERIAL AND METHODS

Study design

This is a randomized controlled intervention study. This study was registered in the archive of the Databases of the National Thesis Center of the Council of Higher Education (No. 578947).

Setting and sample

The study was conducted in a 320-bed, urban, non-profit training and research hospital. More than 3200 cardiac catheterization procedures are performed annually in the CAG laboratory. Two separate 20-bed units working together to implement the procedure and provide post-procedure care are also included in the study.

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Inclusion criteria are 1) electively participating in the femoral CAG procedure, (2) participating in CAG for the first time, (3) performing CAG for diagnostic purposes, (4) not having received training on CAG application, (5) participating in the study voluntarily, no problems in verbal communication, (6) not having hearing loss, (7) being literate, (8) not have been previously diagnosed with a psychiatric illness, (9) being conscious and being 18 years of age or older. Termination criteria are declaring a desire to leave the study, beginning the CAG procedure for diagnostic purposes, however having been decided for a stent and/or balloon intervention during the procedure, being admitted to the intensive care unit, unlike routine follow-up, due to an unexpected complication (arrhythmia, MI, bleeding etc.) during the CAG intervention. Sample size was determined as 28 for each group at the end of the "power analysis" for an 80% power and α=0.05 significance level. 20% more participants were included in the study considering possible losses in the implementation phase. A total of 102 individuals were divided into intervention group 1 (I1), intervention group 2 (I2) and control group (C), with 34 individuals in each group, following a randomization conducted with a computer program[29] (Figure 1). Numbers between 1 and 102 were assigned to the participants in the randomization list. Individuals undergoing elective CAG were assigned to the groups in the randomization list according to their order of submission.

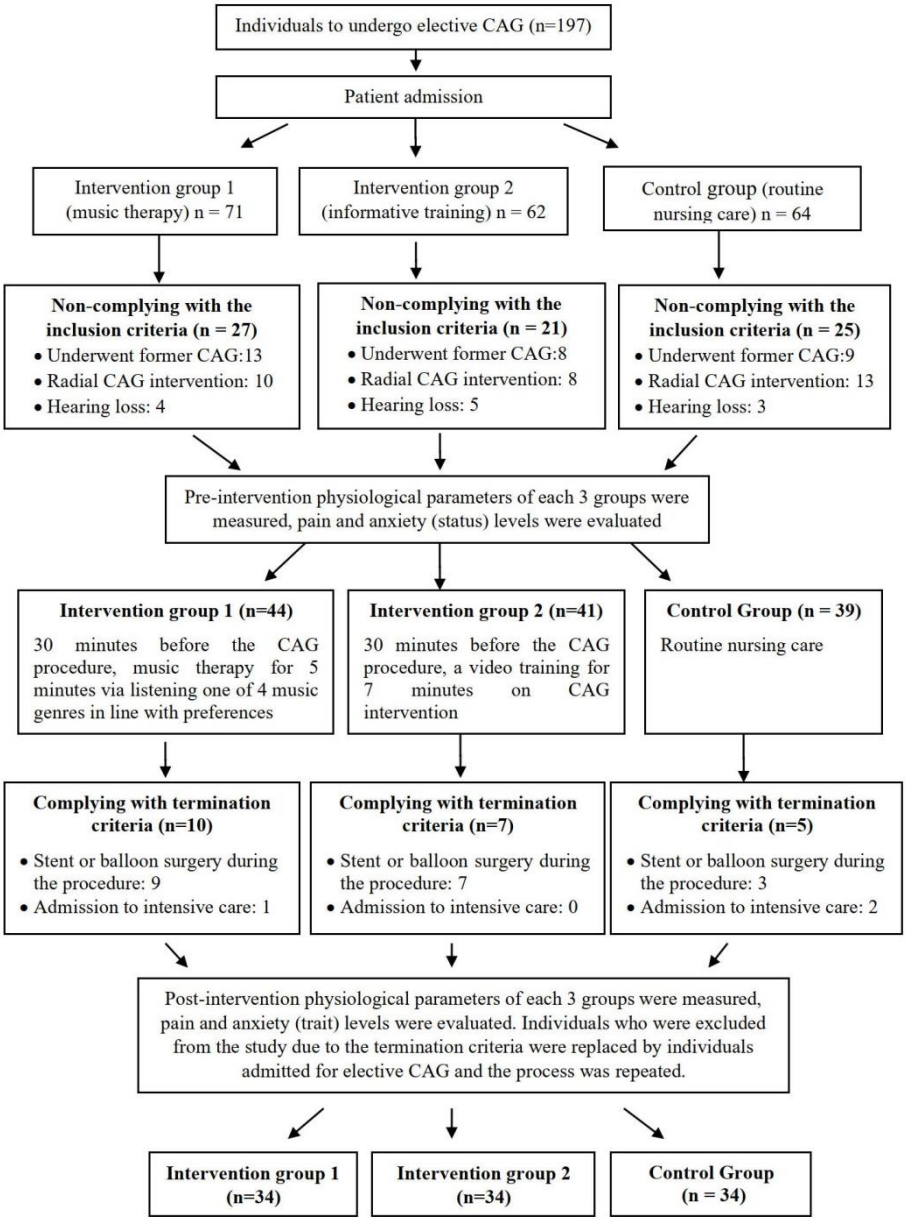

Figure 1. Assignment of Groups and Sampling Diagram

Measures

Introductory Characteristics: It consisted of questions about sociodemographic characteristics, habits, presence and type of chronic diseases and CAG procedure determined by the researchers at the end of the literature review[20, 26, 30].

Physiological Parameters: Blood pressure, heart rate, respiratory rate and pain level were evaluated.

Pain: Pain level was evaluated with visual analog scale (VAS). It is referred to a horizontal straight line with endpoints defined as "I have no pain" and "as bad pain as possible". The patient was then asked to indicate the level of pain by marking on the line between the two endpoints. This tool was first used by Freyd in 1923[31]. Kersten et al.[32] have proven VAS as a valid tool for assessing the level of pain. Ünsal and Ergül[33], in their research, determined that VAS has been used in studies conducted in Turkey.

Anxiety: Anxiety level was evaluated with State-Trait Anxiety Inventory/STAI. Scale was developed by Spielberger et al.[34]. It was adapted into Turkish by Öner and Le Compte[35]. It consists of two sections as State and Trait Anxiety. State Anxiety Inventory evaluates how individuals feel at the moment while Trait Anxiety Inventory measures how the person feels throughout a certain process, regardless of the situation and circumstances. Total score that can be obtained from the scale varies between 20 and 80, where a high score indicates a high level of anxiety[35]. Cronbach alpha value in the study was found to be 0.85 for Stait Anxiety Inventory and 0.80 for Trait Anxiety Inventory.

Procedure

State Anxiety Inventory was applied to the participants the day before the CAG procedure, following their outpatient controls. Introductory Characteristics Form and Trait Anxiety Inventory was applied to the individuals 30-45 minutes before the CAG procedure and their physiological parameters were evaluated. Physiological parameters and anxiety levels were re-evaluated with Trait Anxiety Inventory 15 minutes after the CAG procedure.

Interventions

Intervention group 1: 30 minutes before the CAG procedure, participants were allowed to listen one of 4 music genres (Turkish Folk, Classical, Turkish Classical Music and Sufi Music) determined with expert opinion, in accordance with their preferences via headphones for 5 minutes. Each type of music is instrumental, non-verbal, at 70 decibels, with the same characteristics in terms of rhythm and duration.

Intervention group 2: After the outpatient controls and before AG procedure, the participants were provided visual, auditory and written informative training about CAG for 30 minutes[36-38]. The training prepared in line with literature review and taking expert opinion beforehand included watching a 7-minute video, followed by a question-and-answer discussion and the delivery of a written training booklet.

Control group: The participants in this group were provided routine nursing care and did not receive any intervention. Routine nursing care services performed in the clinic involved preparation for the CAG procedure, which includes vascular access and dressing up with surgical gown, measuring blood pressure, heart rate and oxygen saturation once before and after the procedure and/or more frequently when there are deviations from the normal, and providing answers if the patient asks questions about the procedure.

Statistical analysis

The data were analyzed with the SPSS (25.00) software, and the significance level was considered as $p<0.05$. In addition to descriptive statistical methods (frequency, percentage and mean etc.), Independent Samples t-test was used for intergroup comparisons of parameters with normal distribution and related samples t-test was used for in-group comparisons. Kruskall Wallis was used to detect the significant difference between the variables with more than three sub-categories in the intergroup comparison of parameters without normal distribution, Mann Whitney U was used to determine the group that caused the difference whereas Wilcoxon signed-rank test (for the same group data) was used for in-group comparisons of parameters that did not show normal distribution. The effect sizes of the findings were calculated. Effect sizes were defined as "small, d = 0.1", " medium, d = 0.3", and "large, d = 0.5"[39].

Hypothesis

H_{1-1}: The music played to the patient before coronary angiography has an effect on the patient's anxiety level.

H_{1-2}: The music played to the patient before coronary angiography has an effect on the patient's physiological parameters.

H_{1-3}: The informative training provided to the patient before coronary angiography has an effect on the patient's anxiety level.

H_{1-4}: The informative training provided to the patient before coronary angiography has an effect on the patient's physiological parameters.

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Ethical aspect of research

The study was conducted in accordance with the Declaration of Helsinki and was approved by the institutional ethics committee (ID: 2017/174). Written permission was obtained from the institution where the study was conducted, and informed written consents were duly obtained from the participants.

Limitations of research

The fact that the study was conducted in a single center with patients who firstly in their lives had CAG and with only femoral interventions, independent of the researcher, constituted the limitations of the study.

RESULTS

For the purpose of this research conducted to determine the effects of the music therapy and the informative training provided to individuals before the coronary angiography procedure on their anxiety level and physiological parameters, it was determined that there was no statistically significant difference in the distribution of the introductory characteristics of all three groups included in the study and that the groups were homogeneously distributed. There was no significant difference between the trait anxiety mean scores of the groups (p>0.05) (Table 1).

Table 1. Comparison of trait anxiety scores before coronary angiography intervention (n=102)

Groups	Mean Ranks	DoF	x^2	***p***	Significant Difference
I1 (n=34)	43.83	2	4.41	0.011	None
I2 (n=34)	58.76				
C (n=34)	50.19				

p<0.05, Kruscal Wallis testi

Examining the intergroup state anxiety scores before and after the intervention; no significant difference was determined between the groups before the intervention (p>0.05). After the intervention, however, a significant difference was determined between the groups in terms of their mean scores of state anxiety (p<0.05). It was further determined that mean scores of state anxiety of the intervention 1 and intervention 2 groups exhibited different results both among themselves and with respect to the control group. From which group the differences originated was also examined. Considering the mean rank, the mean anxiety score of the control group ($\bar{X}$ =52.43) was found out to be higher than that of the intervention 1 and intervention 2 groups. When evaluating the mean rank of both intervention groups, among themselves, it was determined that mean post-intervention anxiety score of the intervention 1 group ($\bar{X}$ =32.70), was significantly lower than intervention 2 ($\bar{X}$ =38.93) (Table 2).

Table 2. Inter groups comparison of pre- and post-coronary angiography intervention state anxiety scores (n=102)

Pre-CAG State anxiety score						Post-CAG State anxiety score					
Groups	Mean Rank	DoF	x^2	p	Signif. Diffe.	Groups	Mean Ranks	DoF	x^2	p	Significant Difference
I1 (n=34)	42.59	2	4.564	0.102	None	I1 (n=34)	32.70	2	0.298	0.028	1-2, 1-3
I2 (n=34)	57.59					I2 (n=34)	38.93				2-1, 2-3
C (n=34)	52.57					C (n=34)	52.43				3-1, 3-2
p<0.05, Kruscal Wallis test						*p<0.05, Kruscal Wallis test, Mann Whitney U test post hoc*					

1: Intervention Group, 2: Intervention Group 2, 3: Control Group

$H_{1\text{-}1}$ and $H_{1\text{-}3}$ hypotheses were accepted based on these findings; it was concluded that providing music therapy to the patient before the CAG intervention was more effective in reducing the level of anxiety with respect to providing informative training. The study revealed that post-test anxiety scores of Intervention 1, which received music therapy, and Intervention 2, which received informative training, were significantly lower than their pre-test anxiety scores (p=0.001). On the other hand, there was no significant difference between the pre-test and post-test anxiety scores of the control group (p>0.05) (Table 3).

Table 3. In-Group Comparison of Pre-Test Post-Test anxiety scores (n=102)

Groups	Pre-Test Post-Test	n	Mean Ranks	Rank Sum	Z	p
I1	Negative rank	34	16.85	522.5		0.001
	Positive rank	0	0	0		
	Equal	0			-4.839	
I2	Negative rank	34	17.5	595		0.001
	Positive rank	0	0	0		
	Equal	0			-5.099	
C	Negative rank	34	18.34	587		0.102
	Positive rank	0	0	0		
	Equal	0			-4.954	

p<0.05, Wilcoxon Signed-rank test

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Post-test blood pressure, heart rate and respiratory rate scores of Intervention 1, which received music therapy, and Intervention 2, which received informative training before CAG, were significantly lower than their pre-test scores (p=0.001). There was no significant difference between the pre-test and post-test blood pressure, heart rate and respiratory rate scores of the control group, who received routine care and follow-up before CAG (p>0.05). Post-test and pre-test scores in the control group were similar (Table 4). H1-2 and H1-4 hypotheses were accepted based on these findings.

Table 4. In-Group Comparison of Pre-Test Post-Test Physiologic Parameters (n=102)

Groups	Physiologic Parameters	Pre-Test Post-Test	n	Mean Ranks	Rank Sum	Z	*p*
I1	Blood Pressure	Negative rank	34	16.75	402	-3.507	0.001
		Positive rank	0				
		Equal	0				
	Heart Rate	Negative rank	34	16.52	347	-3.319	0.001
		Positive rank	0				
		Equal	0				
	Respiratory Rate	Negative rank	34	11.75	395	-1.296	0.001
		Positive rank	0				
		Equal	0				
I2	Blood Pressure	Negative rank	34	14.71	250	-3.507	0.001
		Positive rank	0				
		Equal	0				
	Heart Rate	Negative rank	34	14.89	208.5	-3.319	0.001
		Positive rank	0				
		Equal	0				
	Respiratory Rate	Negative rank	34	4.5	36	-1.296	0.001
		Positive rank	0				
		Equal	0				
C	Blood Pressure	Negative rank	34	15.33	233	-1.936	0.053
		Positive rank	0				
		Equal	0				
	Heart Rate	Negative rank	0	0	0	-2.377	0.067
		Positive rank	34	16.83	305		
		Equal	0				
	Respiratory Rate	Negative rank	0	0	0	-2.42	0.006
		Positive rank	34	4.93	34.5		
		Equal	0				

p<0.05, Wilcoxon Signed-rank test

There was no significant difference between the groups in terms of blood pressure, heart rate and respiratory rate before coronary angiography (p>0.05). A decrease was observed after coronary angiography in terms of blood pressure, heart rate and respiratory rate, however this difference was not considered as significant (p>0.05) (Table 5).

The pain level of the patients was also planned to be evaluated in the study, however this parameter could not be evaluated statistically as the participants who underwent elective CAG reported that they did not experience any pain neither before nor after the procedure.

Table 5. Inter-Groups Comparison of Pre- and Post-Coronary Angiography Intervention Physiologic Parameters (n=102)

Pre CAG							Post CAG						
Physiologic Parameters	Groups	Mean Ranks	DoF	x^2	*p*	Signif Differ	Physiologic Parameters	Groups	Mean Ranks	DoF	x^2	*p*	Signif Differ
Blood Pressure	I1 (n=34)	60.06	2	5.643	0.060	Yok	Blood Pressure	I1 (n=34)	56.39	2	5.971	0.052	Yok
	I2 (n=34)	43.41						I2 (n=34)	41.19				
	C (n=34)	49.79						C (n=34))	55.57				
Heart Rate	I1 (n=34)	53.33	2	1.375	0.503	Yok	Heart Rate	I1 (n=34)	51.39	2	0.411	0.814	Yok
	I2 (n=34)	53.33						I2 (n=34)	53.06				
	C (n=34)	46.21						C (n=34)	48.56				
Respiratory Rate	I1 (n=34)	48.38	2	0.509	0.775	Yok	Respiratory Rate	I1 (n=34)	49.59	2	0.604	0.739	Yok
	I2 (n=34)	51.71						I2 (n=34)	49.62				
	C (n=34)	52.84						C (n=34)	53.75				

p<0.05, Kruscal Wallis Testi, Sd: Degree of Freedom, I1: Intervention Group 1, I2: Intervention Group 2, C: Control Group

When examining the effect size in terms of post-test scores of the state anxiety scale; it was determined that the effect size was the highest between the Intervention 1 group and the control group (0.60),

and secondly between the Intervention 2 group and the control group with a close value (0.58). The lowest effect size (0.32) was found among the intervention groups (Table 6). These results indicated that while music therapy was more effective in reducing the state anxiety score, informative training was also effective.

Table 6. The Effect Size Calculated for Post-test State Anxiety Scale Scores

Groups compared	Calculated effect sizes	Comment
Intervention 1- Intervention 2	0.32	Moderate effect
Intervention 1- Control	0.60	High effect
Intervention 2- Control	0.58	High effect

DISCUSSION

Within the scope of the study, patients were either provided music therapy, informative training or routine nursing care without any intervention before coronary angiography. Anxiety levels, blood pressure, heart rate and respiratory rate of the participants, who were randomly divided into three groups, were evaluated. There was no statistically significant difference between the three groups in terms of introductory characteristics and mean trait anxiety scores, which determine how the individual feels regardless of the situation and circumstances. Therefore, the groups were homogeneously distributed. With this result, which is an assumption that should be provided for the intervention study, the effect of different interventions was determined more clearly for groups with the same baseline level. Thus, except for the interventions, the features that could affect the dependent variables of the study were similar in all three groups. The results of the study indicated that both music therapy and informative trainings provided before coronary angiography were effective on the level of anxiety and physiological parameters.

While the state anxiety scores were similar between the groups before coronary angiography intervention (p>0.05), they were different after the intervention (p<0.05). Although this difference is valid for both intervention groups; state anxiety score was significantly lower in the I1 group ($\bar{X}$ =32.70), who were provided music therapy, compared to that of I2 group ($\bar{X}$ =38.93) who were provided informative trainings. On the other hand, no significant difference was observed in the control group (p>0.05) (Table 2). The findings of the research indicated that post-test anxiety scores of Intervention 1, which received music therapy, and Intervention 2, which received informative training, were significantly lower than their pre-test anxiety scores (p=0.001). On the other hand, there was no significant difference between the pre-test and post-test anxiety scores of the control group (p>0.05) (Table 3).

Literature review indicated that; the results of other studies evaluating the anxiety levels of the participants who were provided music therapy for different durations before CAG intervention, similar to the results of the study, revealed a decrease in post-intervention anxiety scores[15,35,36-38,40,41]. Unlike the results derived at the end of this study, a research conducted by Çürük et al.[43] revealed decreasing anxiety scores with respect to pre-test scores. However, this decrease was not considered to be statistically significant (p>0.05). In another study where music therapy was not limited to the pre-intervention stage but was also provided during and after the intervention, post intervention anxiety scores decreased significantly compared to the control group[41]. A study whose sample consisted of women suffering high anxiety levels before the CAG intervention, the participants were provided music therapy only during the procedure and the anxiety level was found to be lower in the intervention group[15]. A review study discussed the effect and significance of music therapy on the anxiety and stress levels experienced by individuals undergoing CAG[25].

Considering patients who will undergo coronary angiography; state anxiety scores of the patients who did not have a previous CAG was found to be significantly higher than the patients who formerly underwent a CAG intervention and state anxiety scores of the patients who received inpatient treatment and care was found to be significantly higher compared to the outpatient angiography patients. Anxiety scores of the patients who had the opportunity to get information about the procedure from their doctor and nurse were significantly lower than those who did not; it was further determined that the majority of the patients were willing to get information about CAG[43]. In another study, patients were asked to express their levels of anxiety and the control group were observed to have experienced the highest anxiety. The reasons underlying this anxiety were found to be feeling pain and suffering

and fear of harm to the heart and body[30].

This study, which aims to reduce the level of anxiety that is frequently observed in individuals who will undergo CAG, revealed that the anxiety score of the group provided informative training was significantly lower than the control group. Similar to these findings, it was determined that the informative training provided before the CAG intervention significantly decreased mean anxiety scores[19,20,30,44]. In a similar study, patients were asked to watch a 12-minute educational video before the KAG initiative; a significant decrease in the anxiety scores of the intervention group has been observed when anxiety and stress levels are evaluated immediately after and one week after KAG initiative[18]. As an informative training is provided to the patients within the scope of our study and individuals had the opportunity to find answers to their questions on KAG, the decrease in their anxiety levels is thought to be more effective.

Post-test blood pressure, heart rate and respiratory rate scores of Intervention 1, who received music therapy, and Intervention 2, who received informative training before CAG, were significantly lower than their pre-test scores (p=0.001). There was no significant difference between the pre-test and post-test blood pressure, heart rate and respiratory rate scores of the control group (p>0.05). (Table 4). There was no significant difference between the groups in terms of blood pressure, heart rate and respiratory rate before and after coronary angiography intervention (p>0.05) (Table 5). Considering another research study where patients who will undergo a CAG intervention are provided music therapy by listening sounds from nature and thereupon their physiological parameters are evaluated, significant reduction in the blood pressure of patients has been determined[45]. Yen et al[46], in their study, evaluated heart rates of the patients who will undergo a CAG intervention and who were provided music therapy via listening relaxing music in advance and concluded that the heart rate of the group receiving music therapy was lower. Forooghy et al.[47] provided their participants music therapy during the KAG intervention; they concluded that the heart rate, blood pressure and respiration of the intervention group decreased significantly with respect to the levels before the intervention. Çürük et al.[42], on the other hand, concluded that post intervention heart rate, blood pressure and respiration rate of the intervention group receiving music therapy decreased however such a decrease was not statistically significant. Studies, where physiological parameters of the patients were evaluated after they were provided informative training on CAG intervention, revealed a significant decrease in the heart rates, blood pressure and respiration rates of the intervention group compared to the control group, similar to the findings of this study[20,48,49]. Another study where participants watched informative videos, post intervention physiological parameters of the patients decreased however such a decrease was not statistically significant [50].

Conclusions and Recommendations

It was determined that the music therapy and informative training provided to patients prior to coronary angiography intervention caused significant subsequent decrease in post intervention blood pressure, heart rate, respiratory rates and anxiety levels of the participants. In line with these results, it may be suggested that patients who will undergo CAG intervention may be provided music therapy and informative training before the process. It is possible to provide music therapy both before and during the CAG intervention. Furthermore, different types of music in different decibels and different rhythms may also be preferred. This study was carried out on the individuals who will undergo femoral CAG intervention. Further research studies may address individuals who will undergo radial CAG, as radial CAG intervention has recently been a preferred method for the patients with indications. In addition, the anxiety levels and physiological parameters of the individuals who will undergo femoral and radial CAG may be compared. Randomized controlled studies may be repeated in different sampling groups to increase the level of evidence of the study.

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