Effectiveness of Emotional-Focused Coping on Heart-Focused Anxiety in Patients Prior to cardiac Catheterization

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ABSTRACT
Background: Heart-focused anxiety involves a concentration on and a fear of cardiac-related feelings and their anticipated negative outcomes (such as a life-threatening arrhythmia or abrupt cardiac death). It results in continuing concerns about heart function, avoiding activities that are thought to cause cardiac symptoms, and frequent behavior of requesting assistance in medical settings. Study purpose: This study aimed to measure the effectiveness of Emotional-Focused Coping on Heart-Focused Anxiety in Patients Prior to cardiac Catheterization. Materials and methods: A quasi-experimental study using (pretest and posttest design with a control group). A purposive sampling technique was used to gather the study information from 120 patients prior to cardiac catheterization by using the beck anxiety inventory scale. The study is conducted in Al-Najaf Al-Ashraf Government, Al-Najaf Center for Cardiac Surgery and Trans-Catheter Therapy. Results: A statistically significant difference is found in participants anxiety level prior to cardiac catheterization between the first measure before applying the coping techniques and the second measure after the application of coping strategies (Mean difference =13.500, P <0.0005) Conclusion: The emotional focused coping strategies are proves as easy interventions to apply and effective in terms of reducing the level of heart-focused anxiety prior to cardiac catheterization

1. Introduction

Heart-focused anxiety (HFA) is an experience of avoidance, fear, and heart-focused attention that develops after cardiac diagnoses, somatic symptoms, and familial factors. It disrupts daily living and causes recurring chest discomfort in addition to unfavorable health effects (Barthle.2022). Heart-focused anxiety involves a concentration on and a fear of cardiac-related feelings and their anticipated negative outcomes (such as a life-threatening arrhythmia or abrupt cardiac death), It results in continuing concerns about heart function, avoiding activities that are thought to cause cardiac symptoms, and frequent behavior of requesting assistance in medical settings (Wedegartner et al., 2020). Clinically relevant in the fields of psychosomatic medicine, cardiology, and particularly psycho-cardiology, HFA shows a unique pattern of anxiety symptoms include the fear of heart-related sensations, avoidance of triggering behaviors, and attention to heart-related symptoms in contrast to general anxiety (Schmitz *et al.*, 2022). H FA has some similarities to other anxiety-related features such panic disorder, panic sensitivity, and health anxiety, but the main feature of heart-focused anxiety is that it is predicated on the idea that cardiac-related stimuli in particular and heart dysfunction are linked to unpleasant and dangerous outcomes. (Hohls et al., 2020). Anxiety symptoms lead to higher subjective distress, less fortunate functioning, increased use of medical services, and higher costs for health care. They can be seen as ineffective coping mechanisms employed by patients in situations where they actually face risk to their lives (Deter et al.,2023). Therefore, this study aimed to measure the effectiveness of emotional-focused coping on heart-focused anxiety in patients prior to cardiac catheterization.Cardiac procedures, such as cardiac catheterization, are commonly used to diagnose or to treat some cardiac problems, which requires hospitalization stay. Hospitalizations that could have been avoided are caused by heart-focused anxiety, which is linked to poor Quality of Life symptoms like palpitations, dyspnea, and chest pain. (Kindermann et al.,2021). In addition to the psychological burden itself, avoidance behavior brought on by heart-focused anxiety may have additional adverse health consequences. (Willinger.2023)**.** Expecting a surgery can cause psychological stress, even if it is a necessary procedure. Changes in the metabolic, neurohormonal, and immunological systems, as well as anxiety, all influence how people respond to stress. Thus, these modifications have been reported as a result of surgery, and stress has been linked to higher cortisol levels in the blood. (Farhoud & Al-Hadrawi, 2024).Anxiety triggers the sympathetic nervous system, leading to physiological responses such as tachycardia, perspiration, increased oxygen fatigue, and elevated blood pressure, which can negatively impact patient progress. Anxiety can negatively affect patient's clinical outcomes,

including refusal to receive treatment and decreased pain tolerance during and after catheterization procedures. (Meseer&Al-Dujaili, 2020). However, HFA can be reduced using some coping strategies to overcome the procedures-related anxiety. Coping is the way people respond to stressful situations through their thoughts and behaviours (Huang &Liu2020).

2. Methods and Materials

Design: A quasi-experimental study using (pretest and posttest design with a comparison group) is used to measure the effectiveness of emotional-focused coping on heart-focused anxiety in patients prior to cardiac catheterization. The recent study started in October, 2023 to April, 2024.

Ethical consideration: Before starting the sample collection, the study was approved by the Research Ethics Committee at the University of Kufa, Faculty of Medicine that there are no any physical or psychological harm on the participants, The researcher also used informed consent to protect participant rights, In order to protect the subjects' rights and ensure their participation in the data collection process, informed consent was obtained beforehand. The participant's right to participate in the study comprises essential components such as the researcher's introduction, explanation of the study's goals and advantages, assurance of patient confidentiality, voluntary participation, and the subject's right to discontinue participation at any time.

Sample and sampling: A purposive sampling technique was used to gather the study information of 120 consenting patients prior to cardiac catheterization. Block randomization is used to divide the study sample into experimental and control groups. According to the Cohen's method of sample adequacy, the minimum sample size required for studies using (0.05) probability value is about 99. However, to increase the effect size of the study, the sample was increased to 120 participants

Inclusion Criteria:

1. Clients who were able to communicate and understand the explination of the relaxation program.
2. Clients of 18 years or older
3. Adult clients who scheduled for cardiac catheterization for the first time.

Study Setting: The study is conducted in Al-Najaf Al-Ashraf Government, Al-Najaf Centre for Cardiac Surgery and Trans-Catheter Therapy.

Study Instrument: The Beck anxiety inventory scale was used to measure the level of anxiety of participants. The original scale originally developed by Beck et al. in 1988, which consists of 21 items. The lower score indicates low anxiety level and the higher score indicates severe anxiety levels.

Data collection: Data were gathered using a self-administered questionnaire. Prior to cardiac catheterization, the expected completion time was 20 to 25 minutes.

Data analysis: To analyze the data we used Microsoft Excel (2010) and SPSS software version 26, also to describe demographic data, health-related variables and heart-focused anxiety levels we used descriptive statistics**.**

Validity and Reliability of the Instrument: Two separate bilinguals translated the original scale to Arabic using forwards and backwards translation process. The validity of the Arabic version of Beck Anxiety Inventory scale was determined by a panel of (14) professionals in the disciplines of medicine and nursing. The Arabic version of the scale was valid with a few recommended improvements that the researcher took into account. Prior to this step, five clients with varying educational levels were asked to assess how clear the items on the Arabic Beck Anxiety Inventory Scale to ensure the clarity of the scale for participants. To verify the scale items' internal consistency and stability, reliability analysis was performed.

3. Results and Discussion

In the experimental group, the majority of participants (30%) were male (55%) and married (88.3%), whereas in the control group, the majority of individuals (33%) were male (61%) and married (78%). In terms of education level, the experimental group (33.3%) has intermediate school (51.1%), is a governmental employee, and (68%) has sufficient to some extent economic status, whereas the control group participants (40%) have primary school (l 31.7%), have a free job, and (58.3%) have sufficient

economic status. (98%) of participants in the experimental group live in urban areas, while (80%) of those in the control group do as well. Prior to cardiac catheterization, 93 percent of the experimental group and 70 percent of the control group received no stress-reduction training.

Table I. Descriptive statistics of socio-demographic variables of participants

Experimental group			**Control group**		
Age groups	F	%	**Age groups**	f	%
28 - 35 Years	5	8.3	29 - 36 Years	4	6.7
36 - 43 Years	11	18.3	37 - 44 Years	9	15
44 - 51 Years	15	25	45 - 52 Years	10	16.7
52 - 59 Years	11	18.3	53 - 60 Years	20	33.3
60 - 67 Years	18	30	61 - 68 Years	17	28.3
Total	60	100	Total	60	100
Sex	F	%	**Sex**	f	%
Male	33	55	Male	37	61.7
Female	27	45	Female	23	38.3
Total	60	100	Total	60	100
Education Levels	F	%	**Education Levels**	f	%
Primary Education	9	15	Does Not Read or Write	1	1.7
Intermediate School	20	33.3	Primary Education	24	40
High School	12	20	Intermediate School	16	26.7
Diploma Degree	10	16.7	High School	9	15
Bachelor Degree or Higher	9	15	Diploma Degree	2	3.3
			Bachelor Degree or Higher	8	13.3
Total	60	100	Total	60	100
Marital Status	F	%	**Marital Status**	f	%
Single	5	8.3	Single	5	8.3
Married	53	88.3	Married	47	78.3
			Divorce or Separated	2	3.3
Divorce or Separated	2	3.3	Widowed	6	10
Total	60	100	Total	60	100
Economic State	F	%	**Economic State**	f	%
Insufficient	3	5	Insufficient	12	20
Sufficient to some extent	41	68.3	Sufficient to some extent	35	58.3

Sufficient or high	16	26.7	Sufficient or high	13	21.7
			4	1	1.7
Total	60	100	Total	60	100
Occupation	F	%	**Occupation**	f	%
Retired	8	13.3	Retired	13	21.7
Governmental employee	31	51.7	Governmental employee	13	21.7
Private section employee	3	5	Private section employee	3	5
Free job	5	8.3	Free job	19	31.7
Not Working or House wife	13	21.7	Not Working or House wife	12	20
Total	60	100	Total	60	100
Living Area	F	%	**Living Area**	f	%
Rural	1	1.7	Rural	12	20
Urban	59	98.3	Urban	48	80
Total	60	100	Total	60	100
Receiving Stress Reduction Training	F	%	**Receiving Stress Reduction Training**	F	%
Yes	4	6.7	Yes	18	30
No training	56	93.3	No training	42	70
Total	60	100	Total	60	100

Table 2. Descriptive statistics of health-related variables of participants

Experimental Group			**Control Group**		
Smoking History	f	%	**Smoking History**	f	%
Active Smoker	18	30	Active Smoker	13	21.7
Passive Smoker	15	25	Passive Smoker	13	21.7
No Smoking	27	45	No Smoking	34	56.7
Total	60	100	Total	60	100
Chronic Illness	f	%	**Chronic Illness**	F	%
None	10	16.7	None	14	23.3
Hypertension	15	25	Hypertension	10	16.7
Diabetes Mellitus	9	15	Diabetes Mellitus	19	31.7
Respiratory disease	1	1.7	Thyroid disease	3	5
Thyroid disease	1	1.7	Others	1	1.7
Others	3	5	Hypertension and Diabetes Mellitus	9	15

Hypertension and Diabetes Mellitus	16	26.7	Hypertension and Respiratory Disease	1	1.7
Hypertension and Respiratory Disease	2	3.3	Hypertension and Thyroid Disease	2	3.3
Hypertension and Thyroid Disease	3	5	Hypertension, Diabetes Mellitus, & Respiratory Diseases	1	1.7
Total	60	100	Total	60	100
Types of Cardiac Catheterization	F	%	**Types of Cardiac Catheterization**	f	%
PCI	33	55	PCI	48	80
Diagnostic	27	45	Diagnostic	12	20
Total	60	100	Total	60	100

Table 3. Descriptive statistics of anxiety level for experimental group

Anxiety levels (Pretest)	f	%	**Anxiety levels (posttest1)**	f	%	**Anxiety levels (Posttest2)**	f	%
Moderate Anxiety	17	28.3	Moderate Anxiety	38	63.3	Moderate Anxiety	56	93.3
Severe Anxiety	43	71.7	Severe Anxiety	22	36.7	Severe Anxiety	4	6.7
Total	60	100	Total	60	100	Total	60	100
Low anxiety= ≤ 21, Moderate anxiety = 22-35, Severe anxiety= 36 – 63								

Table 4. Descriptive statistics of anxiety level for control group

Anxiety levels (1st Measure)	f	%	**Anxiety levels (2nd Measure)**	F	%
Moderate Anxiety	30	50	Moderate Anxiety	26	43.3
Severe Anxiety	30	50	Severe Anxiety	34	56.7
Total	60	100	Total	60	100

Table 5.A. Differences in anxiety levels among (pre-test, post-test1, post-test2) in experimental group (Tests of Within-Subjects Effects) .

Tests of Within-Subjects Effects					
Source		Df	Mean Square	F	Sig.
factor1	Sphericity Assumed	2	2738.42	171.047	.000
	Greenhouse-Geisser	1.789	3060.59	171.047	000
	Huynh-Feldt	1.842	2973.69	171.047	000
	Lower-bound	1	5476.84	171.047	000

Table 5.B. Differences in anxiety levels among (pre-test, post-test1, post-test2) in experimental group (Pairwise Comparisons).

Pairwise Comparisons						
Factor1		Mean Difference (I-J)	Sig.	95% Confidence Interval for Difference		Cohen's D Effect Size
				Lower Bound	Upper Bound	
Pre-test	Post-test 1	7.233*	.000	5.618	8.848	0.95
	Post-test 2	13.500*	.000	11.415	15.585	2.15
Post-test1	Pre-test	-7.233*	.000	-8.848	-5.618	
	Post-test2	6.267*	.000	4.604	7.929	1.06
Effect size = small (d=0.2), medium (d=0.5), and large (d=0.8)						

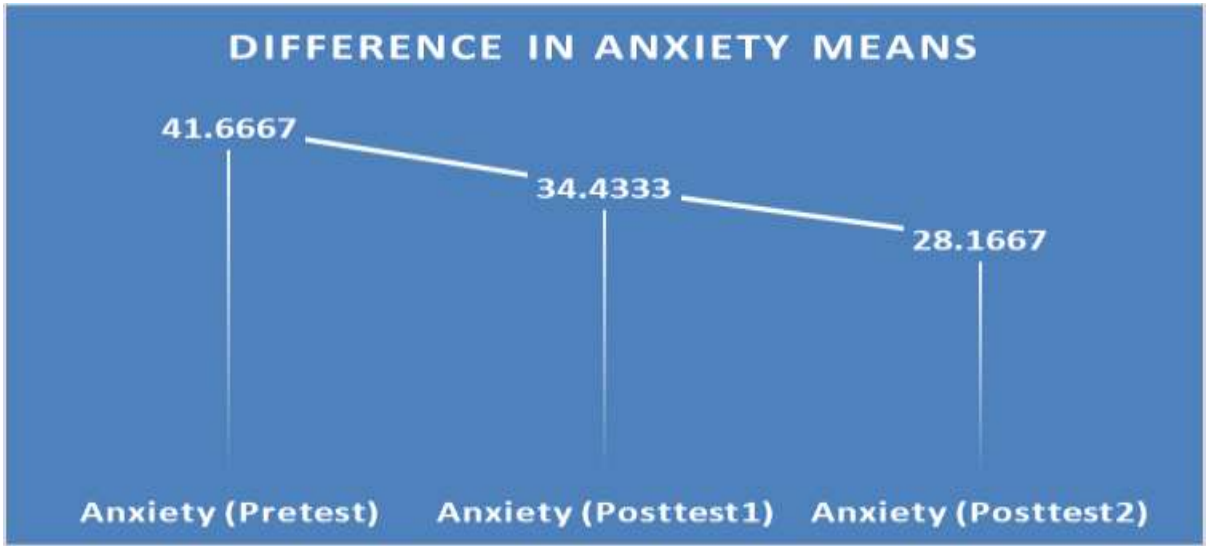

Figure 1: Difference in anxiety mean scores in the three measures

Table 6. Differences in anxiety levels between experimental and control groups

Anxiety Level		Levene's Test for Equality of Variances		t-test for Equality of Means		
		F	Sig.	T	Df	Sig. (2-tailed)
1st Measure for Experimental and Control Groups	Equal variances assumed	1.244	0.267	3.634	118	0.0001
	Equal variances not assumed			3.634	117.66	0.0001
2nd Measure for Experimental and Control Groups	Equal variances assumed	0.17	0.681	-3.52	118	0.001
	Equal variances not assumed			-3.52	117.985	0.001

Discussion

This RCT study aimed to measure the effectiveness of Emotional-Focused Coping on Heart-Focused Anxiety in Patients Prior to cardiac Catheterization. We hypothesized that the emotional focused coping strategies would reduce the level of heart focused anxiety prior to cardiac catheterizationThe findings of Beck Anxiety

Inventory Scale measurements which used in this study show that 71.7% of experimental group had a severe anxiety in (pre-test), while in post-test2 after applying the emotional–focused coping strategies for 3times the results display that there was only 6.7% of participants had a severe anxiety, In the control group in the 1st measure was 50% of participants had a severe anxiety and in the 2nd measure it increased to 56.7% they had a severe anxiety at morning of catheterization day. This applies to the results of a study conducted in(Shahrekord, Iran), it confirmed that listening to the Qur'an, which is one of the emotional-focused coping strategies, has an effect in reducing anxiety among patients suffering from heart disease and who are undergoing diagnostic and therapeutic procedures (Morgan et al.,2020). In addition, Findings of (Zulkifli et a,l, 2022) also yielded that listening to Quran has significantly reduced a patient's anxiety level pre-procedural. The intention of deep breathing which is one of emotional-focused strategies to increase alveolar ventilation, maintain gas exchange, prevent pulmonary atelectasis, improve cough efficiency, reduce stress (physical and mental), and thus lower pain severity and anxiety. Deep breathing helps people maintain self-control while they are anxious. The application of deep breathing relaxation technique enables clients to minimize worry, relieve muscle tension, maximize the benefits of rest and sleep, and be secure in their decision. When you practice deep breathing relaxation techniques, the parasympathetic nervous system activates and the sympathetic nerve relaxes, lowering your heart rate, blood pressure, and respiratory rate to normal levels. This applies to the study that was conducted at the Faculty of Nursing, Universitas Sumatera Utara (Ariga. 2019). The results of the current study showed that meditation has an effect in reducing anxiety occurring before catheterization, This is in consistent with a study done by (Mohammed et al., 2021) which confirmed that mindfulness meditation focuses on personal experiences, including breathing, physical sensations, emotions, and thinking. This low-cost, low-risk technique emphasizes pastoral care and mindfulness. This exercise has been demonstrated to improve quality of life and biological effects in several populations, such as COVID-19 and cancer patients. It can be used every day to improve mental health, particularly anxiety.According to (Alvarez & Yaban. 2020) Nurses can use guided imagery to alleviate anxiety and immediate postoperative pain in both children and adults. It is a simple and cost-effective emotional-focused coping strategy. (Hong & Kim. 2020) confirmed that guided imagery therapy has few limits on time and place and can be quickly implemented, hence it is regarded to be useful as a way to reduce stress and state anxiety.

Conclusion

Anxiety occurring before cardiac catheterization is considered a risk factor for heart disease patients because it affects their vital signs and may also affect the outcome of the catheterization. Therefore, the patient needs to perform some interventions before the catheterization to reduce anxiety. The emotional focused coping strategies are proved as easy interventions to apply and effective in terms of reducing the level of heart-focused anxiety prior to cardiac catheterization,

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