

ISRG Journal of Arts, Humanities and Social Sciences (ISRGJAHSS)



ISRG PUBLISHERS

Abbreviated Key Title: ISRG J Arts Humanit Soc Sci

ISSN: 2583-7672 (Online)

Journal homepage: <https://isrgpublishers.com/isrgjahss>

Volume – III Issue-I (January- February) 2025

Frequency: Bimonthly



The impact of training in problem-solving techniques centered on deepening one's relationship with God on anxiety, life satisfaction, and quality of life in patients referred to Tehran Heart Center in 2023 for open heart surgery

Fatemehsadat Alavi¹, Fatemeh Gholami², Sarah Mohamadi³, Fatemeh sadat Izadkhah⁴, Roghayeh nouri⁵, Dr. Morteza Mansourian^{6*}

¹ PhD Candidate of Health Education and Health Promotion, Department of Health Education and Health Promotion, School of Health, Iran University of Medical Sciences, Tehran, Iran. ORCID: 0000-0003-4239-9219

² Department of Education and Health Promotion, School of Public Health, Iran University of Medical Sciences, Tehran, Iran. ORCID: 0000-0001-9652-4906

³ PhD Candidate, Health Education and Health Promotion Department of Health Education and Health Promotion Iran University of Medical Sciences, Tehran, Iran.

⁴ PhD student of health education and health promotion, Faculty of Health, department of health education and health promotion, IRAN university of medical sciences, Tehran, Iran. ORCID: 0000-0002-9626-8698

⁵ PhD Candidate of Health Education and Health Promotion, Department of Health Education and Health Promotion, School of Health, Iran University of Medical Sciences, Tehran, Iran. ORCID: 0000-0002-7535-321x

⁶ Associate Professor, Health Promotion Research Centre, Iran University of Medical Sciences, Tehran, Iran. ORCID: 0000-0002-2482-5424

| **Received:** 13.01.2025 | **Accepted:** 18.01.2025 | **Published:** 25.01.2025

***Corresponding author:** Dr. Morteza Mansourian

Associate Professor, Health Promotion Research Centre, Iran University of Medical Sciences, Tehran, Iran. ORCID: 0000-0002-2482-5424

Abstract

Background and purpose:

Results from a number of research show that patients having heart surgery require focused therapies to manage their anxiety and enhance their quality of life and life satisfaction. Overall surgical outcomes for these patients can be greatly enhanced by addressing patient expectations, implementing structured psychosocial support, and implementing educational programs based on

spiritual aspects. Thus, the current study sought to determine the impact of problem-solving skills training grounded in enhancing one's relationship with God on anxiety, life satisfaction, and quality of life in patients referred to the Tehran Heart Center in 2023 who were candidates for open heart surgery.

Materials and Methods:

One hundred patients (50 in the experimental group and 50 in the control group) were chosen at random for this quasi-experimental investigation. The researcher's Human-God Interaction Inventory (a reconstruction of Lawrence's 1997 God Conception Scale), Diener's Life Satisfaction Inventory, the World Health Organization Quality of Life Inventory, and Beck's Anxiety Inventory were used to measure quality of life, life satisfaction, anxiety, and the interactive relationship with God, respectively. Participants in the intervention group got six group discussion sessions, instruction in spiritually oriented problem-solving techniques, and a strengthening of their relationship with God in addition to drug treatment. SPSS software was used to evaluate the data from the pre-test, post-test, and one-month follow-up.

Findings:

The findings of the above study showed that the decrease in the mean anxiety in the experimental group had a more severe downward trend than in the control group, especially in the follow-up phase ($p < 0.0001$). Also, the mean of the dimensions of acceptance, benevolence, learning, and quality of life in the post-test in the experimental group (especially in the follow-up phase) increased more than in the control group, although this increase did not lead to a statistically significant result. Also, the mean of the variables of presence, influence, divine providence, self-actualization, commitment, mental focus, faith, the full score of the interactive relationship between man and God, and life satisfaction in the post-test in the experimental group (especially in the follow-up phase) increased more than in the control group, and this increase led to a statistically significant result ($p < 0.0001$).

Conclusion:

Designing and implementing group problem-solving educational interventions based on strengthening the relationship with God can be an effective approach to reducing preoperative anxiety and increasing subscales of the interactive relationship between man and God and life satisfaction.

Keywords: *problem-solve, relationship with God, anxiety, quality of life, life satisfaction, open heart surgery*

Introduction

Cardiovascular disease (CVD) will be responsible for over 19.8 million fatalities in 2022, up from 12.4 million deaths in 1990. This rise is a result of both population expansion and an increase in risk factors like diabetes and obesity(1). Cardiovascular diseases account for approximately 43% of all deaths in Iran, so these diseases are the main cause of mortality in Iran(2). About 593,000 new cases of CAD were reported in Iran in 2019, which accounted for 10.3% of disability-adjusted life years (DALYs) and 26.2% of all fatalities(3). A study conducted in Tehran reported a CAD incidence rate of 11.9 per 1000 person-years for men and 6.5 for women, which represents a significant burden compared to the incidence seen in the United States in the 1970s(4). According to studies, open-heart surgery (CABG) has proven to be an effective treatment for coronary artery disease and provides notable advantages over conservative measures in terms of long-term survival and symptom relief(5). It is anticipated that the results for patients receiving these operations would continue to be positive as surgical techniques advance(6). According to one study, the 5-year survival rate following CABG is roughly 63%, which is noticeably greater than the 43% for patients receiving conservative treatment(7). Even while open heart surgery is frequently helpful in treating heart disease, there are a number of possible side effects, such as bleeding, arrhythmia, heart attack and stroke(8), infection(9), emotional(10) and cognitive disturbances(11), and more. According to studies, patients having open heart surgery can benefit from problem-solving techniques for anxiety management, quality of life enhancement, and life satisfaction(12).

By giving patients the coping mechanisms they need and optimistic outlook on their health, these interventions not only address

immediate psychological issues but also improve long-term recovery advantages(13). According to the findings of a study, patients undergoing coronary artery bypass graft (CABG) surgery reported significantly lower anxiety levels after participating in problem-solving skills training (PSST). Following therapy and during follow-up, the intervention significantly decreased anxiety levels, indicating that structured problem-solving techniques can successfully manage anxiety in this patient population(14). Improved sleep quality was also noted in the same study, and it was strongly correlated with general quality of life. Problem-solving techniques may have a beneficial impact on the general wellbeing of patients recuperating from heart surgery, as evidenced by the better quality of sleep following the intervention(14).

Anxiety, quality of life, and life satisfaction can all be improved for patients having open heart surgery by deepening your relationship with God and practicing spirituality. Prior to surgery, patients who employ spiritual or religious coping mechanisms report feeling less anxious, according to research. Higher degrees of religiosity were linked to lower preoperative anxiety in cardiac patients, according to one study, indicating that faith can offer consolation and assurance during tense medical procedures(15).

According to studies, patients who practiced constructive spiritual or religious coping prior to surgery reported higher levels of instrumental activities of daily living (IADL) and activities of daily living (ADL) following surgery than those who did not. This implies that better functional results following surgery can result from having a strong spiritual connection(16).

Patients with higher spiritual well-being ratings demonstrated better optimism and well-being, which are crucial elements of

quality of life, according to a study that focused on the preoperative period. Hope was a major factor in a more optimistic view during recovery, even if existential well-being was lower than religious well-being(17) . A sense of meaning and purpose is fostered by spiritual activity, and this can improve life satisfaction. Patients who report having a close relationship with God frequently find solace in their faith, which improves their perspective on medical difficulties and their road to recovery(18).

Spiritual coping has advantages that go beyond quick recovery following surgery. After surgery, patients who practice positive religious coping are better able to adjust to life changes since it is linked to long-term psychological resilience and posttraumatic growth(20 ,19).

Overall, while open-heart surgery can significantly improve symptoms and quality of life for many patients with heart disease, it is essential to be aware of its potential complications. Proper preoperative preparation, postoperative care, and lifestyle modifications can help reduce these risks and enhance recovery outcomes.

Further research has revealed that people following open heart surgery can experience considerable improvements in their anxiety levels, quality of life, and life satisfaction by deepening their relationship with God through spiritual practices. These results demonstrate the value of attending to spiritual demands as part of all-encompassing patient care and the contribution of spirituality to cardiac patients' recuperation and general well-being. In order to promote holistic patient care, healthcare professionals are urged to bring up spirituality during preoperative evaluations.

The studies' findings imply that, in spite of the existing research gaps, additional study is required to investigate how problem-solving techniques centered on enhancing one's relationship with God affect patients following open heart surgery in terms of anxiety, quality of life, and life satisfaction. There is a dearth of thorough research, particularly on patients undergoing open heart surgery, despite some studies suggesting that spirituality can improve anxiety and quality of life in heart disease patients. Instead of focusing on surgical procedures, the majority of the work currently in publication has addressed chronic conditions like heart failure. To more accurately evaluate spirituality's influence on various patient populations, consistent spirituality metrics are also required. It is challenging to compare findings or make definitive judgments regarding the efficacy of spiritual therapies in surgical settings because current research frequently uses disparate measures to measure spirituality. However, spirituality can appear in a variety of civilizations and personal beliefs. The impact of these variations on the efficacy of spiritual therapies in various patient populations might be investigated further, especially in relation to major surgeries like open heart surgery.

However, there are a lot of potential advantages to more investigation. More thorough approaches to patient treatment may result from an understanding of how deepening one's connection with God can lower anxiety and enhance quality of life. Overall patient outcomes may be improved by including spiritual care into pre- and post-operative procedures.

Finding successful spiritual interventions can assist medical professionals in creating focused programs that assist patients emotionally and psychologically during their surgical experience, which may increase patient satisfaction and recovery rates. There is a need for instruments to test patients for spiritual distress, as

recent research have shown. Such tools could be developed with the aid of more research, enabling medical practitioners to methodically address spiritual demands. In conclusion, more research is necessary even though preliminary results indicate that improving one's relationship with God can help patients undergoing open heart surgery feel less anxious and have higher levels of life satisfaction and quality of life. This will contribute to a better comprehension of the outcomes of such interventions and guide therapeutic procedures meant to enhance patient care via spiritual support. Thus, this study sought to determine how well problem-solving skills training grounded in deepening one's relationship with God affected patients following open heart surgery in 2023 in terms of anxiety, quality of life, and life satisfaction.

Materials and Methods

The present study was a quasi-experimental study with a control group and an intervention group at the Heart Center Hospital. G*POWER software was used to determine the study's sample size, which was divided into two groups of 50 participants and based on a study by Faraji et al. from 2019 (21) with a 10% dropout rate. Convenience sampling was employed to choose participants for this study, and they were split into two groups at random. Once written informed consent was obtained, the samples were added to the research.

Inclusion criteria included being a candidate for heart surgery, being hospitalized, having the physical and mental ability to participate in the study, speaking Persian, not having an unstable clinical condition or severe physical or mental disabilities, being interested in participating in the study, and being able to provide written consent to participate in the study (literacy at the level of reading and writing). Exclusion criteria included having an unstable clinical condition, cognitive problems (Alzheimer's, delirium), having mental illnesses that impair a person's judgment and cognition, such as schizophrenia, blindness or deafness, having speech problems, having other illnesses that require special treatment and interfere with the education process, such as chemotherapy in cancer patients, and not being interested in participating in the research.

A five-part questionnaire was used as the data gathering instrument. The first section dealt with demographic data. The Beck Anxiety Inventory was the second component. A self-report questionnaire called the Beck Anxiety Inventory(22) is used to gauge how severe anxiety is in adults and teenagers. There are 21 items on this four-choice scale(23). Depressive symptoms are not included in the Beck Anxiety Inventory because of the way it was created(22). This questionnaire's internal reliability coefficient was 0.83 in an Iranian study by Kaviani et al. (24) The test-retest coefficient was 0.81 at a one-week interval, the alpha coefficient was 0.92, and the inter-half reliability coefficient was 0.91 in the Iranian population. The Beck Anxiety Inventory has a correlation value of 0.62.

The researcher-designed interactive relationship with God questionnaire made up the third section. There were multiple steps involved in the questionnaire's psychometric testing. The design of the item pool was informed by both qualitative and prior research. It should be mentioned that the fundamental scriptures of Islam, Christianity, and Judaism served as the basis for the phrases pertaining to the interactive relationship with God subscales in this study. Two separate translators used the Forward-Backward

approach to translate a set of sentences from the Lawrence scale(25).

The content validity technique(27 ,26), (quantitative and qualitative) was applied to determine the validity of this scale. The content validity index and content validity ratio of the scale questions were assessed based on the opinions of 15 specialists, including psychologists, religious clerics, and professionals in health education and promotion. Ten subscales—"influence," "divine providence," "presence," "acceptance," "benevolence," "self-actualization," "faith," "learning," "mental focus," and "commitment"—were included in the original checklist items.

The checklist was cleared of questions with a content validity index below 0.99(28). Additionally, the checklist still included questions with a content validity index greater than 0.79 (29). There were ultimately 33 questions left. A higher computed score on each subscale indicates a greater interactive relationship with God and, in general, a more positive relationship with God overall.

To further explore the reliability of the developed scale, the kappa correlation coefficient, also known as the inter-rater agreement method, was employed (30). Additionally, Cronbach's alpha was calculated for a 60-patient sample. In this investigation, the Cronbach's alpha was.92 and the inter-rater agreement coefficient (Cohen's kappa) was.89 (p<0001), all of which were acceptable (31).

Additionally, Danier's Life Satisfaction Questionnaire was employed to evaluate the life satisfaction score. Danier et al. (32) created this 5-item test to gauge life satisfaction. This test has a seven-point rating system for each question. The Cronbach's alpha coefficient, which ranges from 0.80 to 0.89, has been used to determine the scale's internal reliability and validity (both convergent and discriminant). Additionally, Danier and colleagues calculated the divergent validity for this scale, and the results were positive. Furthermore, a correlation of 0.35 to 0.85 has been found between this scale and other life satisfaction measures (33).

The 26-question World Health Organization Quality of Life Questionnaire (BREF-WHOQOL), which gauges a person's general quality of life, was used to gauge quality of life. There are four subscales in this survey, along with an overall score. These subscales include environmental health, social relationships, mental health, and physical health(34).

The study's intervention group was given six weekly, 45–60 minute group counseling sessions that focused on developing problem-solving skills and enhancing their relationship with God. The questionnaires were filled out again over the phone or in person right after the intervention and a month following the heart surgery. An instructional manual was created to direct the intervention's execution.

Following the completion of the six sessions, a group discussion was held with the patients and the research and treatment team (which included a psychologist, a spiritual specialist, and a cardiac surgeon) with the consent of the ward head nurse. The purpose of the discussion was to discuss potential problems and offer solutions for implementing changes. Participants were urged to establish action plans and attainable targets for changing their lifestyles and outlining the procedures to do so at the conclusion of each session.

The gathered data was described and examined using SPSS version 24 software. Qualitative data were shown as numbers and percentages, whereas quantitative variables were shown as SD ± mean. Two groups with qualitative factors were compared using the chi-square and Fisher Exact tests, while quantitative variables were compared using the t test. The design assumptions that compared changes in indicators at various intervals were examined using repeated measurement ANOVA. Less than 0.05 was taken into consideration as the significance level.

Results

One hundred patients were divided into two groups for this study: fifty experimental patients and fifty control patients. The samples in the experimental and control groups had respective mean ages of 64.92±12.20 and 66.56±11.85 years (PV=0.497). The majority of patients were married, male, had completed high school, and did not use drugs or smoke. The experimental and control groups were similar, as evidenced by the comparison of background variables, which revealed no significant differences in the mean scores of the constructs of the interactive relationship between man and God and the variables of life satisfaction, anxiety, and quality of life. The baseline and background factors for the two groups are compared in Table 1.

Table 1: Two groups' baseline and background factors are compared.

Variable	Control group	Intervention group	PV
Age (SD±mean)	66/56 ± 11/85	64/±92 12/20	0/497
men	0/68	0/70	0/50
Education level			
≥12 th grade	0/24	0/18	0/908
<12 th grade	0/58	0/48	0/908
Married	0/58	0/54	0/912
Average economic situation	0/56	0/60	0/037
Smoking	0/36	0/32	0/833
Drug use	0/36	0/42	0/279
Presence	5/40 ± 13/88	5/46 ± 13/80	0/941
Acceptance	4/97 ± 11/92	4/97 ± 11/86	0/952

Benevolence	5/15 ± 10/60	5/21 ± 10/54	0/954
Influence	14/70 ± 5/03	14/64 ± 5/10	0/953
Divine providence	11/10 ± 4/50	11/04 ± 4/55	0/947
self-actualization	10/12 ± 3/93	10/06 ± 3/97	0/940
Commitment	11/86 ± 3/73	11/82 ± 3/78	0/958
Mental focus	12/48 ± 3/80	12/44 ± 3/81	0/958
Faith	14/18 ± 4/07	14/14 ± 4/10	0/961
learning	12/02 ± 3/34	11/94 ± 3/40	0/906
Total interactive relationship score (TSIRMG)	122/86 ± 36/44	122/28 ± 36/87	0/937
Life satisfaction	15/28 ± 6/40	15/16 ± 6/50	0/926
Anxiety	54/64 ± 18/45	54/54 ± 18/44	0/978
Quality of life	48/22 ± 22/21	48/06 ± 22/31	0/971

The comparison of the two experimental and control groups in all dependent variables (before, after, and follow-up) is displayed in Table 2.

Table 2: Comparison of the two control and experimental groups in all dependent variables (before, after and follow-up)

	Intervention group						Control group						PV
	before		after		follow-up		before		after		follow-up		
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	
Presence-stat	13/80	5/46	14/30	5/27	16/38	4/22	13/88	5/40	13/88	5/40	14/28	5/22	0/029
Acceptance-stat	11/86	4/97	12/32	4/65	13/38	4/07	11/92	4/97	11/92	4/97	12/14	4/95	0/175
Benevolence-stat	10/54	5/21	10/70	4/74	11/26	4/45	10/60	5/15	10/60	5/15	10/82	5/05	0/645
Influence-stat	14/64	5/10	15/04	4/71	17/30	3/61	14/70	5/03	14/70	5/03	15/58	4/64	0/042
Divine providence-stat	11/04	4/55	11/54	4/11	14/00	3/11	11/10	4/50	11/10	4/50	12/44	4/18	0/037
self-actualization-stat	10/06	3/97	10/38	3/73	13/28	3/55	10/12	3/93	10/12	3/93	11/62	3/59	0/022
Commitment-stat	11/82	3/78	12/04	3/61	13/96	3/01	11/86	3/73	11/86	3/73	12/58	3/72	0/044
Focus-stat	12/44	3/81	13/00	3/36	14/76	3/19	12/48	3/80	12/48	3/80	13/40	3/46	0/044
the faith-stat	14/14	4/10	14/58	3/93	16/06	3/57	14/18	4/07	14/18	4/07	14/62	3/62	0/048
learning-stat	11/94	3/40	12/22	3/27	13/62	2/80	12/02	3/34	12/02	3/34	12/64	2/98	0/094
TSIRMG	122/28	36/87	126/12	33/35	144/00	24/05	122/86	36/44	122/86	36/44	130/12	31/96	0/016
Life satisfaction	15/16	6/50	16/02	6/40	18/12	5/93	15/28	6/40	15/28	6/40	15/58	6/23	0/040
Anxiety	54/54	18/44	52/02	17/19	32/02	8/15	54/64	18/45	54/64	18/45	48/48	17/91	0/0001
Quality of life	48/06	22/31	49/14	22/06	51/54	20/18	48/22	22/21	48/22	22/21	49/66	21/02	0/649

The aforementioned findings demonstrate that the test group's mean anxiety decreased with a more pronounced downward trend ($p < 0.0001$).

Additionally, the experimental group's post-test mean for the aspects of acceptance, benevolence, learning, and quality of life increased higher than that of the control group, particularly throughout the follow-up phase. However, there was no

statistically meaningful outcome from this increase. However, using the right tests is necessary to infer meaningful differences in these variables.

Additionally, the experimental group (particularly in the follow-up phase) experienced a statistically significant increase in the post-test average of the following variables: presence, influence, divine providence, self-actualization, commitment, mental focus, faith,

the full score of the interactive relationship between man and God, and life satisfaction.

The relationship between the two test and control groups' overall scores on the interactive relationship between man and God during the pre-test, post-test, and follow-up phases is displayed in diagram 1.

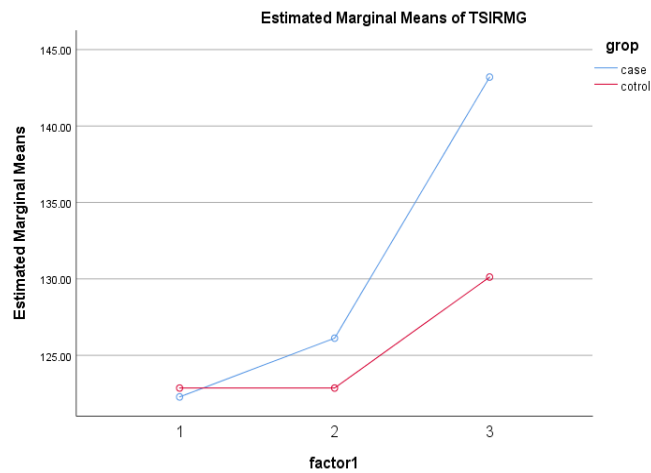


diagram 1: The relationship between the total score of the interactive relationship between man and God, in two groups, before and after.

As can be observed, the test group's overall score on the interactive relationship between man and God rose more in the post-test and, particularly, in the follow-up phase than in the control group, according to the Repeated Measurement ANOVA statistical test used to test the research hypotheses.

The association between the test and control groups' anxiety scores before, during, and after the test is depicted in Figure 2.

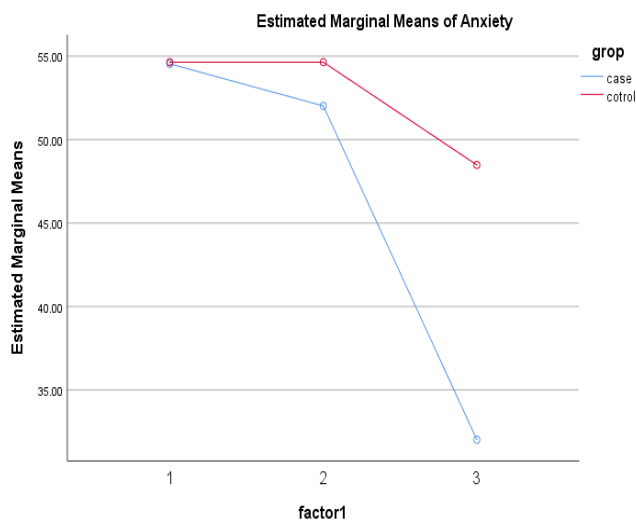


Figure 2: Relationship between anxiety in the two groups, before and after

As can be observed, the test group's anxiety level dropped more in the post-test and, particularly, in the follow-up phases than in the control group, according to the Repeated Measurement ANOVA statistical test performed to assess the research hypotheses.

The link between the two experimental and control groups' life satisfaction at the pre-, post-, and follow-up phases is depicted in Figure 3.

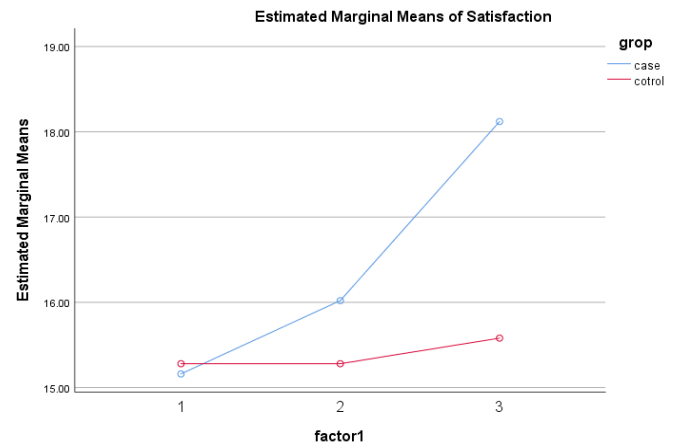


Figure 3: Relationship between life satisfaction in two groups, before and after

As can be observed, the test group's life satisfaction score rose more than that of the control group during the post-test and, particularly, the follow-up phases, according to the Repeated Measurement ANOVA statistical test employed to assess the research hypotheses.

Discussion:

This study examined the effects of problem-solving skills training centered on deepening one's relationship with God on patients following open heart surgery in 2023 in terms of anxiety, quality of life, and life satisfaction. The results of the aforementioned study demonstrated that, particularly throughout the follow-up period, the experimental group's average reduction in anxiety was greater than that of the control group.

According to a systematic review, psychological preparation—which can include problem-solving techniques and spiritual support—significantly lowers anxiety in patients having heart surgery, which is consistent with the results of this study. Patients' overall recovery experience is improved and the stress of surgery is lessened because to this preparation(35).

Studies have demonstrated that cognitive-behavioral therapies, which frequently incorporate problem-solving components, can successfully lower anxiety levels in individuals suffering from coronary heart disease (CHD). These methods assist patients in reframing their ideas and creating healthy coping mechanisms(12).

The current study's findings also demonstrated that the experimental group's average post-test score on the interactive relationship between man and God—particularly during the follow-up phase—rose more than that of the control group, resulting in a statistically significant outcome. According to one study, preoperative anxiety was well predicted by elements of a person's relationship with God. Prior to surgery, patients' anxiety levels were lowered by emphasizing spiritual instruction through activities like group mindfulness meditation. This implies that surgical volunteers' emotional wellbeing may be enhanced by interventions meant to deepen spiritual ties(36). Training in problem-solving techniques can be successfully combined with spiritual activities to assist patients in managing the anxiety associated with upcoming surgery. In addition to teaching them useful coping mechanisms, this method fortifies their spiritual convictions, which may result in a closer bond with God(37, 14).

The current study's findings also demonstrated that the experimental group's mean life satisfaction score at the post-test (particularly during the follow-up phase) rose more than that of the control group, with this increase producing a statistically significant outcome. According to the studies' findings, life satisfaction and spiritual well-being are favorably correlated. Higher levels of life satisfaction are frequently reported by patients who participate in spiritual activities. Strengthening one's relationship with God can offer emotional support and a feeling of purpose during cardiac surgery, which is crucial for healing and general life satisfaction(37).

Results from a study on group logotherapy demonstrated that improving a patient's relationship with God enhanced their spirituality and decreased anxiety. People feel more connected and purposeful during trying times, like surgery, which is probably why this improvement in spiritual well-being adds to life pleasure(38).

The current study's findings demonstrated that there was no statistically significant difference between the experimental group's mean quality of life score on the post-test and that of the control group.

According to the search results, research has not demonstrated that therapies centered on improving a person's relationship with God through problem-solving skills training have no impact on the quality of life of patients having heart surgery. The results actually imply otherwise.

One study's findings indicated that group logotherapy combined with spiritual education had a substantial impact on patients' spirituality and anxiety levels before heart surgery, indicating that a closer relationship with God may help lower preoperative worry. The whole quality of life throughout the surgical procedure can be impacted by this crucial component(36).

Enhancements in coping mechanisms have been linked to problem-solving skills training (PSST), which can raise life satisfaction and quality of life. By encouraging a closer relationship with God, incorporating spiritual components into PSST may promote higher emotional well-being and improve patients' psychological outcomes(39 ,14).

Research has demonstrated that spirituality and problem-solving-focused therapies can improve patients' emotional states and general quality of life (40). Patients who practiced spirituality, for instance, expressed greater levels of purpose and hope, which enhanced their sense of fulfillment in life(37).

In conclusion, research indicates that problem-solving skills training interventions in conjunction with spiritual factors can enhance the quality of life, lower anxiety, and improve overall emotional well-being of patients undergoing heart surgery, which contrasts with the current study's finding that this intervention had no effect on patients' quality of life. Based on the current study's findings, it appears that future research could be helpful to look more closely at these correlations and provide standardized metrics to gauge their significance.

Conclusion:

This study examined how patients following open heart surgery in 2023 responded to problem-solving skills training centered on deepening their relationship with God in terms of anxiety, quality of life, and life satisfaction. The results demonstrated that creating

and putting into practice such interventions can be a successful strategy for lowering anxiety prior to open heart surgery and raising life satisfaction and the subscales measuring the interactive relationship between man and God (perception of presence, efficacy, divine providence, self-actualization, dedication, mental focus, and faith). There may be other variables in the study that require more thorough investigation, as the results of this intervention did not demonstrate a significant association between the experimental group's quality of life and that of the control group.

Study limitations

Since this study is semi-experimental and it is impossible to control for all intervening variables in this kind of research, an effort was made to reduce their impact, and therefore, they were included as confounders in the analyses. Since self-reporting surveys was seen to be a constraint for patients, an effort was made to have patients who did not fully comprehend the questions complete the questionnaire during an interview.

Ethical approval of this research

This was a research study under the Health Promotion Committee, which was approved by the Ethics Committee of Iran University of Medical Sciences with ethics code IR.IUMS.REC. 1402.021 with project tracking code 23302 on 19/01/1402.

Conflict of interest

There was no conflict of interest.

Financial support

This study was supported by the Vice Chancellor for Research, Iran University of Medical Sciences.

Acknowledgements

The staff and patients of Iran University of Medical Sciences and Tehran Heart Center Hospital in particular deserve special recognition from the study's authors for their voluntary participation.

References

1. Walther O. New Study Reveals Latest Data on Global Burden of Cardiovascular Disease Available online: [https://www. acc. org/About-ACC/Press-Releases/2023/12/11/18/48](https://www.acc.org/About-ACC/Press-Releases/2023/12/11/18/48). New-Study-Reveals-Latest-Data-on-Global-Burden-of-Cardiovascular-Disease (accessed on 4 March 2024.)
2. Fahimfar N, Kohansal K, Asgari S, Ostovar A, Hadaegh F, Khalili D. The Trend of Risk for Cardiovascular Diseases during the past Decade in Iran, applying No-Lab and Lab-based prediction models. *Global Heart*. 2023;18.(1)
3. Sarebanhassanabadi M, Mirjalili SR, Marques-Vidal P, Kraemer A, Namayandeh SM. Coronary artery disease incidence, risk factors, awareness, and medication utilization in a 10-year cohort study. *BMC cardiovascular disorders*. 2024;24(1):101.
4. Mirjalili SR, Marques-Vidal P, Kraemer A, Namayandeh SM. Coronary Artery Disease Incidence, Risk Factors, Awareness, and Medication Utilization in a 10-Year Cohort Study. 2023.
5. Jannati M, Navaei MR, Ronizi LG. A comparative review of the outcomes of using arterial versus venous

- conduits in coronary artery bypass graft (CABG). *Journal of Family Medicine and Primary Care*. 2019;8(9):2768-73.
6. de Waard D, Fagan A, Minnaar C, Horne D. Management of patients after coronary artery bypass grafting surgery: a guide for primary care practitioners. *CMAJ*. 2021;193(19):E689-E94.
 7. Szlapka M, Hetzer R, Ennker J, Hausmann H. Conventional cardiac surgery in patients with end-stage coronary artery disease: yesterday and today. *Cardiovascular Diagnosis and Therapy*. 2021;11(1):202.
 8. Montrief T, Koymfman A, Long B. Coronary artery bypass graft surgery complications: A review for emergency clinicians. *The American journal of emergency medicine*. 2018;36(12):2289-97.
 9. Borregaard B, Pedersen SS, Berg SK, Dahl J, Ekholm O, Sibilitz K, et al. What to expect after open heart valve surgery? Changes in health-related quality of life. *Quality of Life Research*. 2020;29:1247-58.
 10. Sedaghat S, Rostami S, Ebadi A, Fereidooni-Moghadam M. Stressors in open-heart surgery patients: A qualitative study. *ARYA atherosclerosis*. 2019;15(4):192.
 11. Sibilitz KL, Tang LH, Berg SK, Thygesen LC, Risom SS, Rasmussen TB, et al. Long-term effects of cardiac rehabilitation after heart valve surgery-results from the randomised CopenHeartVR trial. *Scandinavian Cardiovascular Journal*. 2022;56(1):247-55.
 12. Salzmann S, Salzmann-Djufri M, Wilhelm M, Euteneuer F. Psychological preparation for cardiac surgery. *Current cardiology reports*. 2020;22:1-10.
 13. Prado-Olivares J, Chover-Sierra E. Preoperative anxiety in patients undergoing cardiac surgery. *Diseases*. 2019;7(2):46.
 14. Omidi S, Kakabaraee K, Amiripour A. Effects of problem-solving skills training on the anxiety and sleep quality of patients after coronary artery bypass graft surgery. *Journal of Kermanshah University of Medical Sciences*. 2021;25.(1)
 15. Bezerra SMMdS, Gomes ET, Galvão PCdC, Souza KVd. Spiritual well-being and hope in the preoperative period of cardiac surgery. *Revista Brasileira de Enfermagem*. 2018;71(2):398-405.
 16. Appel HB, Ai AL. Does Spirituality Enhance Functioning in Cardiac Patients? *21st Century Cardiology*. 2022;2(3):1-4.
 17. Gomes ET, Bezerra SMMdS. Spiritual well-being, anxiety and depression in the preoperative period of cardiac surgery. *Rev Rene*. 2022;23:81343.-
 18. Eglin M, Schmid J-P, Ronel J, Khatami R, Leiggenger C, Koenig HG, et al. Impact of social support and religiosity/spirituality on recovery from acute cardiac events and heart surgery in Switzerland. *The International Journal of Psychiatry in Medicine*. 2024;59(5):595-609.
 19. Ai AL, Hopp F, Shearer M. Getting affairs in order: Influences of social support and religious coping on end-of-life planning among open-heart surgery patients. *Journal of social work in end-of-life & palliative care*. 2006;2(1):71-94.
 20. Abu HO, Ulbricht C, Ding E, Allison JJ, Salmoirago-Blotcher E, Goldberg RJ, et al. Association of religiosity and spirituality with quality of life in patients with cardiovascular disease: a systematic review. *Quality of Life Research*. 2018;27:2777-97.
 21. Emafi MF, Hedayatizadeh-Omran A, Noroozi A, Janbabai G, Tatari M, Modanloo M. The effect of group logotherapy on spirituality and death anxiety of patients with cancer: an open-label randomized clinical trial. *Iranian Journal of Psychiatry and Behavioral Sciences*. 2019;1.(3)3
 22. Beck AT, Epstein N, Brown G, Steer RA. An inventory for measuring clinical anxiety: psychometric properties. *Journal of consulting and clinical psychology*. 1988;56(6):893.
 23. Beck AT. Manual for the beck depression inventory-II. (No Title). 199.6
 24. Alinezhad D, Ebrahimi MI. ANXIETY PREDICTION BASED ON INTELLECTUAL RUMINATION AND IRRATIONAL BELIEFS IN STUDENTS OF ISLAMIC AZAD UNIVERSITY, HAMADAN BRANCH. *Humanidades & Inovação*. 2019;6(9):212-9.
 25. Lawrence RT. Measuring the image of God: The God image inventory and the God image scales. *Journal of Psychology and theology*. 1997;25(2):214-26.
 26. Polit DF, Beck CT. The content validity index: are you sure you know what's being reported? Critique and recommendations. *Research in nursing & health*. 97-489:(5)29;2006
 27. Yaghmaie F. Content validity and its estimation. *Journal of medical education*. 2003;3.(1)
 28. Lawshe CH. A quantitative approach to content validity. *Personnel psychology*. 1975;28(4):563-75.
 29. Polit DF, Beck CT. *Nursing research :Principles and methods*: Lippincott Williams & Wilkins; 2004.
 30. Bujang MA, Baharum N. Guidelines of the minimum sample size requirements for Kappa agreement test. *Epidemiology, Biostatistics and Public Health*. 2017;14.(2)
 31. McHugh ML. Interrater reliability: the kappa statistic. *Biochemia medica*. 2012;22(3):276-82.
 32. Diener E, Emmons R, Larsen R, et al. The satisfaction with life scale. *J Pers Assess*. 1985;49(1):71-5.
 33. Besharat M, Shamsipoor H, Barati N. Reliability and validity of stekholm couple stress scale. *J Psychol Sci*. 2006;19:217-25.
 34. Group W, editor *The development of the World Health Organization quality of life assessment instrument (the*

WHOQOL). Quality of Life Assessment: International Perspectives: Proceedings of the Joint-Meeting Organized by the World Health Organization and the Fondation IPSEN in Paris, July 2–3, 1993; 1994: Springer.

35. Farquhar JM, Stonerock GL, Blumenthal JA. Treatment of anxiety in patients with coronary heart disease: a systematic review. *Psychosomatics*. 2018;59(4):318-32.
36. Alavi F, Tafti SHA, Alaeddini F, Ebrahimyan Z, Ebrahimyan A, Mansourian M. The effect of group logotherapy on spirituality and preoperative anxiety in patients seeking open heart surgery referring to Tehran Heart Center in 20 .20*Journal of Education and Health Promotion*. 2022;11(1):233.
37. Omidi S, Kakabaraee K, Amiripour A. Effectiveness of Social Problem-Solving Skills Training on the Depression in Systolic Heart Failure Patients in Kermanshah. *Journal of Kermanshah University of Medical Sciences*. 2023;27.(2)
38. Rabelo ACS, Souza FVFS, Silva LdFd. Contribution of transpersonal care to cardiac patients in the postoperative period of heart surgery. *Revista gaucha de enfermagem*. 2018;38:e64743.
39. Ajtahed SS, Rezapour T, Etemadi S, Moradi H, Habibi Asgarabad M, Ekhtiari H. Efficacy of neurocognitive rehabilitation after coronary artery bypass graft surgery in improving quality of life: An interventional trial. *Frontiers in psychology*. 2019;10:1759.
40. Bikmoradi A, Masmouei B, Ghomeisi M, Roshanaei G, Masiello I. Impact of telephone counseling on the quality of life of patients discharged after coronary artery bypass grafts. *Patient education and counseling*. 2017;100(12):2290-6.