ORIGINAL ARTICLE

Does the technique used in coronary artery bypass graft surgery affect patients' anxiety, depression, mental and physical health? First 3-month outcomes

Yeliz Ciğerci PhD, RN[1] | Fatıma Yaman MD[2] | Ahmet Çekirdekçi MD[3] |
İlyas Küçük RN, Lecturer[4] | Ercüment Ayva MD[5] | Öznur Gürlek Kısacık PhD, RN[1]

[1]Department of Nursing, Faculty of Health Science, Afyonkarahisar Health Science University, Afyonkarahisar, Turkey

[2]Department of Physical Medicine and Rehabilitation, Faculty of Medicine, Kütahya Health Science University, Kütahya, Turkey

[3]Department of Cardiovascular Surgery, Faculty of Medicine, Kütahya Health Science University, Kütahya, Turkey

[4]Hatay Mustafa Kemal University, Hatay, Turkey

[5]Department of Cardiovascular Surgery, Private Fuar Hospital, Afyonkarahisar, Turkey

Correspondence
Yeliz Ciğerci PhD, RN, Department of Nursing, Faculty of Health Sciences, Afyonkarahisar Health Science University, Zafer Sağlık Külliyesi A Blok Dörtyol Mah. 2078 Sokak, No: 3, Afyonkarahisar, Turkey.
Email: yelizceylin@hotmail.com

Abstract

Purpose: This study was aimed at investigating the effect of coronary artery bypass graft surgery conducted with different techniques on patients' anxiety, depression, mental and physical health.

Design and Methods: This cross-sectional study included 60 patients who completed the Beck Anxiety Inventory, the Beck Depression Inventory, and the 36-Item Short-Form Health Survey.

Findings: Anxiety, depression, and mental health showed significant differences in different time measurements, and combined effects of surgical technique and time factor.

Practice Implications: Preoperative routine evaluations can speed up recovery, reduce cost, and improve quality of life by preventing the possible negative effects of anxiety and depression.

KEYWORDS
anxiety, coronary artery bypass graft, depression, mental and physical health, quality of life

1 | INTRODUCTION

Both depressive and anxiety disorders are important in the development of cardiovascular diseases. They are known to be the leading factors that worsen prognosis in patients (Çökmüş, 2019). Also, evidence indicates anxiety and depression as risk factors in patients with coronary artery disease (Al-Zaru et al., 2020; El-Baz et al., 2018). Therefore, in cardiac patients, the symptoms of depression and anxiety should be recognized quickly, and fast and effective treatment should be provided (Çökmüş, 2019).

Coronary artery bypass graft (CABG) is the most common cardiac surgical procedure in the world (Melly et al., 2018; Tachibana et al., 2021). It is performed on more than 800,000 patients every year worldwide (Khorsandi et al., 2015). The number of CABG performed patients in Turkey is thought to increase every day, but the exact number is unknown (Demir Korkmaz et al., 2015). This procedure is generally performed with two techniques such "On-Pump" which is performed with the use of a cardiopulmonary bypass machine and "Off-Pump" in which the heart continues to provide blood to the rest of the body during the procedure (Dirimeşe et al., 2016; Lamy et al., 2016).

The purpose of CABG surgery is to eliminate/alleviate certain symptoms (shortness of breath, sleep problems, surgical pain, and fatigue) associated with coronary artery disease, thereby improving the quality of life and reducing the risk of myocardial infarction (Pačarić et al., 2020; Tsai et al., 2019). However, it is a stressful, undesirable,

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This study consisted of patients who underwent CABG surgery with either On-Pump or Off-pump technique at the Cardiovascular Surgery Clinic of two private institution hospitals in the city of Afyonkarahisar located in Turkey's Aegean Region between December 2015 and December 2017.

life-threatening experience for many patients (Bagheri Nesami et al., 2016). It can cause fear and anxiety to the extent that it affects various aspects of patients' personal life (Bagheri Nesami et al., 2016). Depression and anxiety occur in a significant number of these patients both before and after surgery (Geulayov et al., 2018). Anxiety occurs in 15%–52% of these patients (Geulayov et al., 2018). Increased anxiety is associated with poorer quality of life and worse long-term psychological results (AbuRuz et al., 2019). Patients with the presence of anxiety disorder before surgery are at risk for major cardiovascular complications, cerebrovascular events (Tully et al., 2015), and increased postoperative mortality (Takagi et al., 2017) after CABG surgery.

It has been reported that the rate of depressive symptoms in CABG scheduled patients was 47%, and this rate increased to 61% after surgery (Perrotti et al., 2016). Moreover, postoperative depression has also been associated with poor physical and emotional recovery, reduced physical function, increased risk of a cardiovascular event (angina, myocardial infarction, and cardiovascular mortality), and increased mortality (Pačarić et al., 2020; Perrotti et al., 2016).

After CABG, patients usually report pain, discomfort, feelings of depression, impatience, loss of general well-being, and inability to function at the same level as before the procedure. These feelings can seriously impair the patient's quality of life (Pačarić et al., 2020). It has been shown in the literature that the quality of life of these patients is negatively affected (Kidd et al., 2016). A minimum of 25% of the patients are estimated to experience worsened quality of life after a CABG in a long run (Correa-Rodríguez et al., 2020). Quality of life is a multidimensional concept. In this multidimensional structure, the essential elements of quality of life are functional competence, complaints related to disease and treatment, competence in psychological and social functions (Atay, 2019). Evaluation of quality of life is an essential criterion of clinical trials and routine clinical practices (Atay, 2019; Østergaard et al., 2016). Therefore, determining the effects of diseases and medical interventions on the daily life of the individual, understanding the approach and attitude of individuals to their diseases, determining the changes that the treatment results make on the psychosocial status of the patients, in short, revealing all the conditions affecting the quality of life of the patients is of great importance (Atay, 2019; Østergaard et al., 2016).

In the literature, there are studies examining the quality of life at different time intervals of patients who were performed CABG with two different techniques (Ascione et al., 2004; Bishawi et al., 2018; Lamy et al., 2016; Østergaard et al., 2016). The results of these studies showed that the quality of life of patients did not show significant differences between groups. Although there are studies investigating depression and quality of life in patients who were performed CABG, the number of studies comparing these parameters for CABG patients considering the technique used is limited. Therefore, in this study, it is aimed to investigate the effect of CABG surgery conducted with either On-Pump or Off-Pump techniques on patients' anxiety, depression, mental health, and physical health, at three different stages of the preoperative period, postoperative first (PO$_1$), and third month (PO$_3$).

2 | MATERIALS AND METHODS

2.1 | Design and participant

The population of this cross-sectional study consisted of a total of 250 patients who underwent CABG surgery with either On-Pump or Off-pump technique at the Cardiovascular Surgery Clinic of two private institution hospitals located in Turkey's Aegean Region between December 2015 and December 2017. The sample of the study consisted of a total of 60 patients who had ejection fraction value of 35% or more, between the same dates, without vision and hearing loss, without cerebrovascular accident history and diagnosis of psychiatric disease, without substance abuse, scheduled CABG surgery with elective On and Off-Pump techniques, and willing to participate in the study. A total of 30 of these patients had CABG surgery using the On-Pump technique while the other 30 with the Off-Pump technique.

2.2 | Data collection

The data of the study were collected through face-to-face interviews with the patients by using "Patient Information Form," "Beck Depression Index (BDI)," "Beck Anxiety Index (BAI)," and "The Short-Form Health Survey-36 (SF-36)." The researchers explained the purpose of the study to the patients the day before surgery. Informed and written consent of the patients was obtained. The Patient Information Form was filled in by the patients on the day of the admittance to the clinic. SF-36, BAI, and BDI scales were completed by the patients on the day of admittance to the hospital and the 1st and 3rd months after the operation on the day the patients came to the hospital for follow-up control.

2.3 | Data collection tools

2.3.1 | Patient information form

It consists of 11 questions aimed at evaluating the age, gender, body mass index, graft type and number, complication development status, intensive care and hospital stay times, and mortality status of CABG performed patients. Data were obtained on the day of the patient's admittance to the clinic.

2.3.2 | BAI

The scale was developed by Beck et al. (1988). BAI is used to determine the frequency of anxiety symptoms experienced by individuals. Its validity and reliability have been performed for Turkish society. It is a four-point Likert-type scale with 21 items scored between 0 and 3 (Ulusoy et al., 1998). The evaluation of the scores obtained from the score is classified as such: Mild level of anxiety

with a score between 8 and 15, moderate level of anxiety with a score between 16 and 25, and severe level of anxiety with a score between 26 and 63. The severity of anxiety increases with an increase in the score obtained from the scale. The cut-off point of the scale is 17 and the Cronbach alpha coefficient is 0.90 (Yıldız et al., 2021). BAI data were obtained, in the preoperative period on the first day of the patient's admission to the clinic, and at PO_1 and PO_3 months.

2.3.3 | BDI

It was developed by Beck et al. (1961). Its validity and reliability have been validated by Hisli (1989) for Turkish society. The scale which is used to measure emotional, cognitive, somatic, and motivational components consists of 21 items. Each item on the scale consisted of four options, which were each formed of a sentence on self-evaluation (Beck et al., 1961). The highest score that can be obtained from the scale, scored between 0 and 3, is 63 and the lowest score is 0. The higher the total score is from the scale the higher the level of depression symptoms (Bozdoğan Yeşilot et al., 2019). The cut-off point of the scale is 17. The evaluation of the scores obtained from the score is classified as such: None/minimal depression symptoms with a score between 0 and 9, mild level of depression symptoms with a score between 10 and 18, moderate level of depression symptoms with a score between 19 and 29, and severe level of depression symptoms with a score between 30 and 63. The Cronbach alpha value of the scale is 0.88 (Yıldız et al., 2021). BDI data were obtained in the preoperative period, PO_1, and PO_3 months.

2.3.4 | SF-36

It is the most commonly used quality of life scale in the medical field and evaluates health from a physical and mental point of view. The SF-36 scale is the outcome of many years of research and experience, and its validity has been approved in a wide range of publications (Çoğalan & Özyürek, 2020). The reliability and validity of the SF-36 scale have been validated in studies of CABG patients (Lindsay et al., 2000). SF-36 scale scores range from 0 to 100. The higher the score is from the scale the better the quality of life is. Its validity and reliability have been validated for Turkish society (Çelik & Çoban, 2016). The SF-36 scale which can be completed by patients in 5–10 min is a more sensitive tool than other scales available in detecting minor changes. For these reasons, the SF-36 scale was selected to evaluate the quality of life (Çoğalan & Özyürek, 2020).

The scale consists of 8 subscales with a total of 36 items. These subscales are physical function, social functioning, role limitations due to physical problems, role limitations due to emotional problems, mental health, vitality, pain, and general health perception. The Cronbach's alpha values of the subscales range from 0.792 to 0.992 (Kaya & İçağasıoğlu, 2018). SF-36 also has two summary measures, the physical component summary (PCS) and the mental component summary (MCS) (Sampogna et al., 2021). Scores of PCS and MCS reflect a patient's overall physical and mental health status, respectively. PCS and MCS scores are continuous variables in the range of 0–100. According to the scale, the higher the score is the better the health status is. Very high PCS scores indicate no physical limitations, barriers, or reductions in well-being as well as a high energy level. Very low PCS scores indicate significant limitations in self-care, physical, social, and role activities (such as severe body pain or frequent fatigue). Very high MCS scores indicate frequent positive emotion, both lack of psychological distress and limitations in ordinary social/role activities due to emotional problems. Very low MCS scores indicate significant social and role failure due to frequent psychological distress and emotional problems (Sampogna et al., 2021). The data were obtained in the preoperative period, PO_1, and PO_3 months.

2.4 | Ethical considerations

To conduct the study, ethics committee approval (2015/07-183) was obtained from the Clinical Research Ethics Committee of a university. In line with the ethical standards of the 1964 Helsinki Declaration, volunteered participants were included in the study, and the personal information of the patients was kept confidential.

2.5 | Data analysis

Analysis of the research data was performed by using descriptive statistics with the SPSS version 20.0 (IBMCorp) package program.

TABLE 1 Distribution of patients by personal and clinical characteristics

Characteristics categories	On-pump CABG			Off-pump CABG		
	n	%	Mean (±SD)	n	%	Mean (±SD)
Age (year)			66.57 ± 9.6			61.43 ± 9.8
Gender						
Female	10	33.3		10	33.3	
Male	20	66.7		20	66.7	
Graft type						
Saphenous vein	28	93.3		29	96.7	
Radial artery	2	6.7		1	3.3	
Number of grafts			2.50 ± 0.8			2.03 ± 0.7
The duration of ICU stay			2.93 ± 0.6			2.53 ± 0.9
The duration of stay in the hospital			10.43 ± 2.5			6.20 ± 1.8

Abbreviations: CABG, coronary artery by-pass graft; ICU, intensive care unit; SD, standard deviation.

Data for continuous variables were analyzed using mean and standard deviation, and data for categorical variables were analyzed using frequency and percentage. The normal distribution of the data was evaluated using the Shapiro–Wilk test. Repeated measures two-way analysis of variance (ANOVA) was used to compare SF-36, BAI, and BDI scores by both groups and time. Also, the η^2 value was calculated for the effect size of the significant difference between the groups.

3 | FINDINGS

3.1 | Patient characteristics

The distribution of the patients according to their personal and clinical characteristics is given in Table 1. The mean age of On-Pump patients was 66.57 ± 9.6 years, and 61.43 ± 9.8 years for Off-Pump patients. In both groups, the majority of patients (66.7%) were males. It was determined that the graft used in almost all of the patients' surgeries was saphenous vein graft and the average number of grafts used was similar in both groups (2.50 ± 0.8; 2.03 ± 0.7, respectively). The mean duration of stay in the intensive care unit after surgery was 2.93 ± 0.6 in the On-Pump group, and 2.53 ± 0.9 days in the Off-Pump group, while the mean hospital stay was 10.43 ± 2.5 days in the On-Pump group and 6.20 ± 1.8 days in the Off-Pump group.

3.2 | Anxiety levels of the patients

Preoperative anxiety levels of the patients were found to be mild (14.70 ± 11.4) in the On-Pump group and severe (26.63 ± 18.6) in the Off-Pump group. BAI mean scores of On-Pump patients were significantly lower than Off-Pump patients ($p\ (G) = <0.001$, $\eta^2 = 0.248$). The mean anxiety scores of the patients in the postoperative period were found to change positively in both groups (Figure 1). Also, the change in PO_3 was determined to be higher in the Off-Pump group ($p\ (T) = <0.001$, $\eta^2 = 0.304$).

It was found that the common effects of the time factor with the technique used in CABG surgery on patients' mean scores of anxiety were significant ($p\ (T \times G) = 0.025$, $\eta^2 = .071$) (Table 2).

3.3 | Depression levels of the patients

When the depression severity of the patients was examined, it was determined that, in the preoperative period, the On-Pump patients experienced a mild level of depression (10.83 ± 8.8) while the Off-Pump patients experienced a moderate level of depression (18.97 ± 13.8). There was no statistically significant difference between the groups in terms of BDI mean scores ($p(G) > 0.05$). BDI mean scores of the On-Pump patients were lower than the other group in the preoperative period and at PO_1. However, in the postoperative period, the BDI mean scores of the Off-Pump patients were found to be decreased (Preoperative = 18.97 ± 13.8; $PO_1 = 15.97 \pm 13.7$; $PO_3 = 6.47 \pm 8.9$), whereas the mean scores of the On-Pump patients increased (Preoperative = 10.83 ± 8.8; $PO_1 = 10.87 \pm 7.3$; $PO_3 = 11.23 \pm 10.1$) (Figure 1) and the difference was significant ($p(T) = 0.003$, $\eta^2 = 0.102$).

It was found that the common effects of the time factor with the technique used in CABG surgery on patients' mean scores of depression were significant ($p(T \times G) = 0.001$, $\eta^2 = 0.115$) (Table 2).

3.4 | SF-36 MCS levels of the patients

The mean MCS scores of the On-Pump group patients both in the preoperative period and in the PO_1 were higher than the Off-Pump group. On the other hand, the mean MCS scores of Off-Pump patients were higher in PO_3. However, there is no significant difference in terms of MCS mean scores of the groups ($p > 0.05$).

The mean MCS scores of the patients in the postoperative period were found to change positively in both groups compared with the preoperative period (Figure 1). But in PO_3, the change in the off-Pump group was greater ($p(T) < 0.001$, $\eta^2 = 0.220$).

FIGURE 1 Distribution of groups according to preoperative, PO_1, and PO_3 BAI, BDI, MCS, and PCS mean scores. BAI, Beck Anxiety Index; BDI, Beck Depression Index; CABG, coronary artery bypass graft; MCS, SF36 mental component summary; PO_1, postoperative 1st month; PO_3, Postoperative 3rd month; PCS, SF36 physical component summary
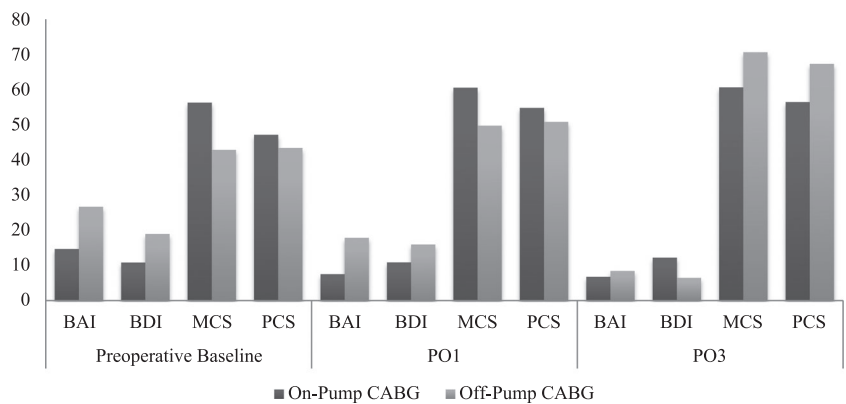
TABLE 2 Measurements of anxiety, depression, mental and physical component on for patients in all groups

	On-pump CABG Mean ± SD	Off-pump CABG Mean ± SD	P (G)	η^2	P (T)	η^2	P (T * G)	η^2
BAI								
Preoperative	14.70 ± 11.4[a]	26.63 ± 18.6[a]	<0.001	0.248	<0.001	0.304	0.025	0.071
PO_1	7.53 ± 4.6[a]	17.87 ± 11.6[a]						
PO_3	6.77 ± 3.6[a]	8.43 ± 8.0[a]						
BDI								
Preoperative	10.83 ± 8.8	18.97 ± 13.8[a]	0.146	0.036	0.003	0.102	0.001	0.115
PO_1	10.87 ± 7.3	15.97 ± 13.7[a]						
PO_3	11.23 ± 10.1	6.47 ± 8.9[a]						
MCS								
Preoperative	56.28 ± 18.8	42.83 ± 22.3[a]	0.183	0.030	<0.001	0.220	<0.001	0.149
PO_1	60.54 ± 15.9	49.73 ± 19.4[a]						
PO_3	60.62 ± 19.1	70.64 ± 15.8[a]						
PCS								
Preoperative	47.12 ± 21.58	43.37 ± 25.30[a]	0.098	0.047	<0.001	0.207	0.286	0.021
PO_1	54.78 ± 20.99	50.80 ± 18.43[a]						
PO_3	56.43 ± 18.37	67.31 ± 22.46[a]						

Note: Two-way repeated Measures ANOVA; $p < 0.05$; P (G), significance between groups; P (T), significance between time points; P (T * G), The significance of time * Group interaction.

Abbreviations: η^2, partial eta squared; CABG, coronary artery bypass graft; BAI, Beck Anxiety Index; BDI, Beck Depression Index; MCS, SF36 mental component summary; PO_1, postoperative 1st month; PO_3, postoperative 3rd month; PCS, SF36 physical component summary.

[a]The difference between the time.

It was found that the common effects of the time factor with the technique used in CABG surgery on patients' mean scores of MCS were significant ($p(T \times G) < 0.001$, $\eta^2 = 0.149$) (Table 2).

3.5 | SF-36 PCS levels of the patients

When the PCS score averages of the groups were examined, the mean PCS scores of the On-Pump group patients both in the preoperative period and in the PO_1 were higher, while the mean PCS scores of Off-Pump patients were higher in PO3. However, there was no significant difference between the groups (p (G) > 0.05).

The mean PCS scores of the patients in the postoperative period were found to change positively in both groups compared with the preoperative period. However, the change in PO_3 was higher in the Off-Pump group (Figure 1) and the difference was found to be significant (p (T) < 0.001).

It was found that the common effects of the time factor with the technique used in CABG surgery on patients' mean scores of PCS were not significant (p (T × G) > 0.05) (Table 2).

4 | DISCUSSION

In this study, it was aimed to investigate the effect of CABG surgery conducted with either On-Pump or Off-Pump techniques on patients' anxiety, depression, mental health, and physical health, at three different stages of the preoperative period, PO_1, and PO_3.

The presence of undiagnosed depressive and anxiety disorders in cardiac patients has long been known (Çökmüş, 2019; Stenman & Sartipy, 2019). Preoperative anxiety levels of patients who will undergo CABG surgery are high. The prevalence of depression (characterized by depressed mood and/or loss of interest or pleasure) is about 15%–20% (Takagi et al., 2017). In this study, in the preoperative period, On-Pump patients were observed to experience mild levels of anxiety and depression whereas Off-Pump patients experienced severe levels of anxiety and moderate levels of depression. Our finding shows that mood disorders are still experienced at a significant level nowadays for patients who are scheduled for CABG surgery. Besides this, our study findings revealed that CABG surgery performed with the On-Pump technique was associated with less anxiety and depression in the preoperative period. Recently, CABG surgery is most commonly performed with the On-Pump

technique. Our study results suggest that patients may have found the most commonly used technique more reliable. The prevalence of depression in CABG patients has been reported to be higher compared with the general population (Correa-Rodríguez et al., 2020; Oldham et al., 2019; Takagi et al., 2017). Despite the advances in On-Pump CABG, microembolism may develop due to the use of the cardiopulmonary bypass machine (Tachibana et al., 2021). Neuropsychological dysfunction and cognitive disorders that may be associated with microembolism are still significant problems for patients in this group (Malhotra, 2016; Radiushyn, 2019; Tachibana et al., 2021). It is stated that the techniques used in Off-Pump can provide short-term a neurocognitive advantage (Haider et al., 2018; Kowalewski et al., 2016; Shaefi et al., 2019). In this study, the mean anxiety and depression scores of On-Pump patients in PO_1 were lower than Off-Pump patients. These results can be attributed to the fact that the On-Pump group had better anxiety and depression scores during the preoperative period. It additionally suggests that the severity of anxiety and depression, which were high in the preoperative period of Off-Pump patients, continued in PO_1. Off-Pump patients' depression and anxiety scores in PO3 are better, differently than the preoperative period and PO_1. This result may be entirely related to the surgical technique.

Quality of life measurements provide arguably the most significant evidence about the relative effectiveness of alternative interventions, that is, the patient's opinion (Ascione et al., 2004). Therefore, in this study, the quality of life of patients who were performed CABG with two different techniques was evaluated. In this study results, both mean mental and PCS scores were found to change positively in PO_1 and PO_3 compared with the preoperative period in both groups. In the study of Khan et al. (2015) examining the quality of life in CABG patients, most of the improvement in both physical and mental summary parts of the quality of life was reported to occur in the first 6 months. In another study, the physical and mental health scores of the patients were reported to increase in the postoperative 6th month (Lie et al., 2010). From this point of view, our study results are similar to the literature. When the difference between techniques was examined, mental health scores were observed to be higher in On-Pump patients in the preoperative period and Off-Pump patients in PO_3. However, there was no significant difference between the groups. In the study of Shroyer et al. (2014) examining the results of diabetic patients who were performed cardiac surgery with the On and Off-Pump technique, the MCS changes in the Off-Pump group in the first-year postoperatively were reported to be higher in the Off-Pump group than the other group, however, there was no significant difference. In the study of Bishawi et al. (2013), the MCS scores of On and Off-Pump patients were stated to show a great improvement in the postoperative 3rd month, but there was no significance between the groups. In the study of Ascione et al. (2004), in which they followed up the On and Off-Pump patients for 3 years, the MCS scores were stated to be normal and the quality of life scores for both groups was very similar.

Depression is known to have negative effects on the quality of life (Bishawi et al., 2013; Kızılırmak & Demir, 2016). Depression and anxiety symptoms are significant predictors for MCS for CABG patients according to the study of Lie et al. (2010). According to the results of the study of Bishawi et al. (2018), depression is a significant predictor for MCS scores for On and Off-Pump patients. In our study, the changes in the depression and anxiety scores of the Off-Pump patients and their MCS scores were observed to be similar.

Cardiac surgery affects both physical and mental components of quality of life (Perrotti et al., 2019). In the literature that PCS is also reported to be an independent risk factor for postoperative mortality (Bond et al., 2019; Lee, 2009). In this study, PCS scores did not show significant differences between the groups. The results of the study examining the PCS scores at different time intervals between the two groups are similar to our study results (Ascione et al., 2004; Bishawi et al., 2013; Shroyer et al., 2014). But, unlike other studies, in this study, the changes in Off-Pump patients in PO_3 were higher than On-Pump patients. In the study of Lee (2009), it was shown that both anxiety and depressive symptoms play an important role in determining the PCS of patients after CABG and their importance in the quality of life (Lee, 2009). In our study, the anxiety and depression scores of the Off-Pump patients were found to decrease in the postoperative period and the PCS scores increased during this period.

5 | CONCLUSION

The results of this study showed that the On-Pump technique was associated with lower anxiety and depression and higher MCS scores in the preoperative period in patients being performed CABG. This technique was also found to be associated with lower depression in PO_1 and PO_3 and higher MCS scores in PO_1. On the other hand, the Off-Pump technique was found to be associated with less depression and higher MCS scores in PO_3. Besides, the technique used in CABG was found not to be related to the PCS scores of the patients.

6 | LIMITATIONS

One of the limitations of this study is that at least one stressful life event in the last year, which might affect the anxiety and depression levels of patients undergoing CABG surgery, was not taken into account. Also, another limitation is that readmittance of the patients, included in the study, back to the clinic is not evaluated. Another limitation is the sample size of the study and the fact that it was conducted with patients in two private health institutions in one province only.

7 | IMPLICATIONS FOR NURSING PRACTICE

Nowadays, psychiatric disorders such as depression and anxiety are still thought to be a natural response to medical illness. It is believed that after the acute period finishes, such conditions will spontaneously

decrease or improve. Therefore, affective disorders that occur especially after an acute coronary event may be missed out or even continue for months without treatment (Akkaya et al., 2018). Depressive symptoms are known to be associated with sudden cardiac death, especially in CABG patients. Given that anxiety and depression can affect the outcome of CABG surgery, it is important to detect these symptoms during preoperative evaluation. Structured interviews or self-administered questionnaires can be used for diagnostic guidance, and pharmacological or psychotherapeutic interventions can be initiated if necessary. Therefore, by preventing the negative effects caused by anxiety and depression, postoperative recovery can be accelerated, patient care costs can be reduced and quality of life can be improved.

CONFLICT OF INTERESTS

The authors declare that there are no conflict of interests.

ETHICS STATEMENT

To conduct the study ethics committee approval (2015/07-183) was obtained from the Clinical Research Ethics Committee of Afyon Kocatepe University.

AUTHOR CONTRIBUTIONS

Study design: Yeliz Ciğerci, Fatıma Yaman, Ahmet Çekirdekçi. *Data collection*: İlyas Küçük, Ercüment Ayva. *Statistic analysis*: Yeliz Ciğerci, Öznur Gürlek Kısacık. *Manuscript preparation*: Yeliz Ciğerci, Fatıma Yaman, Öznur Gürlek Kısacık, Ahmet Çekirdekçi, and Ercüment Ayva.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

ORCID

Yeliz Ciğerci https://orcid.org/0000-0002-9858-0837
Fatıma Yaman https://orcid.org/0000-0002-6137-0166
Ahmet Çekirdekçi https://orcid.org/0000-0002-8131-9608
İlyas Küçük https://orcid.org/0000-0002-9768-3770
Ercüment Ayva https://orcid.org/0000-0001-5138-7573
Öznur Gürlek Kısacık https://orcid.org/0000-0002-1317-3141

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