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Original Article

Pain, Sleep Quality, and Anxiety Experienced at Home After Coronary Artery Bypass Graft Surgery

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Abstract

Objectives: This study aimed to evaluate whether pain experienced at home after discharge was associated with sleep quality and anxiety in patients undergoing coronary artery bypass graft (CABG) surgery.

Methods: This descriptive-correlational study included patients who underwent CABG surgery in a public hospital in Istanbul between January and July 2021. Data were collected from 213 participating patients using a Patient Information Form, the numerical pain rating scale (NPRS), Richard-campbell sleep questionnaire (RCSQ), and State-trait anxiety inventory (STAI) by telephone interview conducted with the patients on post-discharge day 7. Descriptive statistics, Kolmogorov–Smirnov test, Spearman correlation analysis, and Univariate linear regression model analysis were performed to interpret the data.

Results: The participants' mean total NPRS score was 6.45±2.29, the mean total RCSQ score was 35.54±20.12, and the mean total STAI score was 51.98±8.53 post-discharge day 7. Correlation analysis revealed a highly significant negative relationship between NPRS and RCSQ scores ($r=-0.77$; $p<0.01$) and a highly significant positive relationship between NPRS and STAI scores ($r=0.73$; $p<0.01$).

Conclusion: The results of this study suggest that patients experienced moderate-to-severe pain, low sleep quality, and high levels of anxiety after discharge. According to clinical characteristics, patients with a history of previous surgery or intensive care unit stay had higher pain and anxiety levels and lower sleep quality. Furthermore, more severe pain was associated with lower sleep quality and higher anxiety levels.

Keywords: Anxiety; coronary artery bypass graft; pain; sleep quality.

Koroner Arter Bypass Greft Cerrahisi Sonrası Evde Yaşanan Ağrı, Uyku Kalitesi ve Anksiyete

Özet

Amaç: Bu çalışmanın amacı, koroner arter bypass greft (KABG) ameliyatı olan hastalarda taburculuk sonrası evde yaşanan ağrı ile uyku kalitesi ve anksiyete arasındaki ilişkinin incelenmesidir.

Gereç ve Yöntem: Tanımlayıcı-ilişki arayıcı tipte yürütülen bu araştırmanın evrenini, Ocak-Temmuz 2021 tarihleri arasında İstanbul'da bulunan bir kamu hastanesinde KABG ameliyatı olan hastalar oluşturmuş, örneklemini ise araştırmaya katılmayı kabul eden 213 hasta oluşturmuştur. Araştırma verilerinin toplanmasında Hasta Tanıtım Formu, Sayısal Ağrı Değerlendirme Ölçeği (SADÖ), Richard-Campbell Uyku Ölçeği (RCUÖ) ve Durumluk-Sürekli Anksiyete Ölçeği (DSAÖ) kullanılmış ve veriler, hastalar eve taburcu edildikten sonraki 7. günde telefon görüşmesi ile toplanmıştır. Verilerin değerlendirilmesinde tanımlayıcı istatistikler, Kolmogorov-Smirnov testi, Spearman korelasyon analizi ve tek değişkenli doğrusal regresyon modeli yapılmıştır.

Bulgular: KABG ameliyatı olan hastaların taburcu edildikten sonraki 7. gününde, SADÖ toplam puan ortalaması 6.45±2.29, RCPUÖ toplam puan ortalaması 35.54±20.12 ve DSAÖ toplam puan ortalaması 51.98±8.53 olduğu belirlenmiştir. Yapılan korelasyon analizinde, hastaların SADÖ ile RCPUÖ puan ortalamaları arasında negatif yönlü ve yüksek düzeyde anlamlı bir ilişki olduğu ($r=-0.77$; $p<0.01$), SADÖ ile DSAÖ puan ortalamaları arasında ise pozitif yönlü ve yüksek düzeyde anlamlı bir ilişki olduğu ($r=0.73$; $p<0.01$) belirlenmiştir.

Sonuç: Bu araştırmanın sonucunda, hastaların taburculuk sonrası orta-şiddetli düzeyde ağrı yaşadıkları, uyku kalitelerinin düşük ve anksiyete düzeylerinin yüksek olduğu belirlenmiştir. Klinik özelliklere göre, daha önce ameliyat olan veya yoğun bakım ünitesinde kalan hastaların ağrı ve anksiyete düzeylerinin daha yüksek, uyku kalitelerinin ise daha düşük olduğu tespit edilmiştir. Ayrıca, hastaların ağrı şiddeti arttıkça uyku kalitelerinin azaldığı ve anksiyete düzeylerinin arttığı belirlenmiştir.

Anahtar sözcükler: Anksiyete; koroner arter bypass greft; ağrı; uyku kalitesi.

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Introduction

In both developed and developing countries, coronary artery bypass graft (CABG) surgery is among the effective options for the treatment of coronary artery occlusion.[1] However, despite a better quality of life after CABG surgery, a number of post-operative symptoms have been reported by patients, with pain being the most common.[2,3] Pain is a multidimensional symptom that has a major impact on patients' recovery process and physiological outcomes,[4,5] and if not managed properly, it can result in sleep disorders and increased anxiety.[5–7] Studies have shown that most patients (over 50%) experience moderate-to-severe pain after CABG surgery, suggesting that this is an important problem postoperatively.[2,8,9]

Post-operative pain has been reported to contribute to sleep disorders.[7] In a study by Tufekci et al.,[9] pain after CABG surgery was associated with sleep disorders and negatively affected patients' daily activities. In another study, Muthukrishnan et al.[10] found that post-CABG pain and position restrictions during sleep negatively affected patients' sleep quality. Similarly, Ogut et al.[8] reported that pain increased sleep disorders in patients undergoing open heart surgery. Another problem associated with pain after CABG surgery is anxiety.[11] Increased severity of post-operative pain was found to trigger patients' anxiety.[12,13] It has also been reported that anxiety persists for the 1st month after CABG surgery and is associated with pain severity.[13]

In fact, various studies have indicated that patients who report pain symptoms also have high levels of anxiety.[5,6,12,14]

After major surgical procedures, post-operative pain management is critical in preventing problems that result from or are adversely affected by pain.[15] Post-operative pain management involves evaluating patients' pain experiences and providing pharmacological and non-pharmacological treatments based on the pain intensity they report.[4] After cardiac surgery, drug groups such as acetaminophen, non-steroidal anti-inflammatory drugs (NSAIDs), acetaminophen-opioid, and adjuvants are used for pain management,[16] and patients being discharged are prescribed NSAIDs to use when needed.[17,18] In addition to pharmacological treatments, non-pharmacological methods such as progressive muscle relaxation, deep breathing exercises, cold application, position change, music therapy, and massage are also reported to be effective in pain management.[19] Following CABG surgery, patients frequently report back and shoulder pain due to position restrictions, as well as pain at the wound site, drain site, and saphenous vein incision site.[8,9,20] Therefore, health professionals are expected to develop and implement post-operative pain management strategies to ensure patient comfort after CABG surgery.[4,5,19] Effective pain management not only relieves pain-related discomfort but can also prevent or reduce many problems that may occur secondary to pain, such as anxiety and sleep disturbances.[4,5,7,12] This increases the importance of studies to reveal the relationship between pain and problems that are caused or adversely affected by post-operative pain because understanding the relationship between pain experienced after major operations such as CABG surgery and patients' sleep quality and anxiety is essential in the prevention of post-discharge pain-related problems.[3,4,5,20] However, to the best of our knowledge, few studies in the literature have examined the relationship between pain, sleep quality, and anxiety in patients with CABG surgery. Therefore, the primary aim of this study was to evaluate the relationship between post-operative pain and the sleep quality and anxiety experienced at home after discharge in CABG patients. We believe that this study will provide a better understanding of pain and pain-related symptoms following CABG surgery and thereby contribute to care quality in clinical practice.

Materials and Methods

This study was designed as a descriptive-correlational study to examine the relationship between pain experienced at home after discharge, sleep quality, and anxiety in patients who underwent CABG surgery.

Research Hypotheses

- $H0_1$: There is no statistically significant relationship between pain levels and sleep quality in patients discharged after CABG surgery.
- $H0_2$: There is no statistically significant relationship between pain levels and anxiety in patients discharged after CABG surgery.
- $H1_1$: There is a statistically significant relationship between pain levels and sleep quality in patients discharged after CABG surgery.
- $H1_2$: There is a statistically significant relationship between pain levels and anxiety in patients discharged after CABG surgery.

To conduct the study, approval was obtained from the Non-invasive Clinical Research Ethics Committee of a public hospital in Istanbul with a decision (December 22, 2020, number 2020/14/406). This study was conducted in accordance with the ethical principles of the Declaration of Helsinki.

Sample Size and Participants

The population of the study comprised patients who were hospitalized in the cardiovascular surgery clinics of a public hospital in Istanbul and underwent CABG surgery between January and July 2021. The hospital where the study was conducted has a total of 5 relevant clinics staffed by 32 cardiovascular surgeons. The study included a total of 213 patients treated in any of these clinics who met the inclusion criteria and agreed to participate in the study. Inclusion criteria were that the patients were at least 18 years old and had undergone CABG surgery for the first time. Patients with any cognitive impairment, communication problems, or psychiatric diagnosis were excluded from the study. In addition, as the data were collected by phone, patients who had a hearing impairment or could not be reached by phone at the end of the 1st week were also excluded from the study.

Data Collection Process and Tools

Data were collected using a patient information form and the numerical pain rating scale (NPRS), the Richard-campbell Sleep

Questionnaire (RCSQ), and the State-trait Anxiety Inventory (STAI). Patients who underwent CABG surgery were interviewed face-to-face in the clinic before discharge and informed in detail about the study. Patients who agreed to participate in the study were asked to read and sign an informed consent form. Those who provided informed consent were asked to complete the patient information form and provide a phone number where they would be contacted 1 week after discharge.

Telephone interviews were conducted with the patients on post-discharge day 7. During the interview, the NPRS, RCSQ, and STAI were administered. The patients were asked to rate their pain intensity, sleep quality, and anxiety considering the last week. In pain assessment, the patients were asked to describe the pain they experienced in the last week on a scale of 0–10 points, 0 being "no pain" and 10 being "unbearable pain." The phone call with the patients took approximately 25–30 min. In our hospital, patients are routinely prescribed NSAIDs upon discharge and instructed to only use the medication when needed. None of the patients in our study were prescribed sedative analgesics.

Patient Information Form

This form consisted of 13 items, eight related to the patients' demographic characteristics (e.g., age, gender, occupation, education level) and 5 related to clinical characteristics.

NPRS

The NPRS is a unidimensional scale used to measure pain severity. The scale ranges from 0 (no pain) to 10 (unbearable pain). Scores of 1–3 are evaluated as mild pain, 4–6 as moderate pain, and 7–10 as severe pain.[21]

RCSQ

The RCSQ was developed by Richard[22] and validation and reliability studies in Türkiye were carried out by Karaman and Ozer. [23] The scale measures sleep depth, sleep latency, frequency of awakenings, time spent awake, sleep quality, and environmental noise levels. It includes six items in a single dimension, with each item being scored from 0 to 100. The total score is calculated as an average of the five items, excluding the sixth item about environmental noise. Higher scores reflect better sleep quality, with a score of 0–25 indicating very poor sleep and a score of 76–100 indicating excellent sleep. The Cronbach's alpha coefficient of the scale was calculated as 0.82 in the original study by Richard.[22] In the validity and reliability study carried out by Karaman and Ozer,[23] the Cronbach's alpha coefficient of the scale was reported to be 0.91, as in the present study.

STAI

Spielberger et al.[24] developed the STAI and Oner and Le Compte[25] conducted the validity and reliability study for the STAI in Türkiye. It utilizes a 4-point Likert-type scale and consists of two parts, the State Anxiety Inventory and the Trait Anxiety Inventory, each including 20 questions. The scale has both anxiety-present and anxiety-absent statements, with the anxiety-absent statements reverse scored.[25] The State Anxiety Inventory is used to determine how an individual feels at the present moment. Each item is scored from 1 to 4 (1=not at all, 2=somewhat, 3=moderately so, 4=very much so).

The Cronbach's alpha coefficient of the State Anxiety Inventory was reported to be 0.94–0.96 in the validity and reliability study conducted by Oner and Le Compte[25] and was 0.94 in the present study.

The Trait Anxiety Inventory assesses how an individual feels in general, and each item of the scale is scored between 1 and 4 points (1=almost never, 2=sometimes, 3=often, 4=almost always).

Oner and Le Compte[25] reported a Cronbach's alpha coefficient of 0.83–0.87 for the Trait Anxiety Inventory. In the present study, this value was 0.76.

Scores from each subscale can be evaluated separately and can also be summed to give a total score ranging from 20 to 80. A total score of 0–19 is interpreted as no anxiety, 20–39 as mild anxiety, 40–59 as moderate anxiety, and 60–80 as severe anxiety.[24,25]

Statistical Analysis

Categorical variables are presented as frequency (n, %) and continuous variables were presented as mean, standard deviation, and range. Data were assessed for normality using skewness, kurtosis values, and the Kolmogorov–Smirnov test. Cronbach's alpha reliability coefficient was calculated to assess the reliability of the scales. Spearman correlation analysis was conducted to evaluate possible associations between pain, anxiety, and sleep quality. The effect of independent variables (descriptive and clinical characteristics) on dependent variables (pain, sleep quality, and anxiety) was examined by univariate linear regression analysis. Linear regression analysis was also performed to examine the effect of pain on sleep quality and anxiety. Results were evaluated within 95% confidence interval and statistical significance was accepted at $p<0.05$ (two-tailed).

Results

Distribution of Patients' Descriptive and Clinical Characteristics

The patients' descriptive characteristics are summarized in Table 1. The patients included in the study ranged in age from 62 to 67 years, and the majority were male. Demographically, 42.7% of the patients were primary school graduates, 56.8% had low income, 40.4% lived with extended family, and 54.9% were not employed. In terms of clinical characteristics, 63.4% had a history of surgery and 54.5% had previous experience staying in an intensive care unit. In addition, 67.1% of the patients had a chronic comorbidity, 62% smoked, and 38.9% used alcohol (Table 1).

Post-discharge Pain, Sleep Quality, and State-trait Anxiety Scores in CABG Patients

The mean post-discharge NPRS, RCSQ, and STAI scores of the CABG patients in our study are presented in Table 2. Their mean total NPRS score was 6.45±2.29, the mean total RCSQ score was 35.54±20.12, and the mean total STAI score was 51.98±8.53.

When the RCSQ item scores were analyzed, the lowest mean score was for sleep depth (31.20±21.50) and the highest was

Table 1. Descriptive and clinical characteristics of the patients (n=213)

Characteristic	n	%	Characteristic	n	%
Gender			Health insurance		
Female	83	39.0	Available	175	82.2
Male	130	61.0	Not available	38	17.8
Marital status			Family type		
Married	171	80.3	Nuclear	79	37.1
Single	42	19.7	Extended	86	40.4
Education			Broken	48	22.5
No formal education	53	24.9	Employment status		
Elementary	91	42.7	Employed	96	45.1
High school	65	30.5	Unemployed	117	54.9
Undergraduate	3	1.4	History of previous surgery	135	63.4
Graduate	1	0.5	Chronic disease	143	67.1
Income status			History of intensive care unit stay	116	54.5
Income < expenditures	121	56.8	Smoking	132	62.0
Income = expenditures	88	41.3	Alcohol use	83	38.9
Income > expenditures	4	1.9	Age (years), mean±SD	62.81±5.25	

SD: Standard deviation.

Table 2. Post-discharge NPRS, RCSQ, and STAI total mean scores of the patients (n=213)

Scales and subscales	Mean±SD	Min	Max
NPRS total	6.45±2.29	0	10
RCSQ total	35.54±20.12	2	98
Sleep depth at night	31.20±21.50	0	90
Sleep latency	35.28±22.12	0	100
Frequency of awakening	36.22±23.64	0	100
Time spent awake	38.59±20.13	0	100
Sleep quality	36.43±20.90	0	100
Level of environmental noise	34.34±25.72	0	100
STAI total	51.98±8.53	28	68
State anxiety	56.36±11.55	25	76
Trait anxiety	47.61±6.47	28	64

NPRS: Numerical pain rating scale; RCSQ: Richard-campbell sleep questionnaire; STAI: State-trait anxiety inventory; SD: Standard deviation; Min: Minimum; Max: Maximum.

for time spent awake (38.59±20.13). Mean STAI subscale scores were 56.36 ± 11.55 for state anxiety and 47.61±6.47 for trait anxiety (Table 2).

Correlation between Post-discharge Pain, Sleep Quality, and Anxiety in CABG Patients

Relationships between the patients' NPRS, RCSQ, and STAI scores are presented in Table 3. Based on the correlation analysis, we observed a highly significant negative correlation between NPRS and RCSQ scores (r=-0.77; p<0.01). There was also a highly significant positive correlation between the NPRS score and STAI total score (r=0.73; p<0.01), state anxiety score (r=0.71; p<0.01), and trait anxiety score (r=0.62; p<0.01) (Table 3).

Table 3. Correlation between the patients' post-discharge NPRS total scores and RCSQ and STAI total scores (n=213)

	NPRS total	
	r_s	p
RCSQ total	-0.77	**<0.001**
STAI total	0.73	**<0.001**
State anxiety	0.71	**<0.001**
Trait anxiety	0.62	**<0.001**

Statistically significant results (p<0.05) shown in bold. NPRS: Numerical pain rating scale; RCSQ: Richard-campbell sleep questionnaire (5-item); STAI: State-trait anxiety inventory; r_s: Spearman's Rho correlation coefficient.

Relationship between Pain and Mean Sleep Quality and Anxiety Scores after CABG Surgery

The simple regression analysis performed to determine the relationship between mean pain score and mean scores for sleep quality and anxiety is presented in Table 4. The results showed that a 1-unit increase in mean pain score caused a 6.89-unit decrease in sleep mean score and 2.87-unit increase in anxiety mean score (Table 4).

Table 4. Relationship between pain and sleep quality and anxiety scores of the patients after CABG surgery (n=213)

Independent variable	Dependent variable	B	SE	95% CI		t-value	p-value
				Lower	Upper		
Pain	Sleep quality	-6.891	0.374	-7.628	-6.153	-18.417	**<0.001**
	Anxiety	2.873	0.163	2.552	3.193	17.661	**<0.001**

Statistically significant results (p<0.05) shown in bold. CABG: Coronary artery bypass graft; B: Estimates of unstandardized standardized regression weights; SE: Standard error; CI: Confidence interval.

Table 5. Relationship between pain, sleep quality, and anxiety scores after CABG surgery and the patients' demographic and clinical characteristics (n=213)

Independent variables	Pain					
	B	SE	95% CI		t-value	p-value
			Lower	Upper		
Age	0.058	0.030	-0.001	0.116	1.930	0.055
Gender	-0.493	0.321	-1.126	0.140	-1.536	0.126
Marital status	0.022	0.396	-0.759	0.802	0.055	0.956
Education	0.202	0.196	-0.184	0.588	1.030	0.304
Income status	-0.046	0.295	-0.628	0.535	-0.157	0.875
Health insurance	0.319	0.411	-0.491	1.128	0.776	0.439
Family type	0.048	0.208	0.229	0.819	-0.362	0.457
Employment status	-0.565	0.314	-1.185	0.054	-1.800	0.073
History of previous surgery	1.048	0.319	0.419	1.676	3.286	**0.001**
Chronic disease	0.579	0.333	-0.077	1.235	1.740	0.083
History of intensive care unit stay	1.330	0.303	0.733	1.927	4.394	**<0.001**
Smoking	0.003	0.324	-0.637	0.642	0.008	0.994
Alcohol use	-0.158	0.323	-0.795	0.478	-0.490	0.624
Properties	**Sleep quality**					
	B	SE	95% CI		t-value	p-value
			Lower	Upper		
Age	-0.359	0.263	-0.877	0.159	-1.365	0.174
Gender	4.880	2.814	-0.668	10.427	1.734	0.084
Marital status	-3.088	3.467	-9.923	3.747	-0.891	0.374
Education	-1.179	1.722	-4.573	2.215	-0.685	0.494
Income status	0.539	2.588	-4.563	5.641	0.208	0.835
Health insurance	-1.964	3.608	-9.075	5.148	-0.544	0.587
Family type	-0.140	1.823	-3.733	3.453	-0.077	0.939
Employment status	4.261	2.762	-1.184	9.707	1.543	0.124
History of previous surgery	-6.504	2.834	-12.090	-0.918	-2.295	**0.023**
Chronic disease	-2.870	2.936	-8.657	2.917	-0.978	0.329
History of intensive care unit stay	-8.257	2.716	-13.612	-2.902	-3.040	**0.003**
Smoking	0.082	2.847	-5.530	5.694	0.029	0.977
Alcohol use	3.194	2.826	-2.376	8.764	1.130	0.260
Characteristic	**State-trait anxiety inventory**					
	B	SE	95% CI		t-value	p-value
			Lower	Upper		
Age	0.142	0.112	-0.077	0.362	1.277	0.203
Gender	-1.857	1.194	-4.211	0.497	-1.555	0.121
Marital status	0.199	1.472	-2.703	3.101	0.135	0.893
Education	0.762	0.729	-0.674	2.199	1.046	0.297
Income status	0.697	1.096	-1.464	2.857	0.636	0.526
Health insurance	2.652	1.519	-0.343	5.646	1.746	0.082
Family type	0.154	0.772	-1.368	1.677	0.200	0.842
Employment status	-2.801	1.161	-5.090	-0.512	-2.412	**0.016**
History of previous surgery	2.873	1.200	0.508	5.238	2.395	**0.017**
Chronic disease	1.132	1.245	-1.322	3.585	0.909	0.364
History of intensive care unit stay	3.704	1.148	1.441	5.968	3.226	**0.001**
Smoking	-0.339	1.206	-2.717	2.039	-0.281	0.779
Alcohol use	-1.420	1.197	-3.780	0.940	-1.186	0.237

Statistically significant results (p<0.05) shown in bold. CABG: Coronary artery bypass graft; B: Estimates of unstandardized standardized regression weights; SE: Standard error; CI: Confidence interval.

Relationship between Mean Pain, Sleep Quality, and Anxiety Scores after CABG Surgery and Patients' Demographic and Clinical Characteristics (Univariate)

Univariate regression analysis showed that patients who had a history of previous surgery or intensive care unit stay had higher levels of pain and anxiety and lower sleep quality than those who did not ($p<0.05$) (Table 5).

Discussion

Although CABG surgery improves the survival rate of patients with coronary artery disease, many problems are encountered in the post-operative period, including pain, anxiety, and sleep problems.[8–10,13] These problems often continue after discharge.[20] A study evaluating the post-discharge symptom experiences of patients undergoing CABG surgery revealed that high proportions of patients experienced physical and psychological symptoms such as pain (65%), sleep disturbances (54%), and anxiety (32%).[2] Another study examining patients' symptoms at 1 week, 6 weeks, and 3 months after CABG surgery indicated that pain, sleep disturbances, fatigue, and anxiety were the most common symptoms at 1 week.[26] In other studies, patients discharged after CABG surgery reported moderate to severe pain,[2,8,9] had sleep durations of <5 h and low sleep quality,[10,13] and experienced anxiety during the recovery process.[20,26] Similar to the literature, we found in this study that patients who underwent CABG surgery experienced moderate to severe pain and reported low sleep quality and high anxiety after discharge.

Post-operative pain can trigger problems such as anxiety and insomnia.[6,11,12] In one study, it was reported that pain adversely impacts physiological symptoms primarily, and physiological symptoms also negatively impact psychological symptoms.[5] Aktas and Yılmaz[6] reported that severe post-operative pain caused sleep problems and that increasing pain intensity was associated with increases in psychological problems such as depression and anxiety. A qualitative study examining the post-discharge experiences of patients undergoing cardiac surgery showed that having pain for longer than expected causes anxiety and sleep problems during recovery.[3] Similar to the literature, our study demonstrated that as post-discharge pain intensity increased, discharged CABG patients had poorer sleep quality and higher anxiety levels. Accordingly, the hypotheses "H11: There is a statistically significant relationship between pain levels and sleep quality in patients discharged after CABG surgery." and "H12: There is a statistically significant relationship between pain levels and anxiety in patients discharged after CABG surgery." are confirmed. Previous studies have also linked surgical and intensive care histories with higher pain and anxiety levels and lower sleep quality.[27–30] The results of this study and the literature data indicate that post-operative pain is an important problem that is affected by multiple factors and can trigger numerous problems that can only be prevented or mitigated with effective pain management. A holistic approach with evidence-based practices is crucial for adequate post-operative pain management to prevent possible problems caused by pain. Planning interventions that reduce and control pain may have a positive effect on sleep quality, anxiety, and other problems caused by pain. Our study findings may help future research to focus more comprehensively on pain management and develop strategies to improve patients' quality of life.

Limitations

As this study was conducted in a single center, the findings cannot be generalized to all patients undergoing CABG surgery. The possibility of potential recall bias is another limitation of this study, as patients were asked during data collection to consider their pain, sleep quality, and anxiety levels over the 1st week after discharge.

Conclusion

This study revealed that pain has a significant impact on the sleep quality and anxiety levels of patients with CABG surgery, and can also be affected by other factors such as past hospital experiences. As pain is a multifaceted phenomenon, health professionals should take into consideration all associated factors and provide interventions accordingly to achieve symptom control, one of the most important goals after CABG surgery. Moreover, a collaborative approach should be taken to manage the pain of discharged CABG patients. Home care nurses who care for discharged post-operative patients should evaluate pain intensity and frequency, utilize non-pharmacological methods of pain management, remind the patient how to use prescribed medication(s) according to their pain level, and work together with physicians when necessary to eliminate or reduce patients' pain. Nursing care provided with this perspective will not only contribute to better patient outcomes but also cost-effective care, and can potentially reduce hospital readmissions as a result of effective symptom management. Further research is needed to identify other important factors that have a significant impact on pain in CABG patients and elucidate the nature of their relationship.

Disclosures

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Ethics Committee Approval: The study was approved by the The study was approved by the Kartal Koşuyolu High Specialization Training and Research Hospital's Non-invasive Clinical Research Ethics Committee (no: 2020/14/406, date: 22/12/2020).

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