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Investigation of Sleep and Affecting Factors in Coronary Artery Bypass Graft Surgery

Koroner Arter Bypass Greft Cerrahisinde Uyku ve Etkileyen Faktörlerin İncelenmesi

Raife Gökbayrak, Aynur Koyuncu*, Ayla Yava*

Seyhan State Hospital, Clinic of Chest Diseases, Adana, Turkey

**Hasan Kalyoncu University, University, Faculty of Health Sciences, Department of Nursing, Gaziantep, Turkey*

Abstract

Objective: The aim of this study was to evaluate the sleep perceptions and factors influencing sleep during the early postoperative period in patients who underwent coronary artery bypass graft (CABG) surgery.

Materials and Methods: This descriptive study included 92 volunteer patients who underwent CABG surgery between September 1, 2019, and February 1, 2020. Data were collected using the 2nd, 3rd, 4th Richards-Campbell sleep questionnaire (RCSQ) and a postoperative sleep-affecting factors form. The study was reported using the STROBE checklist. Statistical significance was set at $p<0.05$.

Results: The mean age of the participating patients was 60.72±8.95, with 68.5% aged ≤65 years, 73.9% male, and 85.9% having a body mass index ≥25 kg/m^2. The RCSQ total sleep perception scores of the patients were evaluated as 15.88±12.50 on the second day, 24.76±7.50 on the third day, and 32.35±7.56 on the fourth day after the postoperative period. When comparing the mean RCSQ scores with the descriptive characteristics of the patients, no statistically significant difference was found ($p>0.05$). During the postoperative period, patients reported that factors such as pain, frequent medical interventions, fear of sudden deterioration of their condition, fear of death, and being away from home in an unfamiliar environment had a significant impact on their sleep.

Conclusion: The mean RCSQ scores of patients who underwent CABG surgery were found to be very poor on the second and third days postoperatively and worsened on the fourth day.

Keywords: Bypass surgery, sleep, sleep quality, sleep disturbance, nursing

Öz

Amaç: Bu çalışmanın amacı, koroner arter bypass greft (KABG) cerrahisi uygulanan hastaların postoperatif erken dönemdeki uyku algılarını ve etkileyen faktörleri belirlemeyi amaçlamaktayız.

Gereç ve Yöntem: Araştırma, 1 Eylül 2019-1 Şubat 2020 tarihleri arasında KABG cerrahisi uygulanan 92 gönüllü hasta ile tanımlayıcı tasarıma sahip bir çalışmadır. Veriler, cerrahi sonrası 2., 3., 4. günlerde Richards-Campbell uyku ölçeği (RCUÖ) ve uykuyu etkileyen faktörler formu kullanılarak toplandı. Bu çalışmanın raporlanmasında STROBE kontrol listesi kullanıldı. İstatistiksel anlamlılık düzeyi olarak $p<0,05$ değeri kabul edildi.

Bulgular: Çalışmaya katılan hastaların yaş ortalaması 60,72±8,95 idi ve katılımcıların %68,5'i 65 yaşından küçüktü. Bu hastaların %73,9'u erkek, %85,9'u ise beden kitle indeksi ≥25 kg/m^2 olarak belirlendi. Hastaların RCUÖ toplam uyku algısı puanları, postoperatif ikinci gününde 15,88±12,50, üçüncü gününde 24,76±7,50 ve dördüncü gününde ise 32,35±7,56 olduğu belirlendi. RCUÖ puan ortalamaları hastaların tanımlayıcı özellikleri ile karşılaştırıldığında, aradaki fark istatistiksel olarak anlamlı değildi ($p>0,05$). Hastalar, postoperatif günlerde, ağrı, sık tekrarlanan izlemler, durumunun bir anda kötüleşeceğini düşünme, ölümden korkma, evinden uzakta ve alışmadığı bir ortamda bulunmak gibi faktörlerin uykuyu etkilediğini bildirdiler.

Sonuç: KABG cerrahisi uygulanan hastaların RCUÖ toplam puan ortalamalarının, postoperatif ikinci ve üçüncü günlerde çok kötü, dördüncü gününde ise kötü olduğu bulundu.

Anahtar Kelimeler: Bypass cerrahisi, uyku, uyku kalitesi, uyku bozukluğu, hemşirelik

Introduction

Sleep, being a fundamental human need, is a multidimensional, biobehavioral, and circadian phenomenon.[1] It is characterized by the onset of sleep, uninterrupted duration, duration, and quality, leading to a sense of refreshment upon awakening.[2] Sleep disorder (SD) presents itself as an excessive need for sleep and involuntary sleep states, leading to a deterioration in the duration, depth, timing, and quality of sleep, ultimately decreasing the individual's satisfaction with their sleep experience.[1] SD has also been associated with various complications such as weakness, tiredness, and fatigue.[3-7]

Address for Correspondence/Yazışma Adresi: Asst. Prof. Aynur Koyuncu, Hasan Kalyoncu University, Faculty of Health Sciences, Department of Nursing, Gaziantep, Turkey
Phone: +90 539 855 50 92 **E-mail:** aynrkoyuncu@yahoo.com.tr **ORCID-ID:** orcid.org/0000-0003-3486-458X
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Studies have shown that SD increases the risk of blood pressure issues,[3] pain,[4] anxiety,[5] delirium,[4] memory impairment, depression,[5] reduces the quality of life,[6] and increases mortality.[7] In patients undergoing coronary artery bypass graft (CABG) surgery, there is a decrease in rapid eye movement (REM) sleep immediately after the surgery.[8] The reduction in REM sleep leads to decreased production of neurotransmitters, such as serotonin hormone,[9] and impairs the functioning of the hypothalamus, pituitary, and adrenal glands, thus weakening the immune system.[10] Additionally, it affects glucose tolerance, resulting in insulin resistance,[10,11] and negatively impacts wound healing.[11] Studies have reported that nearly half (43%) of CABG patients experience severe irregular breathing during sleep,[12] and more than half (67%) experience sleep apnea.[13] These issues have been linked to a longer requirement for invasive mechanical ventilation, an increase in respiratory complications, and a higher incidence of atrial fibrillation, sepsis, and mortality.[3,12,13]

Despite efforts to reduce the development of SD in patients undergoing CABG surgery, it remains a common complication that has a prolonged impact on patients.[5,14] The results of a systematic review revealed that SD develops in more than 50% of patients undergoing CABG surgery and continues to affect them for up to 6 months after the procedure.[14] In another study, this rate was found to be 82% in the first week and 66% in the first month, with more than half experiencing SD beyond the first month.[5]

The highest rate of SD development in patients undergoing CABG surgery occurs during the first week after surgery.[12] However, the extent to which patient characteristics, habits, disease-related symptoms, healthcare professionals' attitudes, and environmental factors influence the development of SD remains unknown. Understanding these factors better can help define the factors that contribute to SD and identify modifiable and preventable factors. Implementing measures based on this understanding may be beneficial in reducing the frequency of SD development and its related complications. In this study, we aimed to assess the depth of sleep, sleep onset, frequency of nocturnal awakenings, wakefulness, sleep quality, the impact of noise level, and influencing factors in patients who underwent CABG surgery on the second, third, and fourth days after the postoperative period.

Materials and Methods

The study was carried out at a training and research hospital located in southeast Turkey, in the cardiovascular surgery ward, between September 1, 2019, and February 1, 2020. A prospective and descriptive design was utilized for this research. Ethical approval for the study was obtained from the Hasan Kalyoncu University Non-Interventional Research Ethics Committee (decision no: 2019\39, date: 14.06.2019), and permission was granted by the Gaziantep Provincial Health Directorate. The research purpose and procedures were explained to the volunteer patients, and written consent was obtained from them. Written permission was also obtained from the researchers who conducted the Turkish validity-reliability of the Richards-Campbell sleep questionnaire (RCSQ).[15] The patients' written and verbal consents were obtained after they were informed about the study.[15] All stages of the research adhered to the principles outlined in the Helsinki Declaration of the World Medical Association.[16]

The sample size was calculated using the G* Power 3.1.9.7 program. Based on a two-sided hypothesis with Cohen's standard effect size[17] of 0.3, α error of 0.05, β error of 0.20, and power of 80%, it was determined that a minimum of 90 patients should be included in the sample. The study population initially consisted of 127 patients who underwent CABG surgery during the data collection period. After excluding 24 patients who did not meet the sampling criteria, 3 patients who did not volunteer to participate, and 8 patients who were taken back to the intensive care unit due to criticality related to the data collection process, the study was completed with data from 92 patients. The sampling process reached 72.5% of the universe. The study criteria included patients undergoing planned CABG surgery, who were not receiving medication for sleep problems during the preoperative period. The participants were adults aged 18 years and older, without communication barriers, conscious (Glasgow Coma score ≥14), and willing to take part in the study. Data for this study[3-9] were collected using an introductory information form, a questionnaire to determine factors affecting sleep, and the RCSQ, all of which were developed based on a literature review. Opinions were obtained from a total of five experts, including 3 cardiovascular surgeons and 2 academic nurse researchers, for the factors affecting sleep form. The scope provisions index (SPI) for the data collection forms was calculated as 0.98 according to the experts' opinions. Since the SPI value was 0.98>0.80,[18] the data collection forms were deemed appropriate for this study.

The RCSQ was originally developed in 1987 by Richards Campbell. Karaman Özlü and Özer[19] adapted the questionnaire into Turkish. The scale consists of 6 questions to assess the sleep status of patients. Each item on the scale is assessed on a chart ranging from 0 to 100 using the visual analog scale technique. A score of "0-25" indicates very poor sleep quality, while a score of "76-100" indicates very good sleep quality. The total score is based on 5 items, with the 6th item, which evaluates the noise level in the environment, excluded from the total score evaluation. Higher scale scores indicate better sleep quality for patients.[19,20] The visual analog pain scale requires the patient to mark their pain level on a 10 cm ruler, where one end represents "no pain", and the other end represents "most severe pain". Pain intensity is measured on a scale from 0 to 10, where "0" indicates no pain, and "10" indicates the most severe pain.[21] Study procedure: one day prior to the surgery, the patients were provided with detailed information about the objectives of the study and the procedures involved. If the patients agreed to participate, they signed an informed consent form. The introductory information form was completed by the researcher based on the information in the patient's medical file, one day before the surgery. On the postoperative second, third, and fourth days, patients were visited between 09:00-10:00 am. During these visits, the researcher read the RCSQ questions to the patients and

recorded their responses on the data collection form. The researcher presented propositions from the form prepared on the third postoperative day to determine the factors affecting sleep and explained the five-point Likert scale options to the patients. The patients' responses were recorded on the data collection form. The whole process took approximately 10-15 minutes per patient.

Statistical Analysis

Statistical analysis was performed using SPSS 22.0 (IBM USA) software package for Windows. Descriptive statistics included numbers (n) and percentages (%) for categorical variables, while mean ± standard deviation values were used to represent numerical values. The normal distribution of continuous variables was evaluated through the Kolmogorov-Smirnov and Shapiro-Wilk tests. As it was determined that the continuous variables did not exhibit a normal distribution, comparisons of continuous variables were performed using the Mann-Whitney U and Kruskal-Wallis tests. A significance level of $p<0.05$ was considered for all statistical tests.

Results

Table 1 presents the sociodemographic information of the patients. According to Table 2, the average visual analogue scale (VAS) pain scores gradually decreased on the second, third, and fourth postoperative days (respectively: 4.82±1.00, 3.19±2.55, 3.03±0.80). The average sleep depth scores based on the RCSQ increased on the second, third, and fourth postoperative days (respectively: 16.41±14.41, 26.30±9.66, 36.08±8.28). Similarly, the falling asleep scores based on the RCSQ increased on the second, third, and fourth postoperative days (respectively: 15.54±14.18, 21.48±10.88, 27.55±10.95). The average night waking frequency scores based on the RCSQ also increased on the second, third, and fourth postoperative days (respectively: 14.94±14.40, 20.05±8.40, 26.84±8.60). Moreover, the average time of staying awake at night according to the RCSQ increased on the second, third, and fourth postoperative days (respectively: 16.25±12.39, 26.46±8.75, 34.07±9.57). Additionally, the average sleep quality scores based on the RCSQ increased on the second, third, and fourth postoperative days (respectively: 16.25±11.13, 29.51±8.22, 37.22±8.65). The average noise level scores based on the RCSQ increased on the second, third, and fourth postoperative days (respectively: 74.78±20.35, 77.66±10.52, 79.34±10.06). Furthermore, the average total sleep perception scores based on the RCSQ increased on the second, third, and fourth postoperative days (respectively: 15.88±12.50, 24.76±7.50, 32.35±7.56) (Table 2). Figure 1 visually illustrates the increase in average total sleep perception scores on the second, third, and fourth postoperative days. The comparison of pain and RCSQ items (sleep depth, falling asleep, frequency of awakening, sleep quality, noise level) average scores with patient characteristics such as age, gender, body mass index, educational level, and employment status did not yield statistically significant differences ($p>0.05$).

Factors affecting patients' sleep were analyzed in four categories: environmental, individual, disease-related, and health professionals-related factors. 68.05% of the patients strongly stated that the presence of pain, which is one of the disease-related factors, strongly affected their sleep. 33.7% of the patients strongly stated that the proposition "frequently performed follow-up procedures", which is one of the factors

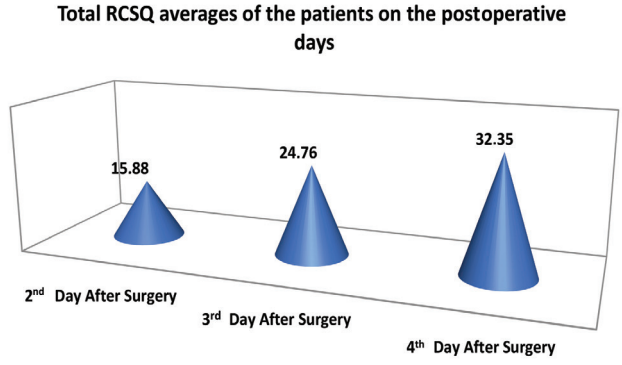

Figure 1. Total RCSQ score averages of the patients on the second, third and fourth days after surgery (n=92)

RCSQ: Richards-Campbell sleep questionnaire

Table 1. Distribution of descriptive characteristics of the patients (n=92)

Features	n	%
Age (year) (mean ± standard deviation =60.72±8.95, smallest-largest=37-82)		
≤65	63	68.5
≥66	29	31.5
Gender		
Female	24	26.1
Male	68	73.9
BMI (mean ± standard deviation =28.57±4.22, minimum-most =18.59-40.83)		
≤24.9	13	14.1
≥25	79	85.9
Educational background		
Illiterate	29	31.5
Primary education	54	58.7
Secondary education & bachelor's level	9	9.8
Employment status		
Non-operational	28	30.4
Operational	64	69.6
Smoking		
Yes	42	45.7
No	35	38.0
Leaved	15	16.3
Alcohol use		
Yes	2	2.2
No	83	90.2
Leaved	6	6.5

BMI: Body mass index

related to health professionals, strongly affected their sleep, while 14.1% stated that it affected them. 16.3% of the patients strongly stated that the proposition "I don't worry about my condition suddenly worsening, fear of death", which is one of the individual factors, strongly affected their sleep, and 39.1% stated that it affected them. Moreover, 18.5% of the patients strongly expressed that the factor "being away from home, being in an unusual environment", which is one of the environmental factors, significantly affected their sleep (Table 3). On the second, third, and fourth postoperative days, it was observed that the average VAS pain scores gradually decreased day by day (7.82±1.00, 7.19±2.55, 6.03±0.80, respectively). Simultaneously, on the same days, the RCSQ sleep depth score averages showed a progressive increase (16.41±14.41, 26.30±9.66, 36.08±8.28, respectively). Falling asleep scores based on the RCSQ also increased on the second, third, and fourth postoperative days (respectively: 15.54±14.18, 21.48±10.88, 27.55±10.95). Night waking frequency scores based on the RCSQ increased gradually on the second, third, and fourth postoperative days (respectively: 14.94±14.40, 20.05±8.40, 26.84±8.60). The RCSQ nighttime awake time scores also increased gradually on the second, third, and fourth postoperative days (respectively: 16.25±12.39, 26.46±8.75, 34.07±9.57). Additionally, the average sleep quality scores based on the RCSQ increased gradually on the second, third, and fourth postoperative days (respectively: 16.25±11.13, 29.51±8.22, 37.22±8.65). Furthermore, RCSQ noise level mean scores increased gradually on the second, third, and fourth postoperative days (respectively: 74.78±20.35, 77.66±10.52, 79.34±10.06) (Table 3).

Discussion

The research findings revealed that patients undergoing CABG surgery experienced significant sleep disturbance during their post-surgery hospital stay. The sleep perception of the patients was found to be markedly impaired on the second and third days following the surgery, and it further worsened on the fourth day. The slight improvement in sleep perceptions on the fourth day after surgery may be attributed to the alleviation of surgery-related symptoms. CABG surgery involves various stressors that impact multiple aspects of an individual's well-being. It is associated with life-threatening physiological stressors and induces fear and anxiety, which can negatively affect sleep quality.[22] Stressors encountered by individuals during the perioperative period lead to hormonal changes, such as increased serum cortisol levels and decreased serum melatonin levels, impairing sleep quality and causing sleep problems in patients.[23] It was speculated that the stressors experienced by the patients during the perioperative period might have contributed to the development of sleep disturbance.

Consistent with previous research, the current study found that patients who underwent CABG surgery experienced sleep disturbance throughout their hospital stay. A systematic review by Liao et al.[14] demonstrated that over 50% of patients who underwent CABG surgery experienced sleep disturbance after the procedure, which persisted for a considerable period. Another study indicated that 82.8% of patients experienced sleep disturbance in the first week after surgery and 66.7% in the first month, with more than half of the patients experiencing sleep disturbance even after the first month.[5] While the research findings align with existing literature, they also underscore the importance of gaining a better understanding of the factors influencing sleep and causing sleep disturbance in the early postoperative period, with the goal of reducing its occurrence.

An individual's sleep-wake cycle is influenced by a multitude of factors related to the environment, the individual, the disease, and healthcare professionals. Patients who develop sleep disturbance after surgery may experience delayed recovery, impaired cognitive functions, heightened pain sensitivity, and increased cardiovascular events.[24] The research findings of this study demonstrated that disease-related factors had the most significant impact on the development of sleep disturbance during the hospitalization period of patients who underwent CABG surgery. Among the disease-related factors, the presence of pain was identified as the most influential factor (68%), with other disease-related symptoms such as nausea, vomiting, and constipation also affecting sleep (67.4%). A study by Dunietz et al.[25] also indicated that reducing pain scores can lead to a reduction in the development of sleep disturbance after surgery. As supported by the literature, the development of sleep disturbance after surgery can intensify the perception of pain, and the presence of pain has been

Table 2. Distribution of the pain and RCSQ sleep perception avareges (n=92)

	After surgery second day mean ± standard deviation	After surgery third day mean ± standard deviation	After surgery fourth day mean ± standard deviation
Pain (visual benchmark scale)	4.82±1.00	3.19±2.55	3.03±80
My sleep last night (sleep depth)	16.41±14.41	26.30±9.66	36.08±8.28
Falling a sleep last night	15.54±14.18	21.48±10.88	27.55±10.95
Frequency of waking up last night	14.94±14.40	20.05±8.40	26.84±8.60
Waking time last night	16.25±12.39	26.46±8.75	34.07±9.57
Quality of sleep	16.25±11.13	29.51±8.22	37.22±8.65
Noise level last night	74.78±20.35	77.66±10.52	79.34±10.06
Total sleep perfection	15.88±12.50	24.76±7.50	32.35±7.56

RCSQ: Richards-Campbell sleep questionnaire

Table 3. Distributions of factors affecting patient's sleep in the post-surgery days (n=92)					
Disease-related factors	**Not affected n (%)**	**Slightly affected n (%)**	**Neutral n (%)**	**Affected n (%)**	**Strongly affected n (%)**
Pain	-	1 (1.1)	2 (2.2)	26 (28.3)	63 (68.5)
Having complaints nausea, vomiting, constipation	-	6 (6.5)	1 (1.1)	23 (25.0)	62 (67.4)
Presence of medical devices, drains, probes attached to the body	-	6 (6.5)	1 (1.1)	23 (25.0)	62 (67.4)
Staying in the same position for a long time, limitation of movement	1 (1.1)	25 (27.2)	-	34 (37.0)	32 (34.8)
Not comfortable lying position, being unable to sleep in the usual position	1 (1.1)	17 (18.5)	3 (3.3)	42 (45.7)	29 (31.5)
Having bad dreams	-	36 (39.1)	1 (1.1)	44 (47.8)	11 (12.0)
Factors related to healthcare professionals	**Not affected n (%)**	**Slightly affected n (%)**	**Neutral n (%)**	**Affected n (%)**	**Strongly affected n (%)**
Frequent monitoring procedures (blood pressure, pulse, etc.)	-	27 (29.3)	21 (22.8)	13 (14.1)	31 (33.7)
Invertions for drug therapy	1 (1.1)	32 (34.8)	25 (27.2)	10 (10.9)	24 (26.1)
Coinciding the treatment and test hours with the bedtime	1 (1.1)	32 (34.8)	25 (27.2)	10 (10.9)	24 (26.1)
Breakfast served early	26 (28.3)	19 (20.7)	23 (25.0)	18 (19.6)	6 (6.5)
Frequent entrance and exit of healthcare professionals into the room	34 (37.0)	26 (28.3)	20 (21.7)	7 (7.6)	5 (5.4)
Loudly conversations of the staff working in the service	52 (56.5)	18 (19.6)	19 (20.7)	2 (2.2)	1 (1.1)
Individual factors	**Not affected n (%)**	**Slightly affected n (%)**	**Neutral n (%)**	**Affected n (%)**	**Strongly affected n (%)**
Worrying that your condition will suddenly worsen, fear of death	1 (1.1)	35 (38.0)	5 (5.4)	35 (39.1)	15 (16.3)
Presence of anxieties about the disease, lack of hope recovery	2 (2.2)	39 (42.4)	2 (2.2)	34 (37.0)	15 (16.3)
Not being able to see family members, feeling unsafe	11 (12.0)	23 (25.0)	6 (6.5)	38 (41.3)	14 (15.2)
Be thirsty	17 (18.5)	18 (19.6)	50 (54.3)	3 (3.3)	4 (4.3)
Be hungry	14 (15.2)	19 (20.7)	52 (56.3)	4 (4.3)	3 (3.3)
Not feeling clean	7 (7.6)	35 (38.0)	38 (41.3)	10 (10.9)	2 (2.2)
Environment factors	**Not affected n (%)**	**Slightly affected n (%)**	**Neutral n (%)**	**Affected n (%)**	**Strongly affected n (%)**
Being away from home in an unusual setting	5 (5.4)	26 (28.3)	2 (2.2)	42 (45.7)	17 (18.5)
Uncomfortable bedding (pillows/mattresses, not feeling that the bed and linens are clean	46 (50.0)	11 (12.0)	17 (18.5)	10 (10.9)	8 (8.7)
Bad odors in the environment, insufficient ventilation of the rooms	2 (2.2)	31 (33.7)	36 (39.1)	17 (17.5)	6 (6.5)
Surrounding noises, crowded patient rooms	3 (3.3)	33 (35.9)	35 (38.0)	16 (17.4)	5 (5.4)
Room temperature is too hot or too cold	11 (12.0)	23 (25.0)	44 (47.8)	10 (10.9)	4 (4.3)
Too light or dark in the room	27 (29.3)	5 (5.4)	55 (59.8)	4 (4.3)	1 (1.1)

identified as a factor affecting sleep and potentially contributing to the development of sleep disturbance in patients. The study findings demonstrated that the average pain score exceeded 7 on the second and third days following the surgery and reached 6 on the fourth day postoperatively. These results suggest that effective pain management was not adequately implemented. It is our belief that the development of sleep disturbance in patients can be mitigated by providing adequate pain relief and management.

The research findings highlighted that the presence of "medical devices, drains, and probes attached to the body" significantly influenced sleep. We believe that these medical instruments might have restricted the patients' movements in bed and contributed to increased pain. To preserve the patients' sleep

quality, frequent evaluations should be made to determine the appropriate time for removing such medical devices, drains, and probes from the body. Additionally, patients reported other disease-related factors that affected their sleep, including "long periods of staying in the same position" and "limitations of movement", as well as "uncomfortable lying positions preventing them from sleeping in their usual posture". The median sternotomy remains the most common technique in CABG surgery,[26] requiring patients to lie on their backs until the sternum bone heals, which could be a reason for increased sleep disturbance. The study findings also revealed that remaining in the same position for prolonged periods negatively impacted sleep. Another noteworthy factor identified in the study was "bad dreaming". It is conceivable that the physiological and psychological stress experienced by the patients contributed to the occurrence of distressing dreams. An interesting finding of the study was that factors related to health professionals also had an impact on sleep. Patients reported that "frequent follow-up procedures", "interventions for drug treatment", and "coinciding treatment and test times with bedtime" affected their sleep. The frequency and timing of these medical interventions should be adjusted in a manner that does not disrupt the patients' sleep-wake cycles.

Overall, the research highlights the multifactorial nature of sleep disturbance in patients undergoing CABG surgery. Various environmental, individual, disease-related, and health professional-related factors play a role in sleep perception and quality during the postoperative period. Proper management of pain, evaluating the necessity of medical devices, minimizing disruptions caused by medical interventions, and providing a comfortable and conducive sleep environment are crucial steps to improve the sleep experience of patients recovering from CABG surgery. By understanding and addressing these factors, healthcare providers can work towards reducing sleep disturbance and its associated complications in this patient population.

Research findings indicated that individual factors, such as fear, anxiety, and feeling unsafe, also significantly influenced sleep. Patients reported that "worrying about their condition suddenly worsening", "fear of death", and "anxiety about the disease with no hope of recovery" affected their sleep. A cohort study by Matthews[22] also reported negative effects of fear, fear of death, anxiety, and mood disorders on sleep. It is crucial for healthcare providers to inform patients about their condition and disease prognosis and address any concerns or questions they may have. Future studies should explore the relationship between psychological stress, increased serum cortisol levels, and the development of sleep disturbances, using objective indicators. Another important factor affecting patients undergoing CABG surgery is "not being able to talk to family members and not feeling safe". Family support becomes particularly significant for patients undergoing major surgeries like CABG. Allowing a family member of the patient's choice to accompany them can contribute to a sense of security and improve the patient's sleep experience. The study findings also highlighted the impact of environmental factors on sleep. Patients reported that "being away from home in an unfamiliar environment" adversely influenced their sleep. In the literature, post-surgical SDs have been associated with various factors, including the surgical inflammatory response, surgical trauma, as well as environmental factors such as pain severity, anxiety, and nighttime noise.[24] Understanding the different factors that impact sleep in patients undergoing CABG surgery is crucial in order to minimize the occurrence of sleep disturbances.

Study Limitations

One limitation of this study is that sleep was not measured using objective methods, and instead, patient self-reports were used for the sleep evaluation. Additionally, the study did not evaluate patients' sleep perceptions in the intensive care unit and after discharge. Nevertheless, given the limited number of studies on this topic, the research findings hold value.

Conclusion

Following CABG surgery, sleep perception was found to be very poor on the second and third days and even worse on the fourth day. The study revealed that sleep was influenced by disease-related, health professional-related, individual, and environmental factors. The most notable factors influencing sleep included pain, nausea, constipation, the presence of drains and catheters, prolonged immobility, limitations in movement, frequent medical interventions, concerns about sudden deterioration, fear of death, and being in an unfamiliar environment. Implementing measures to mitigate the development of sleep disturbances after surgery is of utmost importance.

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Ethics

Ethics Committee Approval: Ethical approval for the study was obtained from the Hasan Kalyoncu University Non-Interventional Research Ethics Committee (decision no: 2019\39, date: 14.06.2019), and permission was granted by the Gaziantep Provincial Health Directorate.

Informed Consent: Written consent was obtained from all the participants in the study.

Authorship Contributions

Concept: A.K., A.Y., Design: A.K., A.Y., Data Collection or Processing: R.G., Analysis or Interpretation: R.G., A.K., Literature Search: R.G., A.K., A.Y., Writing: R.G., A.K., A.Y.

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