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The Effect of Using Walking Aids on Pain and Mobility Levels of Patients Underwent Coronary Artery Bypass Graft Surgery: A Randomized Controlled Trial

Koroner Arter Bypass Greft Ameliyatı Olan Hastalarda Yürümeye Yardımcı Araç Kullanımının Ağrı ve Hareketlilik Düzeylerine Etkisi: Randomize Kontrollü Bir Çalışma

ABSTRACT

Objective: Early mobilization is important for improving healing. This study aimed to evaluate the effect of using walking aids on the pain and mobility levels of patients during early mobilization following coronary artery bypass graft surgery.

Methods: This parallel-group, assessor-blinded randomized controlled study was conducted with 56 patients. The intervention group performed their mobilizations with a walking aid, while the control group received the routine mobilization procedure with two nurses, three times every four hours.

Results: The pain and mobility levels of patients were evaluated using the Patient Mobility and Observer Mobility Scales. The pain levels of intervention group patients were found to be statistically significantly lower ($p < .001$) and mobility levels were significantly higher ($p < .001$) than those in the control group during the three mobilization stages.

Conclusion: The use of walking aids is effective in reducing pain and difficulty levels and increasing mobility levels during early mobilization after coronary artery bypass graft surgery. (ClinicalTrials.gov Protocol Registration Number: NCT05830682).

Keywords: Coronary artery bypass surgery, early mobilization, nurses, pain, walking aid

ÖZ

Amaç: Erken mobilizasyon iyileşmeyi hızlandırmak için önemli olup bu çalışmada kalp cerrahisi sonrası erken mobilizasyon sırasında yürümeye yardımcı araç kullanımının hastaların ağrı ve hareketlilik düzeylerine etkisi değerlendirmek amaçlandı.

Yöntem: Bu paralel gruplu, değerlendiricinin kör olduğu randomize kontrollü çalışma 56 hastayla yürütüldü. Çalışma grubundaki hastalar mobilizasyonlarını dört saat ara ile üç defa yürümeye yardımcı araç ile gerçekleştirirken, kontrol grubundaki hastalar rutin uygulamada olduğu üzere iki hemşire yardımı ile gerçekleştirdi. Hastaların ağrı ve hareketlilik düzeyleri Hasta Hareketlilik ve Gözlemci Hareketlilik Ölçekleri kullanılarak değerlendirildi.

Bulgular: Çalışma grubundaki hastaların ağrı düzeylerinin üç mobilizasyon aşamasında kontrol grubuna göre istatistiksel olarak anlamlı derecede düşük ($P < 0.001$) ve mobilite düzeylerinin anlamlı derecede yüksek ($P < 0.001$) olduğu belirlendi.

Sonuç: Yürümeye yardımcı araç kullanımı, kalp cerrahisi sonrası erken mobilizasyon sırasında hastaların ağrı ve zorluk düzeylerinin azaltılmasında ve hareketlilik düzeylerinin arttırılmasında etkilidir (ClinicalTrials.gov Protokol Kayıt Numarası: NCT05830682).

Anahtar Kelimeler: Koroner arter bypass cerrahisi, erken mobilizasyon, hemşireler, ağrı, yürümeye yardımcı araç

ORIGINAL ARTICLE

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Introduction

Coronary artery disease occurs when the coronary arteries, responsible for supplying blood to the heart, become constricted or obstructed due to atherosclerosis, resulting in ischemia within the heart.[1,2] According to the World Health Organization, cardiovascular diseases account for 32% of global deaths, with 17.9 million people dying annually from these conditions.[3] Based on data from the Turkish Statistical

Institute, cardiovascular diseases are the leading cause of death in Türkiye, comprising 36.8% of all fatalities. Of these deaths, 39.1% are attributed to ischemic heart disease.[4]

Today, coronary artery bypass graft (CABG) surgery is predominantly chosen for treating cardiovascular diseases. This procedure is typically performed using the open method, which involves a median sternotomy incision and multiple chest incisions.[1,5] After surgery, patients often experience pain from the incisions and chest tubes, negatively impacting their mobilization during the postoperative period.[6,7] Literature indicates that patients experience moderate to severe pain on the first day after coronary surgical interventions, with pain during rest and exercise being more significant than on the second day.[7-9] In another study, 81.9% of patients reported pain when getting out of bed during the postoperative period, while 78.3% experienced difficulty moving.[10] These findings reveal that patients endure the most pain during movement on the first day following surgery.

One of the main objectives of nursing care in the postoperative period is managing pain and motivating patients to walk by assessing their activity level.[11,12] Early mobilization following surgery is a crucial component of Enhanced Recovery After Surgery (ERAS) protocols. It is recommended that patients who undergo cardiac surgery be mobilized within the first 24 hours after achieving hemodynamic stability in the intensive care unit.[13,14] Given that this period encompasses the initial 24-48 hours, during which patients experience the most pain, it is vital to support them in their movements and early mobilization during this time.

Walking aids can assist patients' mobilization, enhance their independence, and alleviate pain during movement in the postoperative period. Research indicates that individuals experiencing pain have a greater need for walking aids, which can facilitate mobilization, particularly during the postoperative period.[15,16] Given this information, the literature review reveals a scarcity of studies examining the use of walking aids in surgical patients. It is crucial to underscore the importance of this topic and explore the effects of early mobilization using walking aids in post-cardiac surgery patients through randomized controlled trials. Consequently, this study aimed to assess the impact of using a walking aid on the pain and mobility levels of patients during out-of-bed mobilization after CABG surgery. The data obtained from the study are expected to support the effectiveness of walking aids in managing pain and promoting patients' mobilization following surgical procedures.

MAIN POINTS

- Using a walking aid during early mobilization of patients after cardiac surgery is effective in reducing pain.
- Walking aids can assist patients in their out-of-bed mobilizations after cardiac surgery and lower their difficulty levels.
- Walking aids are practical and easy devices to mobilize patients and prevent their dependency levels.

Research Hypothesis

Within the context of this study, the following hypotheses were proposed:

1. The use of walking aid during mobilization would result in lower pain levels.
2. The use of walking aid during mobilization would result in higher mobility levels.

Material and Methods

Study Design

A parallel-group randomized controlled trial design was used, following the Consolidated Standards of Reporting Trials (CONSORT) guidelines and checklist.[17] Two of the three assessors were blinded. This study is registered at the ClinicalTrials.gov Protocol Registration and Results System, with the registration number NCT05830682.

Setting and Sampling

The study was conducted between January 29, 2019, and July 29, 2019, in a third-level Cardiovascular Surgery Intensive Care Unit (CSICU) with a capacity of five beds at a state hospital in Türkiye. The nurse-to-patient ratio in the unit during the day is either 1:2 or 1:3, and at least one postoperative CABG patient is admitted to the unit daily or every other day. Patients spend their first postoperative day in the CSICU. On the morning of the first postoperative day, after a physician's evaluation and ensuring hemodynamic stabilization, patients are encouraged to mobilize out of bed. They are guided to walk for two rounds in the CSICU with the support of a nurse and allied health personnel every four hours (at 10:00, 14:00, 18:00, and 22:00). Pain management is administered through intravenous paracetamol or diclofenac sodium as needed during the initial 24-48 hours or until the patient is transferred from the CSICU.

The study's sample size was determined based on a patient mobility scale standard deviation (4.98) obtained from a study conducted on patients undergoing CABG surgery, with a 95% confidence level and a 5% tolerance.[18] Consequently, 31 patients were included in the intervention group and 31 patients in the control group, resulting in a total sample of 62 patients. The study was completed with 56 patients (intervention group=31, control group=25). The study encompassed patients who (1) were over 18 years old, (2) underwent elective CABG surgery for the first time, (3) received median sternotomy during surgery, (4) had saphenous vein grafting, (5) were within the first day after surgery, and (6) volunteered to participate in the study. Patients who had vein grafting other than the saphenous vein during surgery and those whose mobilization was not approved by the physician were excluded from the study.

Data Collection Forms

The "Patient Characteristics Form," "Patient Mobility Scale," and "Observer Mobility Scale" were utilized to collect study data.

Patient Characteristics Form

The form was prepared by the researchers based on the literature.[10,18,19] It consisted of a total of 10 questions, with 6 intended to determine patients' sociodemographic

characteristics (gender, age, height-weight, history of chronic diseases, history of surgical procedures) and 4 intended to determine surgery-related characteristics (number of vessel grafts, number and location of chest tubes, duration of surgery).

Patient Mobility Scale

The scale was developed to measure the pain and difficulty levels experienced by patients during mobility in the postoperative period.[20] The evaluation is carried out on a 15 cm horizontal line for four activities: turning from one side to the other/straightening up in bed, sitting on the edge of the bed, standing up from the bed, and walking in the room.[20,21] To evaluate pain, patients are asked to mark their level of pain for each activity on a line ranging from 0 - "no pain" to 5 - "worst pain imaginable." To evaluate difficulty, patients are asked to mark their perceived difficulty for each activity on a line ranging from 0 - "very easy" to 5 - "very difficult".[20,21] In this study, the researcher posed questions for pain assessment, such as "How much pain did you feel when sitting on the edge of the bed?" and "How much pain did you feel when standing up from the bed?" For difficulty assessment, questions like "How difficult was it for you to sit on the edge of the bed?" and "How difficult was it for you to walk in the room?" were asked. Patients were requested to mark their responses with a pen on the horizontal line provided on the data collection form.

The total score of the patient mobility scale is derived by summing the pain and difficulty scores for all activities, with the lowest possible score being 0 and the highest score being 120. A lower score signifies that patient experienced less pain and difficulty during their activities, indicating a higher mobility level. Conversely, a higher score signifies that patients have lower mobility levels.[20,21] The Turkish validity and reliability study of the scale was conducted by Ayoğlu,[21] and Cronbach's α value was determined to be 0.88 for the intervention group and 0.87 for the control group. In the present study, the Cronbach's alpha value of the scale was calculated to be 0.92 for the intervention group and 0.89 for the control group during the third mobilization.

Observer Mobility Scale

The scale was developed to measure the dependency -independence status of patients during mobility in the postoperative period.[20] The evaluation is carried out on a scale of 1-5 for four activities: turning from one side to the other/straightening up in bed, sitting on the edge of the bed, standing up from the bed, and walking in the room.[20,21] According to this, the observer determines the dependency-independency status of patients for each activity by selecting one of the following scores: 1 - "performed the activity independently without verbal or physical assistance," 2 - "performed the activity independently with verbal prompting," 3 - "performed the activity with verbal and physical assistance," 4 - "depended on the nurse to perform the activity," or 5 - "unable to perform the activity with assistance."

The total score of the observer mobility scale is derived by summing the scores for all activities, with the lowest possible score being 4 and the highest being 20. An increase in the score indicates that patients are dependent during activities, whereas a decrease in the score signifies that patients are independent during activities.[20,21] Ayoğlu[21] conducted the scale's Turkish validity and reliability study, and Cronbach's α value was determined to be 0.61 for the intervention group and 0.64 for the control group. In the present study, it was determined that Cronbach's α values of the scale in each of the three mobilizations were above 0.85 based on the observations made by three observers.

Both scales have been utilized in the literature to assess patients' mobility levels in the postoperative period.[22,23]

Study Procedure and Data Collection

Patients were assigned to the intervention and control groups using a simple randomization method. Accordingly, patients were listed according to their CSICU admission date and time, and a protocol number was assigned to each patient. The patients were assigned to the groups using a random assignment method based on their protocol numbers by the researcher. In this arrangement, patients with odd protocol numbers formed the control group, while patients with even protocol numbers formed the intervention group. The researcher visited the patients in their rooms in the cardiovascular surgery ward one day before the surgery and explained that they would be transferred to the CSICU after the surgery. Patients were informed about the purpose of the study and the procedural steps, and those who agreed to participate provided verbal and written consent. The study data were collected in three mobilization stages.

First Mobilization Stage

Intervention Group

The researcher visited patients at their bedside in the CSICU on the first day after surgery. The patient characteristics form was filled out using the face-to-face interview method, which took approximately 10 minutes. Following this, the patient mobilization phase was initiated.

To perform the first out-of-bed mobilization, the researcher and one other CSICU nurse supported the patient on both sides by their arms/underarms and helped the patient to straighten up in bed and then to sit up in bed. The patient then sat on the edge of the bed with their feet dangling outside (Figure 1A). Two minutes later, their vital signs were checked from the monitor to evaluate their condition's stabilization. With the brakes closed on the walking aid, the patient held the handles of the walking aid, stood up from the bed by getting support from the device (Figure 1B), and walked two laps (approximately 12 meters x 2 laps = 24 meters) in the CSICU (Figure 1C) while the researcher observed. Then the patient sat on the edge of the bed and was asked to mark the level of pain and difficulty experienced during each activity on the patient mobility scale. Meanwhile, the researcher and two CSICU nurses (with at least 5 years of experience in cardiovascular surgery and certified in intensive care nursing, responsible nurse, and intensive care nurse) observed the patient's activities and marked the dependency-independence status on the observer mobility scale.

The walking aid utilized for mobilizing patients in the intervention group during the study is a rollator with four wheels that allows for movement in all directions. The height

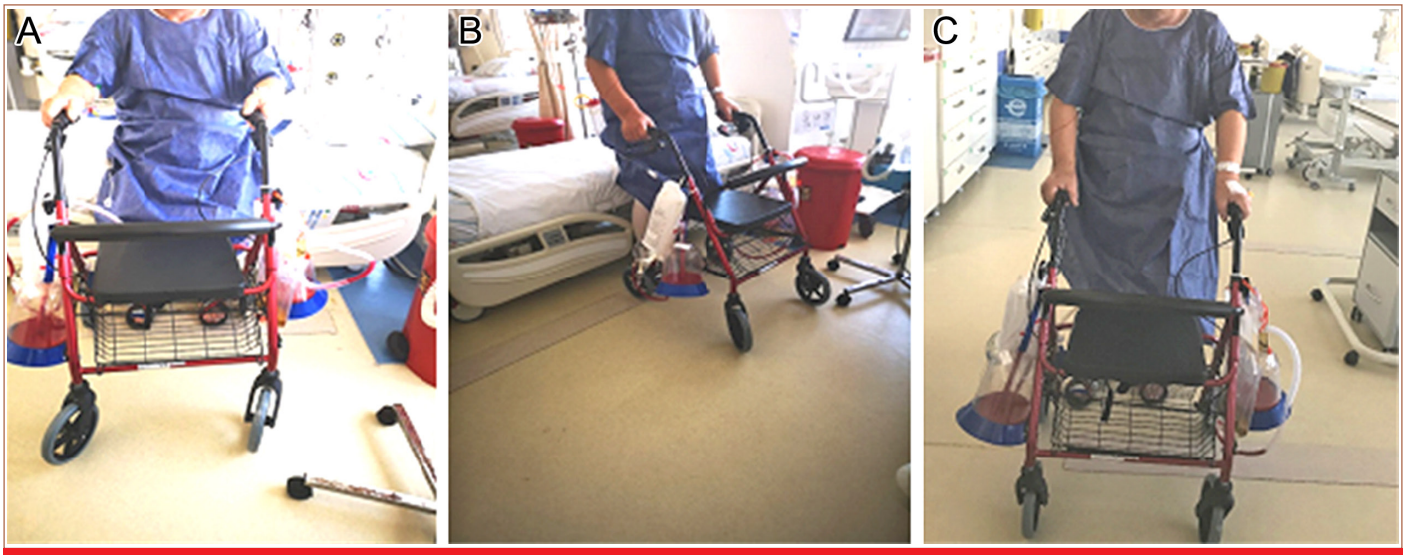

Figure 1. Mobilization steps by using the walking aid (photos were taken by the researcher with the patient's permission).

of the device can be adjusted according to the patient's height. It features a seat for resting when needed and a braking system controlled from the hand grips. Before the study, the braking system was checked, and suspension devices were added to both sides of the rollator to accommodate patients' chest tubes, drains, or urinary bags. Necessary opinions and permissions were obtained from cardiovascular surgery specialists prior to the study to ensure the device's suitability for use with intensive care patients.

Control Group

On the first day after surgery, the researcher visited patients at the bedside in the CSICU to conduct face-to-face interviews using the patient characteristics form, which took approximately 10 minutes. Unlike the intervention group, two CSICU nurses accompanied patients during their mobilization. Nurses supported the patient on both sides from their arms/underarms and helped the patient to straighten up in bed. The patient was then instructed to sit in the bed before sitting on the edge of the bed with their legs dangling outside. Two minutes after the patient was seated, their vital signs were checked from the monitor to evaluate their condition's stabilization. Following this, the two CSICU nurses assisted the patient in standing up from the bed and walking 2 laps (approximately 12 meters x 2 laps = 24 meters) in the CSICU. The patient was then helped to sit back on the edge of the bed and was asked to mark the level of pain and difficulty experienced during each activity on the patient mobility scale. Meanwhile, the researcher and two CSICU nurses (with at least 5 years of experience in cardiovascular surgery and certified in intensive care nursing, responsible nurse, and intensive care nurse) observed the patient's activities and marked the dependency-independence status on the observer mobility scale.

Second Mobilization Stage

Four hours after the initial mobilization stage, both groups of patients underwent a second mobilization procedure, and the interventions applied during the first mobilization were repeated.

Third Mobilization Stage

Following the second mobilization stage, the third mobilization was carried out with patients in both groups, repeating the interventions applied in the first and second mobilization stages. The CONSORT flow diagram for this study can be found in Figure 2.

Data Analysis

The data were analyzed using IBM SPSS (Statistical Package for Social Sciences) version 25.0 (IBM, Armonk, NY, USA) software package.[24] The independent samples t-test was used to compare the difference between two independent groups for the analysis of quantitative data with normal distribution, while the dependent samples t-test was used to compare the difference between two dependent groups. The repeated measures ANOVA was utilized to compare the means of more than two dependent groups. To determine the group that caused the difference in measurements where a difference was found, the Bonferroni pairwise comparison method was used as a post hoc test. A significance level of $P < 0.05$ was used for all statistical tests.

Ethical Considerations

In this study, all procedures were performed in accordance with ethical standards and the Helsinki Declaration. Ethical permission to conduct the study was obtained from Trakya University Faculty of Medicine Ethics Committee (Approval Number: 2018/235, Date: 17.09.2018), and the necessary institutional permission to conduct the study in a state hospital was obtained from the Provincial Health Directorate and the relevant institution (Approval Number: 93966460-044, Date: 25.01.2019). Permission to use the Turkish version of the scales was obtained via e-mail. Informed consent was obtained from the patients, and they were informed that their data would be kept confidential and used only for the purposes of the study.

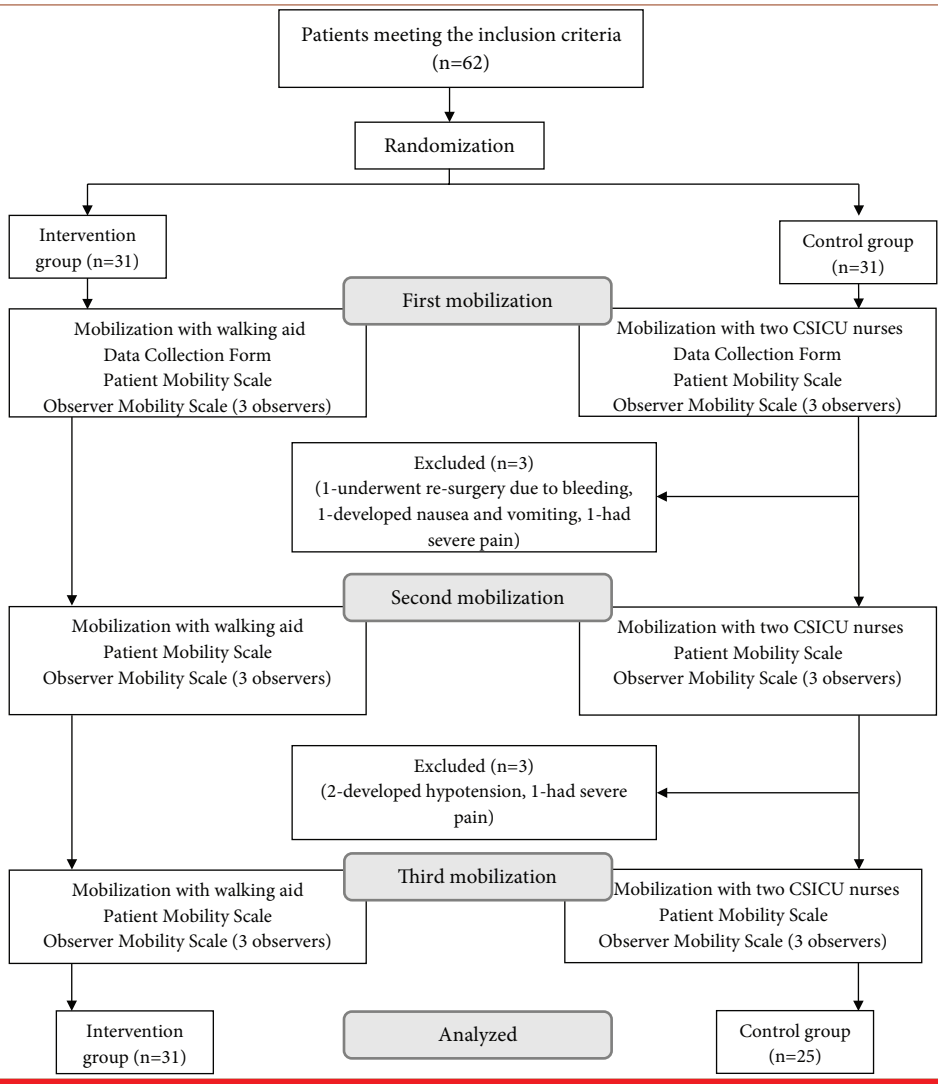

Figure 2. CONSORT diagram of the study.

Results

Patient Characteristics

There were no significant differences in the characteristics of the patients between the two groups. The characteristics of the 56 patients are presented in Table 1.

Pain and Difficulty

The comparison of pain and difficulty scores between groups during the three mobilization stages revealed that the control group patients had significantly higher pain scores (respectively, $t = -8.230$, $P < 0.001$; $t = -7.450$, $P < 0.001$; $t = -10.061$, $P < 0.001$) and higher difficulty scores (respectively, $t = -11.596$, $P < 0.001$; $t = -11.691$, $P < 0.001$; $t = -11.434$, $P < 0.001$) than those in the intervention group (Table 2).

Mobility

When comparing the total mobility scale scores of the patients in both groups during the three mobilization stages, it was determined that the mobility scores of the control group were significantly higher than those of the intervention group (respectively, $t = -11.545$, $P < 0.001$; $t = -11.107$, $P < 0.001$; $t = -11.759$, $P < 0.001$) (Table 2).

Observer Mobility

When the total observer mobility scale scores of the three observers were compared, it was found that patients in the intervention group had statistically significantly lower scores than those in the control group ($P < 0.001$) (Table 3).

Discussion

The study's findings indicated that using a walking aid during out-of-bed mobilization of patients following open-heart surgery is effective in reducing pain levels. This outcome supported the study's first hypothesis. Prior research on patients undergoing CABG surgery has shown that pain is most frequently experienced within the first day after surgery, with the sternum being the most painful area, and pain is exacerbated by chest tubes and movement.[25,26] It was also reported that analgesic treatments primarily consisting of opioid derivatives are employed for pain management during the mobilization of patients following cardiac surgery.[27] In their

Table 1. Patient Characteristics

	Intervention Group		Control Group		Test value
Variables	$\bar{X}$ (S_x) / n (%)		$\bar{X}$ (S_x) / n (%)		**p**
Gender					
Female	7	22.6	3	12	0.252[x²]
Male	24	77.4	22	88	
Age, years	64.09	11.3	60.36	10.42	0.202[t]
BMI (kg/m²)	29.29	4.2	29.36	4.46	0.948[t]
Chronic disease history					
Yes	30	96.8	23	92	0.418[x²]
No	1	3.2	2	8	
Surgical history					
Yes	17	54.8	15	60	0.454[x²]
No	14	45.2	10	40	
Number of vessel grafts					
1-2	9	29.0	9	36.0	0.780[x²]
3	15	48.4	12	48.0	
4	7	22.6	4	16.0	
Number of chest tubes					
1-2	23	74.2	17	68.0	0.414[x²]
3	8	25.8	8	32.0	
Location of chest tube	6	19.4	7	28.0	0.317[x²]
Mediastinum	25	80.6	18	72.0	
Mediastinum+Thorax					
Duration of surgery (hours)	4.14	1.21	4.02	0.71	0.650[t]

BMI: Body Mass Index; x²: Chi-square test; t: Independent samples t-test

study, Hong et al[25] reported a reduction in pain experienced during walking and mobility exercises conducted during physiotherapy sessions for patients who underwent CABG surgery. Supporting this finding, our study found significantly lower pain scores for patients who used walking aids compared to those who did not. Furthermore, the use of walking aids during postoperative mobilization helps to alleviate pain by preventing patients from placing a load on the sternum region, while drain hangers attached to the device assist in securing chest tubes, further reducing pain levels in patients.

In the literature, it was reported that more than one-third of the patients who had CABG surgery experienced difficulties during mobilization in the early postoperative period.[28] Similarly, Ayoğlu's study[21] on patients who underwent surgical interventions revealed that patients experienced the most difficulty while sitting on the edge of the bed and required the most support during this time. In the study conducted by Morri et al[29] it was reported that patients experienced the most difficulty and required the most assistance during mobilization when getting in and out of bed. In a qualitative study exploring patients' experiences of early mobilization after colorectal surgery, patients emphasized that early mobilization was exhausting and that walking aids are important during mobilization activity.[30] Supporting these reports, our study found that patients in the control group who did not use walking aids experienced significant difficulties during mobilization. Conversely, patients who used a walking aid during mobilization experienced significantly decreased difficulties in the later stages of mobilization. The walking aid used in our study helped the patients to stand up from the side of the bed and walk in the room. Given these results, it can be concluded that the difficulties experienced by patients during postoperative mobilization can be reduced by using walking aids during mobilization.

This study found that the use of walking aids significantly increases the mobility levels of patients. This finding also confirms the second hypothesis of the study, which states that "the use of walking aids during mobilization would result in higher mobility levels." In the literature, Kızılcık et al's study[31] conducted with the relatives of patients who underwent surgical interventions reported that 95.7% of the relatives helped their patients during activities such as sitting in bed and standing up. It has been reported that 25.4% of the relatives needed to use an assistive device during these activities. Although there are no studies in the literature investigating the effect of using walking aids on the mobility levels of patients, it

Table 2. Pain, Difficulty, and Mobility Levels of Patients During Mobilizations

	Intervention Group $\bar{X}$ (S_x)	Control Group $\bar{X}$ (S_x)	Statistics, Test value	
			Between Groups	**In-group**
Pain level				**Intervention group** F=4.395, ***P*=0.017**[F]
1. Mobilization	7.14 (7.47)	26.80 (10.38)	t= -8.230, ***P*=0,000**[t]	1>3
2. Mobilization	5.80 (6.44)	22.59 (10.30)	t= -7.450, ***P*=0.000**[t]	**Control group**
3. Mobilization	3.77 (5.59)	25.23 (25.23)	t= -10.061, ***P*=0.000**[t]	F=2.341, *P*=0.107
Difficulty level				**Intervention group** F=11.743, ***P*=0.000**[F]
1. Mobilization	15.61 (5.72)	38.03 (8.68)	t= -11.596, ***P*=0.000**[t]	1>3, 2>3
2. Mobilization	14.16 (6.99)	36.15 (6.99)	t= -11.691, ***P*=0.000**[t]	**Control group**
3. Mobilization	10.55 (6.99)	34.95 (8.97)	t= -11.434, ***P*=0.000**[t]	F=4.513, ***P*=0.000**[F]
				1>3
Mobility level				**Intervention group**
1. Mobilization	22.76 (11.68)	64.84 (15.58)	t= -11.545, ***P*=0.000**[t]	F=9.623, ***P*=0.000**[F]
2. Mobilization	19.97 (12.13)	58.74 (13.98)	t= -11.107, ***P*=0.000**[t]	1>3, 2>3
3. Mobilization	14.33 (11.24)	60.18 (17.75)	t= -11.759, ***P*=0.000**[t]	**Control group**
				F=3.137, *P*=0.052 [F]

t: The independent samples t-test; F: The analysis of variance

Table 3. The Scores of the Observer Mobility Scale

	Intervention Group $\bar{X}$ (S_x)	Control Group $\bar{X}$ (S_x)	Statistics, Test value	
			Between Groups	In-group
1. Observer				**Intervention group** F=28.874, ***P*=0.000**[F]
1. Mobilization	9.67 (1.72)	15.56 (0.65)	t=-17.547, ***P*=0.000**[t]	1>2, 1>3
2. Mobilization	8.19 (1.24)	15.36 (0.9)	t=-24.831, ***P*=0.000**[t]	**Control group**
3. Mobilization	7.54 (1.31)	14.96 (1.24)	t=-21.521, ***P*=0.000**[t]	F=3.733, ***P*=0.031**[F]
				1>3
2. Observer				**Intervention group**
1. Mobilization	9.61 (1.66)	15.56 (0.58)	t=-18.510, ***P*=0.000**[t]	F=34.664, ***p*=0.000**[F]
2. Mobilization	8.12 (1.2)	15.36 (0.86)	t=-26.168, ***P*=0.000**[t]	1>2, 1>3, 2>3
3. Mobilization	7.45 (1.2)	15 (1.15)	t=-23.721, ***P*=0.000**[t]	**Control group**
				F=4.269, ***P*=0.020**[F]
				1>3
3. Observer				**Intervention group**
1. Mobilization	9.54 (1.56)	15.72 (0.54)	t=-20.464, ***P*=0.000**[t]	F=3.458, ***P*=0.000**[F]
2. Mobilization	8.16 (1.18)	15.56 (0.58)	t=-30.468, ***P*=0.000**[t]	1>2, 1>3, 2>3
3. Mobilization	7.41 (1.23)	15.04 (1.20)	t=-23.218, ***P*=0.000**[t]	**Control group**
				F=7.707, ***P*=0.001**[F]
				1>2, 1>3

[t]: The independent samples t-test; [F]: The analysis of variance

has been reported that increasing mobility in patients who are mobilized early can improve their own mobility status, reduce complications, and shorten hospital stays.[32-34]

The study conducted by da Costa Torres et al[35] on patients who had CABG surgery reported that patients who followed an early mobilization protocol walked more, stayed less time in the intensive care unit, and recommended the routine application of early mobilization protocols. In a study on patients who underwent total knee replacement surgery, it was found that starting mobilization one day before the surgical intervention was effective in increasing patients' postoperative mobility levels.[23] When these results are evaluated, it can be said that the use of walking aids provides support for movement during mobilization, increases the mobility level of patients, and enables them to mobilize independently. Additionally, the assessment results conducted by observers who evaluated the mobility levels of patients during mobilization also support that the use of walking aids helps to increase patients' mobility levels and reduce their dependence.

Strengths and Limitations

The most important strength of the study is that patient mobility levels were evaluated by three independent observers. This ensured that the mobility status of the patients was assessed not only through individual evaluations but also through independent observations, enhancing the objectivity and reliability of the findings.

There are some limitations in the study. Firstly, the patient population is limited to those undergoing open CABG surgery in a state hospital located in a city in Türkiye, which restricts the generalizability of the results to all patients. Secondly, the baseline mobility status of the patients in both groups was not evaluated before the surgery, and their mobility levels were assessed and compared based on their initial mobilization status. In future studies, we recommend evaluating the mobility and dependence/independence status of patients before surgery and planning studies in a cross-over design if appropriate.

It is believed that the use of practical and clinically appropriate walking aids in the mobilization process of postoperative patients contributes significantly to reducing pain during mobilization and decreasing dependency levels, thus increasing mobility levels. However, safety risk factors related to the use of walking aids were not investigated within the scope of this study. Therefore, we recommend that future studies integrate the use of walking aids into patient mobilization processes and examine the outcomes concerning maintaining patient safety.

Conclusion

The results of this study suggest that the use of walking aids is effective in reducing pain and difficulty levels during the postoperative out-of-bed mobilizations of patients who underwent open CABG surgery. Using walking aids may be a practical and easy way for both patients and healthcare professionals to mobilize patients and prevent dependency. Therefore, we recommend the use of walking aids to reduce pain and increase mobility during the mobilization of patients who have undergone open CABG surgery. Future qualitative studies should explore the experiences of both patients and healthcare professionals regarding mobilizing patients with the use of walking aids, as well as examine the safety risk factors associated with their use.

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