

Cardiovascular Intensive Care Unit Nurses' Perceptions of the Factors Affecting, Barriers to, and Facilitators of Early Mobilization

Abstract

Background: Although early mobilization has well-documented benefits for patients in intensive care units, it is not implemented as frequently as recommended. Previous studies have identified patient-related factors, time constraints, and inadequate staffing as barriers to the early mobilization of cardiovascular intensive care unit (CICU) patients.

Aim: This study aimed to explore CICU nurses' perceptions of the factors affecting, barriers to, and facilitators of early mobilization in CICU patients.

Methods: A descriptive qualitative study design was employed. Seven CICU nurses were recruited using purposive sampling. Data were collected through semi-structured interviews. Audio-recorded interviews were transcribed verbatim and analyzed using qualitative content analysis. Codes were generated from the transcripts and subsequently organized into categories and themes.

Results: Participants reported that early mobilization is beneficial for CICU patients and should be prioritized according to each patient's clinical condition. Three themes and seven categories emerged: factors affecting early mobilization, barriers to early mobilization, and facilitators of early mobilization. Factors affecting mobilization included patient-related factors (hemodynamic stability, pain, fear, and muscle strength), environmental factors (limited space and medical equipment), and personnel-related factors (staff shortages and lack of experience). Barriers were categorized as physical (e.g., hemodynamic instability and pain) and psychological (e.g., fear and lack of self-confidence). Facilitators included preoperative education and adequate staffing support.

Conclusion: The findings suggest that CICU nurses perceive patient-related factors, environmental conditions, and staffing issues as key influences on early mobilization. Improving staffing support, developing written protocols, and providing education may facilitate the implementation of early mobilization in CICUs.

Keywords: Barriers, cardiovascular surgery, early mobilization, facilitators, intensive care unit, qualitative study

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Introduction

Although early mobilization of intensive care unit (ICU) patients is considered safe, feasible, and beneficial, it is not implemented as frequently as recommended.¹⁻³ Prolonged immobilization is associated with reduced joint mobility, muscle weakness, pressure injuries, deep vein thrombosis (DVT), prolonged mechanical ventilation, cognitive impairment, and psychological disorders. In the cardiovascular system, these changes may manifest as tachycardia, orthostatic hypotension, reduced oxygen uptake, and decreased cardiac output. Reduced respiratory volume and impaired secretion clearance resulting from prolonged supine positioning increase the risk of atelectasis and pneumonia. Furthermore, decreased physical function and reduced quality of life are commonly experienced following an ICU stay.^{2,3}

Previous studies have demonstrated the benefits of early mobilization in mechanically ventilated patients.⁴⁻⁷ The literature recommends mobilizing ICU patients within the first 24 hours after surgery, provided that their vital signs are stable.⁸⁻¹⁰ However, some studies have reported that patients receiving mechanical ventilation are rarely mobilized, whereas patients who are not mechanically ventilated are still mobilized less frequently than recommended.¹¹⁻¹³ Reported barriers to early mobilization include patient-related factors (e.g., mechanical ventilation, sedation, vasopressor use, patient reluctance, and invasive interventions), insufficient time, inadequate staffing, poor communication among healthcare professionals, stress, and the absence of clear protocols.^{1,3,11,13}

Early mobilization is recognized as a key intervention in the care of critically ill patients because it reduces muscle weakness, shortens the duration of mechanical ventilation, promotes functional recovery, and decreases the length of hospital stay.¹⁴ In patients undergoing cardiovascular surgery, early mobilization is particularly important for preventing pulmonary complications, supporting cardiovascular function, and accelerating postoperative recovery.¹⁵ Despite its well-established clinical benefits, the implementation of early mobilization in intensive care units remains suboptimal.^{16,17} The literature indicates that several factors hinder its implementation, including concerns about hemodynamic instability, inadequate staffing, excessive workload, poor interdisciplinary communication, and the lack of standardized protocols.^{2,18}

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Although barriers to early mobilization have been investigated in various intensive care populations, evidence specific to patients undergoing cardiovascular surgery remains limited. The complex clinical characteristics of these patients, including invasive monitoring, vasoactive medication use, postoperative pain, and hemodynamic instability, may present unique challenges to early mobilization.¹⁹ Therefore, a better understanding of the factors influencing mobilization in this population is needed.

Although the benefits and safety of early mobilization have been well documented,^{20,21} studies examining barriers to its implementation in intensive care units are limited. Furthermore, most existing studies have employed descriptive or cross-sectional designs and have primarily focused on healthcare professionals' knowledge, attitudes, beliefs, and experiences.^{13,18–24} Consequently, there is a lack of qualitative evidence providing an in-depth understanding of the perceptions and factors influencing barriers to and facilitators of early mobilization.

Nurses play a central role in planning and implementing early mobilization; however, qualitative research examining the barriers and facilitators encountered by cardiovascular intensive care nurses remains scarce. To our knowledge, few qualitative studies have explored this issue in the Turkish context. Therefore, exploring nurses' clinical experiences and perceptions is essential for gaining a deeper understanding of the factors influencing early mobilization practices. Such knowledge may contribute to the development of targeted strategies and support the evidence-based implementation of early mobilization in cardiovascular intensive care units (CICUs).

Accordingly, this study aimed to explore CICU nurses' perceptions of the barriers to and facilitators of early mobilization in patients undergoing cardiovascular surgery.

Research Questions

The study addressed the following research questions:

1. What are the barriers to early mobilization of CICU patients as perceived by CICU nurses?
2. What are the facilitators of early mobilization of CICU patients as perceived by CICU nurses?

Materials and Methods

Research Design

This study employed a descriptive qualitative research design. A descriptive qualitative approach was selected because it enables the exploration of participants' perceptions and experiences within their natural settings.²⁵ Qualitative descriptive studies aim to provide a rich and straightforward description of a phenomenon as perceived by those experiencing it.²⁶ Therefore, this design was considered appropriate for exploring CICU nurses' perceptions of the barriers to and facilitators of the early mobilization of patients undergoing cardiovascular surgery and for gaining a deeper understanding of these factors. The study findings are reported in accordance with the Consolidated Criteria for Reporting Qualitative Research (COREQ).²⁷

Research Team

All researchers specialized in surgical nursing. The first and fourth researchers were professors of surgical nursing. The second and third researchers were PhD. All researchers had received training in or had prior experience with qualitative research methods. The qualitative interviews were conducted by the second and third researchers. Participants were provided with general information about the researchers, including their professional experience and educational backgrounds.

Participants

The study included seven CICU nurses from a single center who were recruited using purposive sampling. Consistent with the principles of qualitative research, purposive sampling, a non-probability sampling technique, was used to recruit participants who could provide rich and relevant information regarding the phenomenon under investigation.²⁸ The inclusion criteria were: [1] working in the CICUs; [2] having at least one year of experience caring for patients undergoing cardiovascular surgery; [3] being directly involved in the early mobilization of these patients; and [4] voluntarily agreeing to participate in the study. The exclusion criteria were: [1] having less than one year of CICU experience; [2] not being directly involved in the care and mobilization of patients undergoing cardiovascular surgery; [3] being on leave during the data collection period; or [4] declining to participate in the study.

Data collection continued until data saturation was achieved, defined as the point at which no new themes, categories, or insights emerged from the interviews.^{29,30} Interview transcription and preliminary coding were conducted concurrently with data collection. Data saturation was reached after the sixth interview, when recurring codes and themes began to emerge. One additional interview was conducted to confirm data saturation, resulting in a final sample of seven participants.

Data Collection Tools

The data collection form was developed by the researchers based on the relevant literature.^{1,2,3,18} It consisted of two sections: a personal information form and a semi-structured interview guide. The personal information form included five questions regarding participants' gender, age, educational level, years of professional experience, and years of experience in the CICU. The semi-structured interview guide included the following four questions to explore CICU nurses' perceptions of the barriers to and facilitators of the early mobilization of patients undergoing cardiovascular surgery:

1. Do you think that early mobilization after cardiovascular surgery is beneficial? If yes, what are these benefits?
2. Do you think there are factors that influence early mobilization after cardiovascular surgery? If yes, what are these factors?
3. In your opinion, what is the main barrier to the early mobilization of patients in the CICU?
4. If you could do something to facilitate the early mobilization process in your ICU, what would you do?

Procedures

Data were collected in December 2021. Nurses who agreed to participate were informed about the study and provided written informed consent. Following consent, participants received a data collection form containing four open-ended questions and were given one day to complete the form in writing. The researchers reviewed the written responses before conducting the interviews.

Subsequently, individual online semi-structured interviews were conducted based on the participants' written responses. During the interviews, participants were invited to elaborate on, clarify, and expand upon their written answers. Additional probing questions were used to explore emerging issues in greater depth and to obtain a more comprehensive understanding of participants' perceptions of the barriers to and facilitators of early mobilization. Each interview lasted approximately 20–30 minutes and was audio-recorded with the participants' permission. To ensure confidentiality, participants were assigned identification numbers ranging from N1 to N7. All interviews were conducted in Turkish to allow participants to express their views more comfortably and comprehensively.

Data Analysis

Data were analyzed using qualitative content analysis. Qualitative content analysis is an iterative process involving the concurrent collection and analysis of data and includes coding the data, developing categories and themes, organizing codes and themes, and interpreting the findings.^{31,32}

The interviews were conducted by the second and third researchers. Data analysis began by assigning a unique identification number to each participant to ensure confidentiality. Written responses to the open-ended questions and the verbatim interview transcripts were read repeatedly by the researchers to gain a comprehensive understanding of the data. Meaningful statements relevant to the study aim were identified and assigned initial codes. Coding was performed independently by all four researchers, and the resulting codes were compared and discussed throughout the analysis. Any discrepancies in coding or interpretation were resolved through discussion until consensus was reached.

Following the initial coding process, conceptually similar codes were grouped into subcategories and categories. The researchers then examined the relationships among the categories and developed broader themes reflecting CICU nurses' perceptions of the barriers to and facilitators of the early mobilization of patients undergoing cardiovascular surgery. Themes and categories were continuously reviewed, refined, and compared with the original data to ensure that they accurately represented participants' experiences and perceptions.

Table 1. Demographic characteristics of the participants

Participant	Gender	Age	Education	Professional experience (years)	CICU experience (years)
Nurse 1	Female	27	Bachelor's	4	4
Nurse 2	Female	24	Bachelor's	2	1.5
Nurse 3	Female	30	Associate degree	12	3
Nurse 4	Female	37	Bachelor's	14	14
Nurse 5	Female	27	Bachelor's	3.5	3
Nurse 6	Female	36	Bachelor's	15	7
Nurse 7	Male	26	Bachelor's	1.7	1.7

The interview transcripts were returned to the participants for member checking, and participants were asked to verify the accuracy of their statements. Throughout the analysis, participants' perspectives were carefully considered, and representative quotations were selected to illustrate the identified themes.

Reliability and Validity

The reliability and validity of the study were established by ensuring an adequate sample, involving multiple researchers in the coding process, clearly describing the research setting and the researchers' roles, maintaining impartiality throughout the study, consulting relevant literature and expert opinion, and providing a detailed description of the data collection and analysis procedures.³³⁻³⁵

Reliability was enhanced through independent analysis by all four researchers. Transferability was supported by providing a clear description of the data collection procedures, participant characteristics, and data analysis process. Dependability was strengthened by supporting each theme and category with representative participant quotations. Confirmability was achieved through independent coding by all researchers and repeated discussions until consensus was reached. The use of purposive sampling and the opportunity for participants to express their views freely further strengthened the authenticity of the findings.

Ethical Considerations

Ethical approval was obtained from Lokman Hekim Non-interventional Clinical Research Ethics Committee (Approval Number: 2021/118, Date: 23.09.2021). Participants were informed about the purpose of the study, and both written and verbal informed consent were obtained prior to data collection. Confidentiality was maintained throughout the study. The study was conducted in accordance with the principles of the Declaration of Helsinki.

Results

The mean age of the participants was 29.57±5.06 years. Most participants were female (85%) and held a bachelor's degree. The mean duration of professional experience and CICU experience was 7.45±5.92 and 4.88±4.41 years, respectively (Table 1). All participants agreed that early postoperative mobilization should be a priority for patients in the CICU.

Analysis of the interview data revealed three overarching themes: factors affecting early mobilization, barriers to early mobilization, and facilitators of early mobilization. These themes comprised seven subthemes: patient-related factors, environmental factors, personnel-related factors, physical barriers, psychological barriers, healthcare personnel-related facilitators, and education-related facilitators (Table 2).

Theme 1. Factors Affecting Early Mobilization

Analysis of the interview data revealed that nurses perceived the mobilization process to be influenced by patient-related factors, environmental conditions, and the availability of healthcare personnel. Among the patient-related factors, hemodynamic stability, pain, fear, disorientation, muscle strength, and the need for inotropic support were frequently identified. Participants emphasized that patients should undergo a comprehensive assessment before mobilization, particularly with respect to vital signs, oxygenation status, and mental status. Pain associated with major cardiac surgery and reduced physical strength were also perceived as important factors influencing successful mobilization.

Environmental conditions were identified as another important influence on the mobilization process. Participants reported that limited space for mobilization, unsuitable physical conditions within the unit, and the presence of multiple monitoring devices and drains often complicated mobilization efforts. In addition, personnel-related factors, including inadequate staffing levels and limited clinical experience among healthcare professionals, were perceived to negatively affect the planning and implementation of early mobilization.

"Disorientation, low pain tolerance, fear of adverse events, and unsuitable or inadequate space for mobilization may be factors affecting mobilization." (N1)

"When the number of patients is high and there is a shortage of nurses, mobilization remains a priority. A lack of support staff is also common and can prolong the process." (N5)

"The presence of multiple devices attached to the patient (e.g., drains)..." (N2)

"...the demand for rapid mobilization within a limited intensive care unit environment..." (N4)

Theme 2. Barriers to Early Mobilization

Participants identified both physical and psychological barriers to early mobilization in the CICU. Physical barriers primarily included hemodynamic instability, impaired oxygenation, postoperative pain, and the physiological consequences of major cardiovascular surgery. Participants emphasized that unstable vital signs and delayed clinical recovery frequently postponed mobilization, while severe pain associated with sternotomy and extensive surgical incisions reduced patients' ability and willingness to mobilize.

Psychological barriers were also perceived as important obstacles to mobilization. Participants reported that some patients were reluctant to participate in mobilization because of fear, low self-confidence, and concerns about their ability to perform physical activities safely. These psychological barriers often interacted with physical symptoms, further reducing patients' readiness and motivation for mobilization.

"Postoperative pain and patients' reluctance to participate in mobilization are the primary barriers to mobilization in CICU patients." (N2)

"A lack of self-confidence and the belief that they are unable to perform the activity may negatively affect the patient's mobilization process." (N3)

"Cardiovascular surgery, postoperative vital signs, and low cardiac output are the main obstacles." (N6)

"The main barrier is the severe pain associated with the surgical site (sternum), which is highly pain-sensitive, as well as the significant pain resulting from large surgical incisions." (N7)

Theme 3. Facilitators of Early Mobilization

Participants identified adequate staffing and preoperative education as the primary facilitators of early mobilization. Many participants suggested increasing the num-

Table 2. Representative participant quotations regarding the barriers to and facilitators of early mobilization in patients in the cardiovascular intensive care unit (CICU)

Theme	Subthemes	Codes	Representative participant quotations		
Factors affecting early mobilization	Patient-related factors	Fear	<i>"Disorientation, low pain tolerance, fear of adverse events, and unsuitable or inadequate space for mobilization may be factors affecting mobilization."</i> [N1] <i>"The patient can be mobilized to a standing position once blood pressure, heart rate, and oxygen saturation return to normal levels."</i> [N4] <i>"If the patient requires inotropic support after surgery... mobility may be restricted because of severe pain associated with the location and extent of the surgical incision."</i> [N2] <i>"A low pain threshold and insufficient physical strength may hinder the patient's mobilization process."</i> [N5] <i>"The patient's overall condition following cardiac surgery provides important insight into readiness for early mobilization. In particular, vital signs and mental status should be carefully assessed before assisting the patient to stand."</i> [N7]		
		Pain			
		Hemodynamic status			
		Disorientation			
		Inotropic support			
		Major surgery			
		Muscle strength			
	Environmental factors	Limited mobilization space	<i>"An unsuitable floor surface and inadequate space for mobilization..."</i> [N1]		
		Unsuitable floor conditions	<i>"The presence of multiple devices attached to the patient (e.g., drains)..."</i> [N2]		
		Attached monitoring devices	<i>"...the demand for rapid mobilization within a limited intensive care unit environment..."</i> [N4] <i>"...for example, the floor should be dry, clean, and non-slip, and adequate lighting should be provided..."</i> [N7]		
Personnel-related factors	Inadequate staffing	<i>"...an insufficient number of healthcare personnel..."</i> [N1]			
	Inexperienced and inadequately trained healthcare personnel	<i>"When the number of patients is high and there is a shortage of nurses, mobilization remains a priority. A lack of support staff can also prolong the process."</i> [N5] <i>"...the experience of healthcare personnel is very important because planning errors may occur..."</i> [N2] <i>"...inexperienced healthcare personnel are an important concern..."</i> [N3]			
		Barriers to early mobilization	Physical barriers	Hemodynamic instability Pain	<i>"Cardiovascular surgery, postoperative vital signs, and low cardiac output are the main obstacles."</i> [N6] <i>"The main barrier is the severe pain associated with the sternotomy site, which is highly sensitive, as well as the significant pain caused by the large surgical incision."</i> [N7] <i>"...the patient's unsuitability for mobilization (hypotension, poor oxygenation, pain)..."</i> [N5]
					Psychological barriers
Facilitators of early mobilization	Healthcare personnel-related facilitators	Improved nurse-to-patient ratio	<i>"...I would like to increase the number of healthcare personnel..."</i> [N1]		
			Increasing the number of nursing and support staff	<i>"...I would increase the number of healthcare personnel on each shift..."</i> [N4] <i>"I would like to ensure adequate nursing and support staff for the mobilization process in the intensive care unit where I work."</i> [N5] <i>"...I would reduce the number of patients assigned to each nurse and increase the number of support personnel..."</i> [N6]	
		Education-related facilitators	Preoperative education on mobilization	<i>"...I think patients do not have sufficient knowledge about mobilization. Effective preoperative education is one of the things I would like to improve."</i> [N2] <i>"Patients should receive preoperative education and follow-up from a healthcare professional specialized in cardiovascular surgery, such as a nurse or physiotherapist..."</i> [N4]	

ber of healthcare professionals involved in patient care, improving nurse-to-patient ratios, and providing greater support from auxiliary personnel. They believed that adequate staffing would enable safer and more timely mobilization while reducing delays associated with heavy workloads and time constraints.

Preoperative education was also viewed as an important facilitator. Participants reported that patients often lacked sufficient knowledge about mobilization and suggested that structured education before surgery could improve patient cooperation and readiness. Some participants further recommended that preoperative education and postoperative follow-up should be provided by healthcare professionals with expertise in cardiovascular surgery, such as nurses or physiotherapists.

"...I think patients do not have sufficient knowledge about mobilization. Effective education before surgery is one of the things that I would like to improve." [N2]

"I would like to provide adequate nurse and support staff for the mobilization process in the intensive care unit where I work." [N5]

"...I would reduce the number of patients assigned to each nurse and increase the number of support personnel..." [N6]

Discussion

This qualitative study explored CICU nurses' perceptions of the factors affecting, barriers to, and facilitators of early mobilization in patients undergoing cardiovascular surgery. Previous studies have demonstrated the beneficial effects of early mobilization on respiratory, cardiovascular, musculoskeletal, and psychological outcomes.⁴⁻⁷ Despite the growing body of evidence supporting the safety, feasibility, and effectiveness of early mobilization, its implementation in intensive care settings remains suboptimal.¹³ Previous studies investigating barriers and facilitators to early mobilization have primarily focused on patient-related factors.^{2,3} According to the literature, mechanical ventilation, sedation, vasoactive medication use, and hemodynamic instability are among the most frequently reported patient-related barriers.³⁶ Consistent with these findings, CICU nurses in the present study identified patient-related factors, particularly pain, fear, and hemodynamic instability, as the primary barriers to early mobilization. Patients in CICUs commonly experience hemodynamic fluctuations,

cardiac rhythm disturbances, and require multiple invasive monitoring devices during the early postoperative period. Consequently, nurses tend to exercise greater caution regarding potential cardiovascular complications during mobilization.

Pain was another major barrier identified by the participants, which is consistent with the nature of cardiovascular surgery.³⁷ Median sternotomy and the presence of chest tubes can substantially limit physical movement and increase discomfort.³⁸ In addition to restricting movement physically, sternotomy incisions and chest tubes may also contribute to psychological fear and insecurity. Such fears may reduce patients' willingness to participate in mobilization and, when combined with concerns about postoperative complications, may lead to prolonged inactivity.³⁹ Furthermore, patients' confidence in their own abilities, as well as their trust in healthcare professionals, may directly influence their willingness to participate in mobilization. Consequently, even patients who are physiologically ready for mobilization may be reluctant to engage in physical activity.

In addition to patient-related barriers, participants identified several organizational barriers that hinder early mobilization. These included inadequate staffing, the absence of structured early mobilization programs, and insufficient training of healthcare professionals.² Previous studies have similarly reported limited time and inadequate staffing as major barriers to early mobilization in intensive care units.^{11,22} Heavy nursing workloads often reduce the time available for mobilization activities.⁴⁰ This finding may reflect both a limited organizational emphasis on early mobilization and insufficient institutional support. Furthermore, inadequate education regarding early mobilization may prevent healthcare professionals from developing the knowledge and confidence required for effective implementation.⁴¹ As a result, mobilization may be delayed because of uncertainty and concerns about patient safety. These findings suggest that improving staffing levels, providing competency-based education, and promoting interdisciplinary collaboration are essential organizational strategies for enhancing early mobilization practices in intensive care settings.

Another important factor influencing mobilization is organizational culture. Institutions that do not prioritize or actively support early mobilization may negatively influence both healthcare professionals' attitudes and patients' participation.² Without a shared understanding of the importance of early mobilization, interdisciplinary collaboration may be weakened. Likewise, when patients are not encouraged to participate actively in the mobilization process, their motivation may decline, adversely affecting rehabilitation outcomes. Therefore, organizational commitment, supportive leadership, and effective education programs are critical components for fostering a culture that promotes early mobilization.

Successful implementation of early mobilization requires a comprehensive, multidisciplinary approach. Key strategies include improving interdisciplinary collaboration, developing and implementing standardized protocols, and establishing clear inclusion and exclusion criteria for mobilization.² Improving nurse-to-patient ratios would allow healthcare professionals sufficient time and resources to perform mobilization safely. Additionally, healthcare professionals should receive systematic education on the principles of early mobilization, mobilization techniques, and patient safety.³⁶ Standardized protocols and effective interdisciplinary teamwork may improve consistency and quality of care. Providing patients with preoperative education about the mobilization process and offering psychological support may help reduce fear and anxiety. Finally, regular assessment of patients' readiness for mobilization would facilitate individualized care plans and may enhance the effectiveness of mobilization interventions.

Overall, the findings indicate that barriers to early mobilization extend beyond individual patient characteristics and encompass broader organizational factors, including institutional culture, staffing, education, and resource management. Therefore, improving early mobilization requires not only increasing staffing levels but also implementing comprehensive organizational policies that promote cultural and structural change.

Limitations

This study has several limitations. First, participants may not have recalled or reported all of their experiences during the interviews, and additional perspectives may therefore remain unexplored. Second, the study was conducted at a single center, which may limit the transferability of the findings to other CICU settings. Third, the relatively small sample size limits the representativeness of the findings and restricts their generalizability.

Conclusion

Although CICU nurses recognized the importance and benefits of early mobilization, they identified several patient-, nurse-, and organizational-level barriers that limited its routine implementation. Hemodynamic instability, safety concerns, insufficient staffing, heavy workloads, and the lack of standardized mobilization protocols were the most frequently reported challenges. Participants also emphasized that multidisciplinary collaboration, evidence-based written protocols, adequate staffing, and regular education and training would facilitate the successful implementation of early mobilization. Addressing these barriers may improve the consistency and safety of early mobilization practices and contribute to better postoperative recovery and patient outcomes in CICUs.

Ethics Committee Approval: The study was approved by the Lokman Hekim Non-interventional Clinical Research Ethics Committee [Approval Number: 2021/118, Date: 23.09.2021].

Informed Consent: Written informed consent was obtained from the participants.

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