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Position Change and Early Ambulation Post-Trans-Femoral Coronary Angiography: A Systematic Review

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ABSTRACT

Background: Trans-femoral coronary angiography (TFCA) is a key diagnostic procedure for assessing coronary artery disease. Post-procedural care, particularly early ambulation and structured position changes is essential to minimize complications and enhance recovery. While prolonged bed rest has traditionally been recommended, emerging evidence suggests that early mobilization may improve patient comfort and reduce hospital stays. However, inconsistencies in clinical guidelines necessitate a systematic evaluation of its safety and efficacy.

Aim: This systematic review is aiming the impact of early ambulation and position changes on pain reduction, vascular complications, and patient recovery outcomes post-TFCA.

Method: Following PRISMA guidelines, we searched PubMed, Scopus, Web of Science, Cochrane Library, and Embase, including clinical trial registries. RCTs and quasi-experimental studies meeting predefined criteria were included. Risk of bias was assessed using RoB 2 for RCTs and the JBI Critical Appraisal Checklist for quasi-experimental studies.

Results: Five studies (n=556) were included. Early ambulation and position changes significantly reduced pain, particularly between the 2nd and 8th hours post-procedure, and improved patient comfort while reducing pain medication dependence. No significant increase in vascular complications (hematoma, hemorrhage, thrombosis) was reported. Some studies indicated a lower incidence of urinary retention in the intervention group.

Conclusion: Early ambulation and position changes post-TFCA are safe and effective, reducing pain and improving recovery without increasing complications. Findings support standardized mobility protocols to optimize post-procedural care, warranting further large-scale RCTs for broader implementation.

INTRODUCTION

Trans-femoral coronary angiography (TFCA) is a critical diagnostic procedure employed to visualize the coronary arteries and assess cardiovascular anomalies and disease states(1). This minimally invasive technique involves the insertion of a catheter into the femoral artery, providing access to the heart for the purpose of diagnostic imaging(2). As TFCA remains a cornerstone in the diagnosis and management of coronary artery disease, the procedure's success not only hinges on the visualization capabilities and the expertise of the healthcare professionals but also significantly on the post-procedural care provided to the patient(3).

Post-procedural care after TFCA is crucial for minimizing complications such as bleeding, hematoma formation, and arterial occlusion(4–6). Historically, patients were required to lie flat for several hours following the procedure to ensure hemostasis and prevent complications at the catheter insertion site. Recent advancements and research, however, suggest that early ambulation—defined as the act of walking or moving shortly after the procedure—may be beneficial. This practice is supported by the notion that early mobility can reduce hospital stay lengths, enhance patient comfort, and possibly decrease the incidence of vascular complications(7–9).

The practice of early ambulation must be carefully balanced with appropriate position changes to manage potential risks effectively. Position changes, involving adjustments from supine to sitting or standing positions, play a pivotal role in facilitating early ambulation(10,11). These positional adjustments help in assessing the patient's tolerance to activity post-procedure and are critical in promoting blood flow dynamics, thus potentially reducing the risk of thrombosis and speeding up recovery time(12–16).

Despite the apparent benefits, the protocols for position changes and the timing of ambulation post-TFCA vary widely across institutions and are often based on the discretion of the clinical team. This variability underscores the need for systematic evaluation to establish evidence-based guidelines that optimize patient outcomes while ensuring safety. The systematic review aims to collate and synthesize existing research on the impact of position change followed by early ambulation post-TFCA, to provide a clearer understanding and guidance on best practices in post-procedural care. This is essential not only for improving

patient outcomes but also for standardizing care protocols in clinical settings globally.

Rationale for this Review Paper

The systematic review on position changes and early ambulation after trans-femoral coronary angiography (TFCA) is necessary due to significant gaps and inconsistencies in existing research and clinical practices. Current studies vary in their methodologies, patient groups, and post-procedural care protocols, making it difficult to establish universal guidelines. Additionally, there is a lack of detailed analysis on how patient-specific factors like age, health conditions, and medication impact outcomes. Most research focuses only on immediate physical outcomes, with little information on long-term effects, patient-reported outcomes, or economic implications. This review aims to consolidate existing data to support more standardized and effective clinical guidelines, enhancing patient care and optimizing resource use in healthcare settings globally.

Objectives

This study aims to evaluate the effectiveness of early ambulation and assess the impact of position changes in post-procedural care.

MATERIAL AND METHODOLOGY

This systematic review was registered with PROSPERO, the international prospective register of systematic reviews. The registration number is CRD42024509530. We have prepared the present study according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement.

Search strategy

Database Selection:

Our search strategy for this systematic review included a comprehensive review of key bibliographic databases such as PubMed, Scopus, Web of Science, Cochrane Library, and Embase. This was complemented by searches in major clinical trial registries including ClinicalTrials.gov, EU Clinical Trials Register, WHO ICTRP, and regional registries like ANZCTR, ChiCTR, CRIS, and the Japan Primary Registries Network. Additional sources such as TrialScope, OpenTrials, and EudraCT were also utilized, broadening the scope and enhancing the credibility and comprehensiveness of our findings.

We strategically employed Medical Subject Headings (MeSH) to ensure comprehensive coverage of pertinent literature. The MeSH terms used were "Coronary Angiography," specifically targeting studies focused on trans-femoral access; "Ambulation, Early," to include research involving early movement post-procedure; and "Patient Positioning," aimed at capturing studies related to changes in patient positioning post-procedure. Additional keywords included "early ambulation," "post-procedural ambulation," "trans-femoral coronary angiography recovery," and "patient mobility after coronary angiography." Our Boolean operators effectively combined these terms: (("Coronary Angiography" [MeSH] AND "Patient Positioning" [MeSH]) AND ("Ambulation, Early" [MeSH] OR "early ambulation")). The search was refined to include only human studies, published in English to ensure relevance and consistency in data interpretation, focusing on contemporary practices and outcomes.

Selection Criteria

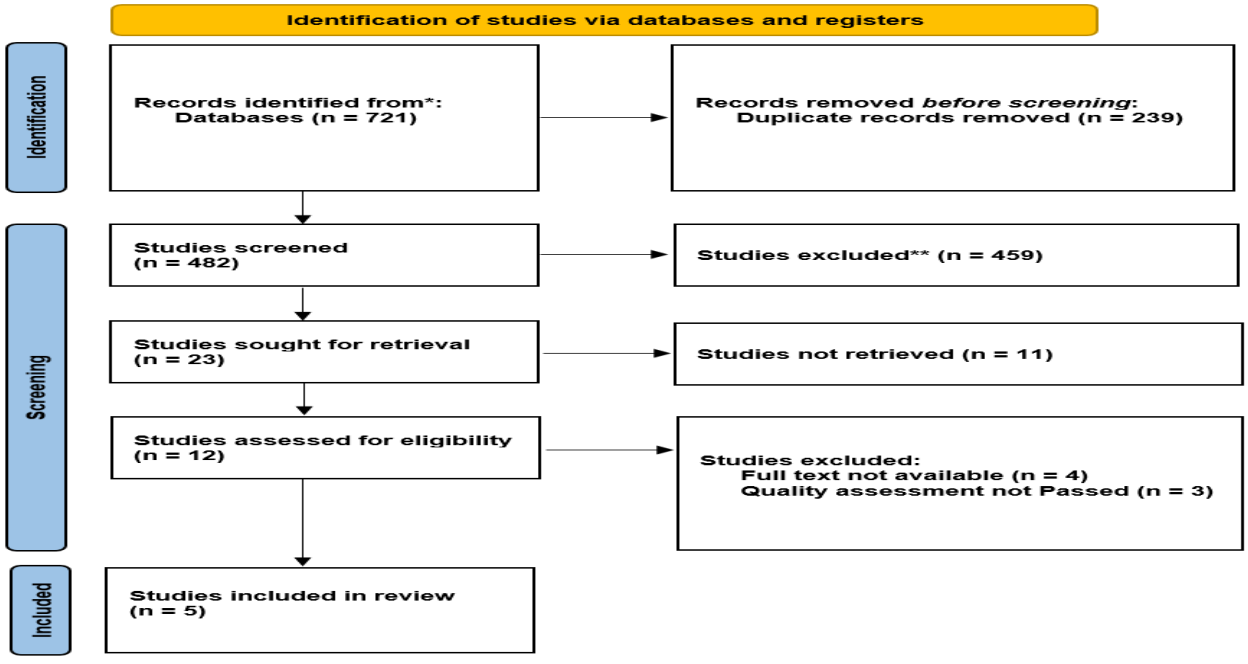
The inclusion criteria for the study are defined as follows: adult patients undergoing trans-femoral coronary angiography; interventions involving early ambulation or specific position changes post-procedure; and studies that assess outcomes related to vascular complications, patient comfort, and recovery metrics. Only experimental studies conducted after 2015 are included. The exclusion criteria include studies involving non-trans-femoral access routes, pediatric patients, or those focusing solely on procedural outcomes without examining post-procedural care.

Data Extraction Methodology

In our systematic review, we employed a meticulous data extraction strategy tailored for high-quality research synthesis. Utilizing an Excel spreadsheet, we systematically collated essential data from each included study. This data encompassed bibliographic details (Title, Author, Year of Publication), which provide context and reference for the analysis. We captured demographic specifics, such as the mean age of participants, offering insights into the age-related dynamics within the study cohorts. Key procedural and post-procedural markers, including time to ambulation, type of position changes, and any reported complications or interventions, were recorded to evaluate the efficacy and safety of early ambulation and position changes.

Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) Flowchart

Figure 1 presents the flowchart depicting the systematic process of study selection employed in the systematic review, adhering to PRISMA 2020 guidelines. The process began with the identification of 721 records from a variety of databases and registers. Duplicate entries amounting to 239 were removed, which narrowed down the pool to 482 records. These were then rigorously screened, leading to the exclusion of 459 records that did not meet the preliminary inclusion criteria. The remaining 23 records were sought for retrieval; however, challenges such as accessibility issues prevented the retrieval of 11 reports.



**Studies were excluded due to exclusion criteria.

Figure 1 Showing PRISMA flow chart for study selection.

The full texts of the 12 successfully retrieved reports were further assessed for eligibility, which resulted in the exclusion of an additional 7 studies—4 due to the unavailability of the full text and 3 due to failing the quality assessment criteria. Ultimately, only 5 studies passed all the stringent criteria for inclusion, ensuring that the review consisted of high-quality and relevant studies. This meticulous selection process exemplifies the rigorous standards typically employed to ensure the integrity and validity of systematic reviews.

Risk of Bias Assessment

Two independent assessors evaluated the quality of the studies included in our review, employing different assessment tools based on the study design. For randomized controlled trials (RCTs), the Risk of Bias 2 (RoB 2)(17) tool was used, and for quasi-experimental studies, the Joanna Briggs Institute (JBI)(18) Critical Appraisal Checklist was applied. The visual summary presented in **Figure 2** illustrates the risk of bias assessment across different studies or study outcomes. Each column represents different studies or distinct outcomes within a study, with green circles containing plus signs indicating a low risk of bias across all assessed domains. The uniform presence of green circles suggests consistency in the methodological rigor of the studies, reinforcing the reliability of their findings.

RoB 2 assesses various bias domains, including the randomization process, deviations from intended interventions, missing outcome data, measurement of outcomes, and selection of reported results. The overall evaluation in **Figure 2** indicates that the studies demonstrate a low risk of bias, ensuring the validity of their conclusions. This systematic assessment confirms that the included studies are methodologically sound and provide strong evidence for the review, supporting the robustness of the findings and their implications for clinical practice.

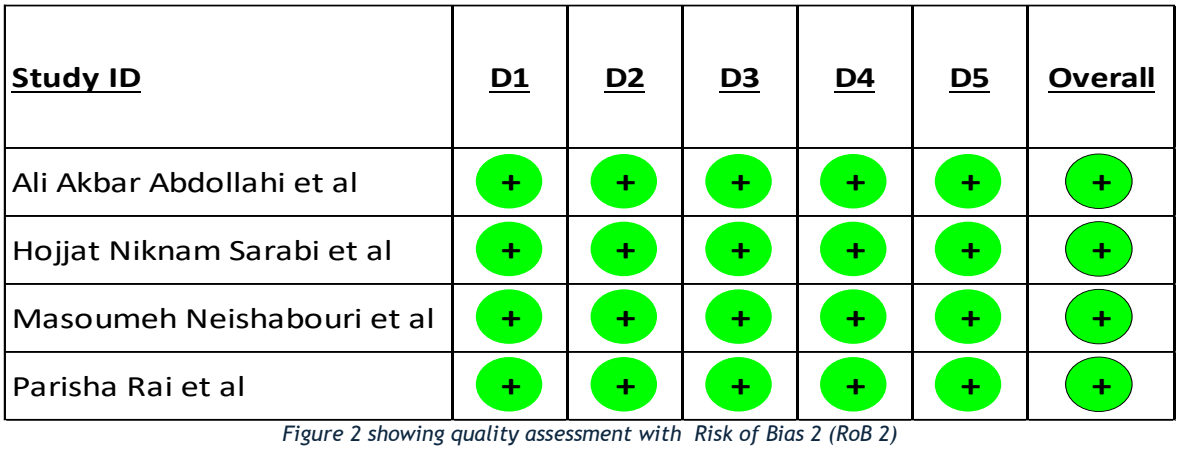


Figure 2 showing quality assessment with Risk of Bias 2 (RoB 2)

Table 1 provides a structured assessment of quasi-experimental studies using the JBI Critical Appraisal Checklist. The study meticulously assesses the impact of early ambulation on patients following transfemoral cerebral angiography. The key strengths noted include clear definitions of cause and effect, comparability of participants across treatment groups, and the rigorous application of standardized outcome measurements. Additionally, the study employs appropriate statistical analyses to ensure the reliability of its findings.

Criteria	Response	Justification
1. Clarity of cause and effect	Yes	The early ambulation protocol is clearly identified as the cause; pain reduction and vascular complications as effects.
2. Similarity of participants in comparisons	Yes	Experimental and control groups were comparable at baseline.
3. Similar treatment/care, excluding the intervention	Yes	Both groups received similar care, differing only in the ambulation protocol.
4. Presence of a control group	Yes	A control group followed traditional post-procedure care protocols.
5. Multiple measurements of the outcome pre and post intervention	Yes	Hourly measurements post-procedure for 8 hours provided a robust analysis.
6. Completeness of follow-up	Yes	Complete follow-up was reported for all participants during the monitored period.
7. Consistency in outcome measurement across groups	Yes	Standardized methods used across groups for assessing outcomes.
8. Reliability of outcome measurement	Yes	Validated tools like the Numeric Rating Scale for pain ensured reliable assessments.
9. Appropriateness of statistical analysis	Yes	Employed robust statistical analyses suitable for the study design and data types.

Overall Appraisal	Include	Low risk of bias, providing reliable evidence suitable for inclusion in systematic review.
Comments		Effective use of quasi-experimental design supports the benefits of early ambulation without increasing risks.

Table 1 JBI Critical Appraisal Summary for Hao Liang et al. Study for Quality Assessment(18)

Overall, the study presents a low risk of bias and provides reliable evidence that supports the practice of early ambulation in clinical settings post-angiography. This makes it a valuable addition to systematic reviews focusing on post-procedural care enhancements.

RESULT

Demographic Characteristics of Included Studies

The demographic characteristics of the study participants from the included trials are presented in Table 2. The studies varied in sample size, age distribution, and gender composition across control and experimental groups. The total sample size across all five studies was 556 participants, with individual sample sizes ranging from 70 to 214 participants.

Age Distribution:

The mean age of participants in the studies ranged between 55.4 and 67 years, reflecting a population primarily comprising middle-aged and elderly individuals undergoing transfemoral coronary angiography (TFA). Among the included studies, Hao Liang et al. reported median age values (Control: 67 years, range: 57 to 73; Experimental: 63 years, range: 54 to 69), whereas the remaining studies provided mean and standard deviation (SD) values. Hojjat Niknam Sarabi et al. had the highest mean age in the control group (60.97 ± 14.23 years) and the experimental group (63.44 ± 9.87 years), while Ali Akbar Abdollahi et al. reported the lowest mean age values (55.4 ± 7.81 years in the control group and 55.7 ± 7.87 years in the experimental group)(19–23).

Gender Distribution:

The gender distribution across studies was relatively balanced, with both control and experimental groups including male (M) and female (F) participants. The Hao Liang et al. study had the largest sample size (214 participants) and the highest number of male participants in both groups (Control: 67 males, Experimental: 60 males). In contrast, the Parisha Rai et al. study had the smallest number of female participants in the control group (9 females). The gender distribution across the control and interventional groups shows a relatively balanced representation, with male participants comprising 62.23% in the control group and 60.07% in the interventional group. Conversely, female participants account for 37.77% in the control group and 39.03% in the interventional group. The slight variation in gender distribution between the groups is minimal, suggesting that the study maintains comparability between groups, reducing potential gender-related confounding effects(19–23). This balanced distribution ensures that the results remain generalizable across both male and female populations.

Comparability Across Studies:

Baseline comparability in gender and age across control and experimental groups was maintained across all studies, ensuring the validity of comparisons between intervention and non-intervention groups. The relatively uniform distribution of male and female participants across studies minimizes potential gender-related confounding effects. Similarly, the close alignment in age distributions within each study further strengthens the internal validity of the findings.

Table 2: Selected Demographic Characteristics of the included study

Research Study	Sample Size	Age, Mean (SD)		Gender Control Group		Gender Experimental Group	
		Control Group	Experimental Group	M	F	M	F
Hojjat Niknam Sarabi et. al.(19)	72	60.97 ± 14.23	63.44 ± 9.87	20	16	22	14
Parisha Rai et. al.(23)	80	56.7 ± 14.16	52.92 ± 13.63	31	9	26	14
Ali Akbar Abdollahi et. al.(22)	70	55.4 ± 7.81	55.7 ± 7.87	19	16	19	16
Hao Liang et. al.(20)	214	67 Median age (range 57 to 73)	63 Median age (range 54 to 69)	67	40	60	47
Masoumeh Neishabouri et. al.(21)	120	56.15±12.20	55.49±11.42	36	24	40	20

Table 2 Showing Selected Demographic Characteristics of the included study

*M = Male & F= Female

Characteristics of Included Studies

The included studies were assessed based on their methodology, clinical profile, monitored complications, follow-up duration, primary quantitative outcomes, and secondary effects (Table 3). A total of five studies were reviewed, comprising four randomized controlled trials (RCTs) and one quasi-experimental study. The studies were conducted across three countries: Iran (three studies), India (one study), and China (one study). The publication years ranged from 2015 to 2024, covering a mix of recent and past investigations on early ambulation and position change following transfemoral coronary angiography (TFA).

Impact of Position Change and Early Ambulation on Pain Reduction Post-Transfemoral Coronary Angiography

The findings on pain reduction across the included studies are summarized in Table 3. Pain intensity was assessed at different time points post-transfemoral coronary angiography (TFA), with variations in the effectiveness of position change and early ambulation interventions. These interventions contributed to significant reductions in pain, particularly in the groin, back, and leg regions, with varying degrees of effectiveness over time.

Research Study	Findings on Pain Reduction
Ali Akbar Abdollahi et al.	Significant reduction in pain at the 4th hour for the group with combined position changes and early ambulation, showing the lowest pain scores compared to other groups.
Hao Ling et al.	Intergroup differences noted in NRS scores for low back pain at the 4th to 8th hours post-TFA, with experimental groups showing lower scores. No significant differences in leg pain until after the 4th hour.
Hojjat Niknam Sarabi et al.	Significant reduction in groin, back, and leg pain from the 2nd to the 6th hour post-TFA in the experimental group. The control group showed consistently higher pain scores.
Masoumeh Neishabouri et al.	Hourly position changes led to significantly less pain immediately post-procedure and at the point of highest pain severity in the intervention group.
Parisha Rai et al.	Significant reduction in back pain at the 6th hour in the experimental group due to position changes and early ambulation.

Table 3 Showing Pain Reduction Following Position Change and Early Ambulation Post-Transfemoral Coronary Angiography(19-23)

Pain reduction was observed as early as the 2nd hour post-procedure, with intervention groups consistently showing lower pain scores compared to control groups. Notable reductions were reported in the 4th to 8th hours, with early ambulation and position changes leading to progressive pain relief. Some studies indicated a delayed response in leg pain relief, with significant differences appearing only after the 4th hour, while back and groin pain showed earlier reductions.

Hourly position changes immediately post-procedure was associated with lower peak pain intensity, reinforcing their role in improving post-procedural comfort. The overall findings suggest that early ambulation and structured position changes play a crucial role in post-procedural pain management, effectively minimizing discomfort while maintaining safety. The greatest differences in pain relief were observed between the 2nd and 8th hours post-procedure, emphasizing the importance of mobilization strategies in enhancing patient recovery.

Complications and Follow-Up Duration

Complications related to vascular events (hematoma, hemorrhage, arterial thrombosis) and urinary retention were monitored across all studies (shown in table 4). Hojjat Niknam Sarabi et al(19). and Hao Liang et al.(20) reported no significant differences in vascular complications between the control and intervention groups, with the latter study noting a smaller area of ecchymosis in the intervention group, suggesting improved hemostasis with early ambulation. Ali Akbar Abdollahi et al.(22) reported a lower incidence of urinary retention in the experimental group, which may be associated with increased mobility post-procedure.

The follow-up duration varied among studies, with most tracking patients between 6 and 24 hours post-procedure. Hojjat Niknam Sarabi et al.(19) monitored patients for 6 hours, while Hao Liang et al.(20) followed participants for 8 hours. The remaining studies extended their monitoring periods to 24 hours, providing a longer observation window for delayed vascular and pain-related complications.

Intervention and Comparator Treatments

The included studies employed early ambulation and position changes as intervention strategies following transfemoral coronary angiography (TFA), with traditional post-procedural bed rest serving as the comparator treatment. Studies such as those conducted by Hojjat Niknam Sarabi et al.(19) and Parisha Rai et al.(23) implemented early mobilization and structured position changes, assessing their impact on pain management, vascular complications, and overall patient recovery (Table 4). The experimental groups consistently demonstrated improved outcomes, indicating that early ambulation may serve as a safe and effective alternative to prolonged bed rest in post-TFA management.

Table 4: Characteristics of the included study

Author Name	Research Design	Year	Clinical Profile	Complications Monitored	Follow-Up Duration	Findings on Patient Outcomes	Country
Hojjat Niknam Sarabi et al	RCT	2021	Patients undergoing transfemoral coronary angiography	Hematoma, hemorrhage, and urinary retention assessed; no significant differences found between groups	Immediate to 6 hours post-procedure	Significant reduction in pain in the intervention	Iran
Parisha Rai et al	RCT	2019	Patients undergoing coronary angiography via femoral access	No significant difference in the incidence of vascular complications between the control and experimental groups	Immediate to 24 hours post-procedure	Early ambulation and position changes effectively decreased back pain, enhanced comfort, and reduced fatigue without increasing vascular complications.	India
Ali Akbar Abdollahi et al	RCT	2015	Patients undergoing coronary angiography	No vascular complications reported, Lower urinary retention in intervention groups.	Immediate to 24 hours post-procedure	Significant improvements in pain intensity and discomfort management, leading to enhanced patient comfort with less pain medication needed.	Iran
Hao Liang et al	Non-RCT	2024	Patients undergoing transfemoral cerebral angiography	No significant difference in vascular complications (bleeding, hematoma) between groups, significantly smaller area of ecchymosis in intervention group	Immediate to 8 hours post-procedure	Significant improvements in comfort and reduction in pain levels, contributing to effective reduction of discomfort and stabilized blood pressure.	China
Masoumeh Neishabouri et al	RCT	2019	Coronary angiography via the femoral artery	Primary: Back pain, vascular side effects (bleeding, hematoma, arterial thrombosis)	Immediate post-procedure and subsequent checks for back pain intensity and vascular side effects	Significant reduction in back pain intensity. Early mobilization allowed with hourly position changes during the first four hours of post-procedure.	Iran

Table 4 This table presents the characteristics of included studies.

*RCT: Randomized Controlled Trial & Non-RCT: Non-Randomized Study.(19–23)

Complications and Follow-Up Duration

Post-procedural complications were systematically monitored across studies, including hematoma, hemorrhage, arterial thrombosis, and urinary retention. Findings from Ali Akbar Abdollahi et al. and Hao Liang et al. indicate no significant increase in vascular complications with early ambulation, reinforcing the safety of the intervention. Additionally, the study by Masoumeh Neishabouri et al. reported no increase in vascular side effects in patients subjected to hourly position changes during the first four hours post-procedure. These results suggest that early mobility does not compromise vascular integrity and may facilitate hemodynamic stabilization in post-TFA patients.

Follow-up durations varied among studies, ranging from 6 to 24 hours post-procedure, ensuring adequate monitoring of immediate and delayed complications. The study by Hojjat Niknam Sarabi et al. followed patients for 6 hours, while Hao Liang et al. extended follow-up to 8 hours, capturing changes in pain intensity, comfort, and hemodynamic stability. Longer follow-up periods in studies such as Parisha Rai et al. and Ali Akbar Abdollahi et al. (both 24-hour follow-up studies) provided comprehensive assessments of procedural recovery and late-onset complications.

Patient Satisfaction

Pain intensity and patient satisfaction were among the primary quantitative outcomes assessed. Across all included studies, early ambulation and structured position changes led to significant pain reduction (Table 4). The experimental groups in Hojjat Niknam Sarabi et al. and Parisha Rai et al. reported notably lower pain scores compared to control groups, particularly in the back and leg regions. Additionally, Ali Akbar Abdollahi et al. demonstrated improvements in pain intensity and discomfort management, with patients in the intervention group requiring less pain medication post-procedure. The study by Hao Liang et al. emphasized that early mobilization contributed to enhanced patient comfort and reduced overall procedural discomfort, supporting the hypothesis that structured ambulation protocols may improve post-procedural recovery. These findings align with those of Masoumeh Neishabouri et al., where hourly position changes significantly reduced back pain intensity, without an increase in vascular complications.

Secondary Outcomes and Clinical Implications

Beyond pain reduction, the secondary outcomes highlight the broader clinical benefits of early ambulation. The findings from Hao Liang et al.(20) suggest that early ambulation effectively reduces discomfort and stabilizes blood pressure, which is a crucial factor in post-TFA recovery. Additionally, Masoumeh Neishabouri et al(21). demonstrated that early mobilization with controlled position changes did not lead to increased vascular complications, reinforcing its clinical feasibility and safety. Early ambulation was also associated with reduced fatigue and enhanced overall patient satisfaction, as noted in Parisha Rai et al.(23) Patients in the intervention groups across multiple studies reported better comfort, reduced reliance on pain medication, and an overall improved recovery experience, suggesting that early mobility enhances both subjective and objective recovery metrics.

DISCUSSION

The systematic review highlights the effectiveness and safety of early ambulation and position changes in enhancing recovery following trans-femoral coronary angiography (TFCA). This review has included studies by Hojjat Niknam Sarabi et al.(19), Parisha Rai(23) et al., Ali Akbar Abdollahi et al.(22), Hao Liang et al.(20), and Masoumeh Neishabouri et al.(21), each contributing valuable insights into the reduction of post-procedural pain and

improvement in patient comfort through early mobilization strategies. These interventions are pivotal not only in reducing hospital stay durations but also in enhancing patient satisfaction without increasing the incidence of vascular complications such as bleeding or hematoma formation.

The findings from these included studies are consistent with the broader literature on the topic, as seen in the works of Sulaiman Abubakar Sulaiman(13) and Jinyao Wang(24), which further corroborate the benefits of early ambulation in TFCA recovery protocols. Similar to our findings, these studies affirm that early mobility contributes significantly to patient recovery dynamics, including reduced pain levels and quicker return to normal activities, which aligns with the goals of modern post-operative care. Incorporating early mobilization and structured position changes post-TFCA shows a clear trend across multiple global studies towards improving clinical outcomes and patient experiences. These practices not only mitigate the typical discomfort associated with invasive procedures but also streamline the recovery process, showcasing a shift from traditional care methods that often involve prolonged bed rest and associated complications.

The study conducted by Earnestine Jenita E and Pushpakala(25) explored the impact of early ambulation versus late ambulation on patients who underwent transfemoral coronary procedures. This research highlights critical post-procedure care elements, focusing on the alleviation of back pain, urinary discomfort, and the minimization of vascular complications such as bleeding and hematoma formation. The findings revealed that early ambulation significantly reduced back pain levels and urinary discomfort compared to the control group, which adhered to traditional prolonged bed rest protocols. Notably, the reduction in discomfort was statistically significant, indicating that patients who were mobilized earlier experienced substantial relief from common post-procedural ailments. This aligns with the growing body of literature suggesting that reducing immobility periods after procedures can lead to improved patient outcomes and satisfaction. Despite the promising results, the review underscores the need for more uniform protocols across healthcare settings. This standardization is crucial for ensuring that the benefits of early ambulation and position changes can be reliably replicated and that patient care practices are optimized across different clinical environments.

This review substantiates the need for updating existing TFCA recovery protocols to incorporate early ambulation and strategic position changes. Implementing these practices not only augments patient outcomes but also resonates with modern healthcare objectives focused on minimizing procedural risks and enhancing operational efficiencies. To solidify these recommendations and refine post-procedural care guidelines, further longitudinal research and expanded randomized controlled trials are essential. Such studies will provide the robust evidence needed to standardize these practices across healthcare systems, ensuring optimal patient care and recovery following TFCA.

SIGNIFICANCE OF THE STUDY

Impact on Public Health Policies

The results of this study have significant implications for public health policy, particularly in the formulation of guidelines that govern post-procedural care for cardiac interventions. By integrating findings such as these into public health policy, health systems can adopt more effective strategies that not only improve patient outcomes but also promote more efficient use of healthcare resources. Policies that support early ambulation and structured position changes can set new standards for post-TFCA care, encouraging healthcare facilities nationwide to adopt these beneficial practices.

Clinical Practice

This study highlights critical insights for nursing clinical practice, emphasizing the active role nurses play in managing post-procedural care. By implementing early ambulation and position changes, nurses can directly influence the speed and quality of patient recovery following TFCA. Training and protocols can be developed to equip nursing staff with the skills and knowledge necessary to safely facilitate early mobility, ensuring that all patients benefit from the latest evidence-based practices. This proactive approach in nursing care can lead to enhanced patient outcomes and greater nurse-patient engagement during the recovery process.

Future Research Directions

The conclusions drawn from this study open several avenues for future research. Longitudinal studies are needed to evaluate the long-term benefits and potential risks associated with early ambulation and position changes following TFCA. Additionally, comparative studies across different demographic groups can provide deeper insights into how age, gender, and underlying health conditions might influence the effectiveness of early mobility protocols. Expanding research to include multi-center trials can also help to assess the applicability and scalability of these protocols in various healthcare settings, further supporting the push for standardized post-procedural care across the healthcare spectrum.

CONCLUSION

The systematic review strongly supports integrating early ambulation and position changes into post-procedural care for patients undergoing trans-femoral coronary angiography (TFCA). These practices significantly reduce pain and accelerate recovery, aligning with healthcare goals to enhance patient outcomes and efficiency. Given the compelling evidence, healthcare systems are encouraged to update their TFCA recovery protocols to include these interventions, promoting quicker recovery and more efficient resource use. Future research should focus on long-term effects and further refine these protocols to ensure broad implementation and standardization across healthcare settings.

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Conflict of Interest

There are no conflicts of interest to declare.

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