



Family Support and Patient Independence After Cardiac Catheterization: A Cross-Sectional Study

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Abstract

Cardiac catheterization is a common invasive procedure for diagnosing and treating coronary heart disease. Post-procedural independence is essential to support optimal recovery and prevent complications. Family support plays a critical role in facilitating self-care, motivation, and functional independence among patients after cardiac catheterization. This study aimed to examine the relationship between family support, age, sex, and patient independence after cardiac catheterization at the Cardiology Outpatient Clinic of Dr. Dradjat Prawiranegara Hospital, Serang, Indonesia. A cross-sectional design with 32 participants was used. Family Support Scale (FSS) and Lawton Instrumental Activities of Daily Living (IADL) were employed to measure family support and independence. Data were analyzed using Chi-square. The results showed that 62.5% of patients had high family support and 56.2% were independent. A significant association was found between family support and independence ($p = 0.021$), while age ($p = 0.317$) and sex ($p = 0.442$) showed no significant relationship. These findings highlight the importance of integrating family-centered care into post-catheterization rehabilitation.

Keywords: family support, independence, cardiac catheterization, rehabilitation, self-care

Dukungan Keluarga dan Kemandirian Pasien Setelah Kateterisasi Jantung: Studi Cross-Sectional

Abstrak

Kateterisasi jantung adalah prosedur invasif umum untuk mendiagnosis dan mengobati penyakit jantung koroner. Kemandirian pasca-prosedur sangat penting untuk mendukung pemulihan yang optimal dan mencegah komplikasi. Dukungan keluarga memainkan peran penting dalam memfasilitasi perawatan diri, motivasi, dan kemandirian fungsional di antara pasien setelah kateterisasi jantung. Penelitian ini bertujuan untuk mengkaji hubungan antara dukungan keluarga, usia, jenis kelamin, dan kemandirian pasien setelah kateterisasi jantung di Klinik Rawat Jalan Kardiologi RSUD Dr. Dradjat Prawiranegara, Serang, Indonesia. Desain cross-sectional dengan 32 peserta digunakan. Skala Dukungan Keluarga dan Lawton Instrumental Activities of Daily Living (IADL) digunakan untuk mengukur dukungan dan kemandirian keluarga. Data dianalisis menggunakan Chi-square. Hasilnya menunjukkan bahwa 62,5% pasien memiliki dukungan keluarga yang tinggi dan 56,2% mandiri. Hubungan yang signifikan ditemukan antara dukungan keluarga dan kemandirian ($p = 0,021$), sedangkan usia ($p = 0,317$) dan jenis kelamin ($p = 0,442$) tidak menunjukkan hubungan yang signifikan. Temuan ini menyoroti pentingnya mengintegrasikan perawatan yang berpusat pada keluarga ke dalam rehabilitasi pasca-kateterisasi.

Kata Kunci: dukungan keluarga, kemandirian, kateterisasi jantung, rehabilitasi, perawatan diri

Introduction

Cardiac catheterization is an invasive diagnostic and therapeutic procedure that often causes significant psychological distress for patients. Studies show that patients frequently experience anxiety related to the procedure, including fear of pain, uncertainty about results, and separation from family support systems, all of which can negatively impact physiological stability and recovery outcomes (Tambunan & Marbun, 2023). Pre-procedural anxiety has been documented to reach levels as high as 60–80% among cardiac patients and is associated with reduced comprehension of medical instructions and poorer overall coping capacity (Ababa et al., 2022).

Because emotional distress can interfere with adherence to treatment recommendations and heighten procedural risks, the presence of a supportive family environment becomes crucial. Emotional reassurance, informational support, and assistance in decision-making provided by family members can help patients feel more secure and reduce procedural anxiety, ultimately improving their readiness for catheterization (Acoba, 2024; Ho et al., 2022; Nouri et al., 2021).

Following the procedure, family support becomes even more essential as patients transition from hospital to home. Literature emphasizes that discharge planning for post-cardiac catheterization patients is often suboptimal, with many families lacking adequate knowledge about post-procedural care, risk monitoring, and lifestyle adjustments required for recovery (Fitriani et al., 2025). Studies also reveal that informal caregivers frequently possess poor knowledge and insufficient practices regarding discharge instructions, placing patients at risk of complications and non-adherence to therapy (Mohamed et al., 2024).

Given that many post-catheterization complications can arise at home, such as bleeding at the puncture site, medication non-adherence, and unmanaged lifestyle risk factors, strong family involvement becomes a key determinant of patient safety and functional recovery. Thus, family support is not merely complementary, it is an integral component of effective cardiac rehabilitation and long-term disease management.

This study aimed to analyze the correlation between family support and patient independence among post-catheterization patient.

Method

This was a quantitative analytic study using a cross-sectional design conducted at the Cardiology Outpatient Clinic. The target population consisted of all patients who had undergone cardiac catheterization within the last 6 months. The sample size of 32 participants was determined based on feasibility of data collection in the outpatient setting and the average monthly number of post-cardiac catheterization patients. A power analysis (medium effect size $w = 0.30$, $\alpha = 0.05$, power = 0.80) indicated that at least 34 participants were needed; however, 32 eligible patients were recruited through consecutive sampling as they attended the cardiology outpatient clinic for follow-up within 6 months after cardiac catheterization, based on inclusion criteria of age 30–59 years, family involvement in care, ability to communicate, and willingness to participate. All eligible patients during the data collection period were approached, informed about the study, and invited to participate voluntarily. Therefore, the final sample of 32 participants represents a slightly underpowered sample, which is acknowledged as a methodological limitation.

The Family Support Scale (FSS) was used to assess the level of support provided by family members across four dimensions: emotional support, informational support, instrumental support, and appraisal support. The total score was categorized into two levels, with scores greater than 46 indicating high family support, and scores below 46 indicating low family support. The instrument has demonstrated strong validity and reliability in previous studies and is widely used in clinical and community health research. The Lawton Instrumental Activities of Daily Living (IADL) Scale was employed to measure the functional independence of patients in performing daily activities. Scores were classified into two categories: a score greater than 7 indicated that the patient was independent, while a score below 7 reflected dependences. Similar to the FSS, the Lawton IADL scale has shown strong psychometric properties, with high validity and reliability reported in earlier research, making it a suitable tool for evaluating patient independence in post-procedural rehabilitation settings.

Data were processed using descriptive statistics and the Chi-square test to assess the



relationship between variables ($\alpha = 0.05$). All data analyzed in this study were obtained directly from respondents and reflect actual measurements based on validated instruments. This research has been declared to have obtained permission from the research ethics committee of Faletehan University, number 002676/Faletehan University/2025.

Result and Discussion

There was a significant association between family support and patient independence following cardiac catheterization, indicating that patients who received higher levels of family support were more likely to achieve functional independence. These findings are consistent with a growing body of evidence emphasizing the essential role of psychosocial and environmental factors in post-procedural recovery among cardiac patients.

Table 1. Demographic Characteristics (n = 32)

Variable	Category	N	%
Age	30–45 years	14	43.8
	46–59 years	18	56.2
Sex	Male	19	59.4
	Female	13	40.6

Table 1 presents the demographic characteristics of the 32 participants included in this study. The age distribution shows that a greater proportion of respondents were in the 46–59-year age group (56.2%) compared to those aged 30–45 years (43.8%). This indicates that middle-aged adults represented the majority of individuals undergoing cardiac catheterization and follow-up care in this setting, which aligns with epidemiological evidence that cardiovascular disease becomes more prevalent with increasing age.

Table 2. Family Support Level (n = 32)

Variable	Category	N	%
Family Support	High Support	20	62.5
	Low support	12	37.5

Table 2 shows that the majority of participants (62.5%) reported receiving high levels of family

support, while 37.5% experienced low support. This indicates that most patients had strong involvement from family members during their post-catheterization recovery. The predominance of high support suggests that family engagement is relatively robust within this population, which may positively influence rehabilitation, emotional well-being, and adherence to post-procedural care recommendations.

Table 3. Patient Independence (n = 32)

Variable	Category	N	%
Patient Independence	Independent	18	56.2
	Not independent	14	43.8

Table 3 shows that 56.2% of patients were categorized as independent, while 43.8% remained not independent following cardiac catheterization. This indicates that slightly more than half of the respondents had regained functional independence during the recovery period. However, the relatively high proportion of patients who were still not independent suggests that a considerable number of individuals continued to require support in performing daily activities, highlighting the importance of effective rehabilitation and family involvement in post-procedural care.

Table 4 demonstrates a significant association between family support and patient independence after cardiac catheterization ($p = 0.021$). Among patients who received high family support, 75% (15 out of 20) were independent, whereas only 25% were not independent. In contrast, the majority of patients with low family support (75%, or 9 out of 12) were not independent. These findings indicate that higher levels of family support are strongly linked to better functional independence during recovery, suggesting that family involvement plays a crucial role in promoting self-care and rehabilitation outcomes (Chang et al., 2021).

Table 4. The Correlation Between Family Support and Patient Independence

Family Support	Patient Independence		Total	P value
	Independent	Not Independent		
High	15	5	20	0.021
Low	3	9	12	

Family support plays a pivotal role across both the pre- and post-procedural phases of cardiac catheterization and PCI. Prior to PCI, patients often experience substantial anxiety and psychological distress, which may interfere with physiological stability and comprehension of medical instructions. Supportive family presence has been shown to reduce perceived stress and enhance emotional readiness for the procedure, consistent with the stress and coping model by Lazarus and Folkman. Evidence indicates that family and significant-other support effectively lowers anxiety and perceived stress, enabling patients to approach PCI with improved coping capacity (Acoba, 2024).

Between family support and patient independence following cardiac catheterization, indicating that patients who received higher levels of family support were more likely to achieve functional independence. These results are consistent with a growing body of evidence emphasizing the essential role of psychosocial and environmental factors in post-procedural recovery among cardiac patients. Anxiety is commonly experienced before and after cardiac procedures, including catheterization, and has been shown to negatively affect patient readiness, cooperation, and post-procedure outcomes. Preprocedural uncertainty, unfamiliarity with the procedure room, and concerns about complications can contribute to patient distress, which in turn may hinder optimal performance of self-care activities. Family support serves as a buffer against such anxiety by providing emotional reassurance, informational clarity, and a sense of safety, thereby enabling patients to participate more effectively in recovery activities (Mohamed et al., 2024).

Following PCI, family support becomes essential in promoting patient independence and reducing care dependence. Our findings align with previous studies demonstrating that strong family involvement is associated with better self-care ability, reduced dependence on caregivers, and enhanced recovery after PCI. Patients with poor mental health status tend to exhibit higher care dependence, and family support contributes to mitigating this vulnerability by strengthening self-efficacy and emotional stability (Guo et al., 2023). Consistent with this, family care has been shown to improve subjective well-being and encourage the use of adaptive coping strategies, which are

directly related to improved functioning and daily activity performance in CHD patients after PCI (Liang et al., 2022).

Longitudinal evidence further highlights that family members serve as ongoing facilitators of healthy behavior change after PCI, influencing adherence to medications, lifestyle modification, and secondary prevention behaviors for months after the procedure. Social facilitators including family play a continuous role in supporting patients' dietary adjustments, physical activity, and fear-of-relapse management throughout the recovery trajectory (Su et al., 2024). Moreover, family systems contribute through mechanisms such as emotional reinforcement, supervision, role modelling, and creating a supportive home environment, all of which promote sustained health behaviors and enhance rehabilitation outcomes (Ho et al., 2022).

Between family support and patient independence following cardiac catheterization, indicating that patients who received higher levels of family support were more likely to achieve functional independence. These results are consistent with a growing body of evidence emphasizing the essential role of psychosocial and environmental factors in post-procedural recovery among cardiac patients. Anxiety is commonly experienced before and after cardiac procedures, including catheterization, and has been shown to negatively affect patient readiness, cooperation, and post-procedure outcomes. Preprocedural uncertainty, unfamiliarity with the procedure room, and concerns about complications can contribute to patient distress, which in turn may hinder optimal performance of self-care activities. Family support serves as a buffer against such anxiety by providing emotional reassurance, informational clarity, and a sense of safety, thereby enabling patients to participate more effectively in recovery activities (Mohamed et al., 2024).

Although family presence during invasive cardiac care has shown mixed effects in previous studies, some evidence indicates that supportive involvement can reduce procedural distress and strengthen patient engagement. For example, studies on cardiac surgery patients show that family presence may help alleviate anxiety and improve emotional stability during acute care, although outcomes vary depending on the care

context and patient baseline characteristics (Nouri et al., 2021).

In the context of cardiac catheterization, effective family engagement particularly through structured education and supportive communication may enhance patients' ability to follow instructions, manage symptoms, and adopt early mobility practices essential for functional recovery. This aligns with literature showing that early mobilization and multidisciplinary support significantly improve functional independence among cardiac patients, reduce complications, and promote faster achievement of rehabilitation milestones (Jacob et al., 2021).

Furthermore, post-catheterization recovery often depends heavily on self-care behaviors performed at home, including medication adherence, monitoring for warning signs, maintaining activity levels, and regulating lifestyle risk factors. Evidence suggests that inadequate family knowledge or involvement can place patients at risk for complications, including recurrent chest pain, poor mobility, and even heart attack after the procedure (Muhammad & Hardy, 2022).

Therefore, strong family support is not only beneficial but also necessary to ensure safe recovery, prevent complications, and promote long-term independence. Education interventions aimed at both patients and families, such as virtual-reality-enhanced preprocedural teaching, have been shown to improve preparedness, reduce anxiety, and increase satisfaction with care, suggesting a promising direction for enhancing family-centered care during the catheterization processes (Chang et al., 2021).

Overall, the present study reinforces the importance of integrating family-centered strategies into cardiac catheterization care pathways. By providing emotional, informational, and practical support, family members play a pivotal role in promoting patient independence, reducing recovery-related distress, and optimizing functional outcomes. Future programs should consider structured family education, involvement in discharge planning, and ongoing support mechanisms to maximize recovery and long-term health outcomes for patients undergoing cardiac catheterization.

This study has several limitations. First, the sample size was relatively small and slightly underpowered, as the study included only 32

participants, which may reduce the precision of estimated associations. Second, the analysis relied on bivariate Chi-square tests and did not include multivariate modeling such as logistic regression. As a result, potential confounding factors including age, sex, comorbidities, type of cardiac catheterization procedure, and time since the procedure could not be statistically controlled. Therefore, the observed association between family support and independence should be interpreted with caution. Future studies with larger samples and multivariable analyses are recommended to validate these findings.

Conclusion

Family support plays a crucial role in promoting independence among patients after cardiac catheterization. High family support is significantly associated with better functional outcomes, while age and sex are not. Healthcare providers should prioritize family engagement and education as part of routine post-catheterization care.

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