



## Original Article

## Readiness for hospital discharge on people after hip replacement surgery in Vietnam: A cross-sectional study

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## ABSTRACT

**Background & Aim:** Readiness for hospital discharge is closely linked to post-operative complications, readmission rates, and the post-discharge health status of patients after hip replacement surgery. This study aimed to assess discharge readiness and identify the factors that predict it in patients undergoing hip replacement surgery.

**Methods & Materials:** This cross-sectional descriptive study included 112 patients who had undergone hip replacement surgery at Hospital X in Middle Vietnam. Participants were selected using a convenience sampling method, and data were collected within 4 hours before hospital discharge. The Readiness for Discharge Scale, developed by Weiss et al. was used to measure discharge readiness. Data analysis was conducted using SPSS 20.0 statistical software.

**Results:** The average discharge readiness score was  $6.06 \pm 2.10$ , indicating a low discharge readiness level. Multivariable linear regression analysis revealed that age, living conditions, planned admission, previous admission for the same diagnosis, and length of hospital stay significantly predicted 78.5% of the variance in discharge readiness ( $F=77.626, p<0.001$ ). Among these factors, the strongest predictor was previous admission for the same diagnosis ( $\beta=0.341, p<0.001$ ), followed by planned admission ( $\beta=0.324, p<0.001$ ).

**Conclusion:** The findings indicate that patients' readiness for discharge after hip replacement surgery remains low, with various factors influencing their readiness. Nurses caring for these patients should consider these factors to improve discharge readiness and patient outcomes.

## Introduction

Hip replacement surgery is an effective treatment for various hip joint conditions, such as femoral head necrosis, hip osteoarthritis, and femoral neck fracture. According to statistics, from 2012 to 2015, there were 169,060 hip replacement surgeries performed in the U.S. (1) and 326 cases at Cho Ray Hospital in Vietnam in 2018 (2). Common post-discharge complications following hip replacement surgery include the need for reoperation (6.9%), embolism (12%), deep surgical wound infections (6.9%), and joint dislocation (6.4%) (3). A study by Rahmawati (2021) found that up to 28% of patients required re-examination 3–4 times per year, 24% had no access to medical care, 20% needed hip removal, and 54% required hip revision surgery (4). In

Vietnam, Dang Nhat Quang (2023) reported that post-surgical infection occurred in 41.81% of cases, artificial hip dislocation in 26.48%, and joint loosening in 20.56% (5). These complications primarily arise after hospital discharge, often due to inadequate patient preparation for transitioning from hospital care to home care (6). Patients face numerous challenges in preparing for discharge, including managing recovery, self-care, seeking support from family and community, coping with mental anxiety, and overcoming a lack of confidence in their ability to care for themselves (7). Many patients also express fear and uncertainty about their ability to recover and walk again after surgery. Clinical experience shows that despite being physically ready, some patients feel



unprepared or hesitant to return home, preferring to remain in the hospital for continued inpatient recovery or delaying discharge (7).

Readiness for hospital discharge is a cognitive assessment of the patient's immediate condition and cognitive abilities relevant to handling care requirements at home (8). This concept has been studied across various patient groups, including cancer patients (9), individuals recovering from myocardial infarctions (10), parents of children with acute leukemia (11), and postoperative patients (8), particularly those undergoing hip surgery (12). Previous research has indicated that discharge readiness among patients after hip replacement surgery remains suboptimal (4, 13). Evidence further suggests that discharge readiness is closely linked to post-discharge complications, readmission rates, and the overall health status of patients after surgery (14, 15). Patients who report unmet care needs following discharge experience higher rates of complications and readmissions compared to those whose needs were adequately addressed (6, 14). However, in Vietnam, no studies have specifically investigated the discharge readiness of patients following hip replacement surgery. Although a few studies have explored patients' informational needs and responses after surgical discharge (16, 17), the concept of discharge readiness is relatively new and warrants further exploration in the Vietnamese context. Therefore, examining discharge readiness in patients after hip replacement surgery is crucial for improving the quality of care and preventing post-operative complications.

## **Methods**

A cross-sectional descriptive research design was employed, following the STROBE guidelines to enhance the reporting quality of the study (18).

The study included 112 participants who underwent hip replacement surgery at Hospital X in Middle Vietnam between July 1, 2022, and July 31, 2023. The sample size was calculated using Green's formula (1991),  $n \geq 104 + m$  (19), where  $m$  represents the number of independent variables, such as age, gender, living conditions, economic status, planned admission, first hospitalization, previous admission for the same diagnosis, and

length of hospital stay (4). Inclusion criteria: Participants had to be at least 18 years of age, have undergone hip replacement surgery, and be scheduled for discharge. Participants also had to be free from mental disorders and possess sufficient cognitive ability to read and respond to the study's questions. Exclusion criteria: Individuals who were no longer conscious due to advanced age or physical exhaustion and those who refused to participate or did not cooperate were excluded.

The study instruments included information on demographic characteristics, hospitalization factors, and the Readiness for Discharge Scale (RHDS) (6). The demographic questionnaire collected information such as the reason for hip replacement, type of prosthetic hip, comorbidities, age, gender, length of hospital stay, occupation, living conditions, education level, economic status, and hospitalization factors like planned admission, first hospitalization, and previous admission for the same diagnosis. The RHDS, developed by Weiss et al. in English (2007), has a Cronbach's alpha reliability coefficient of 0.90 (6). This scale assesses a patient's readiness for discharge following acute care hospitalization (6, 8). The questionnaire was administered within 4 hours prior to discharge, and the RHDS consists of 21 items rated on an 11-point Likert scale. The scale covers four domains: personal status (items 1–6), knowledge (items 7–14), coping ability (items 15–17), and expected support (items 18–21). The total score is calculated by averaging item scores, with possible scores ranging from 0 to 10. Readiness for discharge is categorized as low (<7), moderate (7–7.9), high (8–8.9), or very high (9–10) (20).

For this study, permission was obtained from the original authors to translate the RHDS into Vietnamese. The translation was performed following Brislin's classic back-translation method (1970) (21). To ensure accuracy and cultural appropriateness, a pilot study was conducted with 30 post-trauma surgery patients in the Department of Joint Surgery and Sports Medicine at Hospital X. The pilot study confirmed the reliability and cultural validity of the translated scale, with a Cronbach's alpha coefficient of 0.89.

The study was approved by the Ethics Council in Biomedical Research at A University

(Decision No. H2022/116, dated June 7, 2022) and authorized by the hospital administration (Code N3/2022/82SV, dated September 8, 2022). Data collection was carried out from July 2022 to July 2023. A clinical nurse was designated as the study coordinator and was briefed on the data collection procedures. Both the researcher and the study coordinator were responsible for collecting the data. All participants who met the inclusion criteria were informed about the study's objectives, procedures, and potential benefits and provided written consent before participating. Interviews were conducted approximately 4 hours before discharge, with each session lasting 30 to 40 minutes. Participants were allowed to stop the interview at any point if desired. If a participant's discharge readiness score was found to be low, this information was reported to the clinical nurse for appropriate intervention.

Data were analyzed using SPSS 20.0. Qualitative variables were described using frequency (n) and percentage (%), while means and standard deviations were used for interval variables. The normality of the data distribution was assessed using the mean, median, skewness,

and histogram plots. Multivariable linear regression analysis was conducted to identify factors influencing discharge readiness.

## Results

The study included 112 participants with a mean age of  $59.12 \pm 16.50$  years. The majority of the participants were male (65.2%), with primary diagnoses of femoral head necrosis (48.2%) and femoral neck fracture (33.9%). A total of 107 participants (95.54%) underwent total hip replacement surgery. Regarding education, 67.8% had not completed high school, and the majority were either housewives or farmers (70.5%). Additionally, 84.8% of the participants resided with family members or relatives.

Regarding hospitalization factors, 62 participants (55.4%) had planned their admissions, while 72 participants (64.3%) were being hospitalized for the first time. A notable proportion, 59 participants (52.7%), had been previously admitted for the same diagnosis. The average length of hospital stay was  $12.71 \pm 5.05$  days (Table 1).

**Table 1.** Demographic characteristics of participants after hip replacement surgery (n=112)

Demographic characteristics		N	%
Age	≤ 40	14	12.5
	41-60	49	43.8
	61-80	39	34.8
	> 80	10	8.9
Gender	Male	73	65.2
	Female	39	34.8
Education level	Primary school	37	33.0
	Secondary school	39	34.8
	High school	21	18.8
	Intermediate, college	7	6.3
	University, postgraduate	8	7.1
Type of artificial hip replacement	Total hip replacement	107	95.54
	Partial hip replacement	5	4.46
Job	Workers and Employees	12	10.7
	Farmer, housewife	79	70.5
	Retirement	11	9.8
	Business	9	8.0
	Student	1	0.9
Living condition	Live alone	17	15.18
	Live with relatives	95	84.82
Economic status	Poor and near-poor households	20	17.86
	Middle-income and above households.	92	82.14
Diagnosis	Femoral head necrosis	54	48.2
	Hip osteoarthritis	11	9.8
	Hip prosthesis loosening	7	6.3
	Femoral neck fracture	38	33.9
	Failed proximal femoral fusion/proximal femoral screw rupture	2	1.8

## Readiness for hospital discharge

### *The readiness for hospital discharge perceived by participants*

Participants' perceived readiness for hospital discharge was generally low, with an overall score of  $6.06 \pm 2.10$ . Among the four key dimensions assessed, all reported low scores: personal status ( $6.01 \pm 1.85$ ), knowledge ( $5.88 \pm 2.31$ ), coping ability ( $5.94 \pm 2.29$ ), and expected support ( $6.61 \pm 2.32$ ). The lowest scores

were attributed to factors such as pain or discomfort, insufficient knowledge about recognizing and managing post-discharge complications, limited information on community support services, and difficulties in administering medical treatments at home. In contrast, the highest-rated item was emotional support after discharge, which received a score of  $6.78 \pm 2.39$  (Table 2).

**Table 2.** Participant's perception of readiness for hospital discharge (N=112)

Items	Range	Mean±SD	Min	Max	Level
<b>Personal status</b>	<b>0-10</b>	<b>6.01 ± 1.85</b>	<b>2.0</b>	<b>9.33</b>	
1. How physically ready are you to go home?	0-10	6.46 ± 2.37	1	10	<b>Low</b>
2. How would you describe your pain or discomfort today?	0-10	5.55 ± 1.24	1	9	
3. How would you describe your strength today?	0-10	5.29 ± 2.01	1	10	
4. How would you describe your energy today?	0-10	6.22 ± 2.24	2	10	
5. How emotionally ready are you to go home today?	0-10	6.68 ± 2.38	1	10	
6. How would you describe your physical ability to care for yourself today?	0-10	5.85 ± 2.28	1	10	
<b>Knowledge</b>	<b>0-10</b>	<b>5.88 ± 2.31</b>	<b>1.63</b>	<b>10</b>	<b>Low</b>
7. How much do you know about caring for yourself after you go home?	0-10	6.00 ± 2.22	1	10	
8. How much do you know about taking care of your personal needs after you go home?	0-10	6.24 ± 2.43	1	10	
9. How much do you know about taking care of your medical needs (treatments, medications) after you go home?	0-10	5.99 ± 2.46	1	10	
10. How much do you know about problems to watch for after you go home?	0-10	5.81 ± 2.49	1	10	
11. How much do you know about who and when to call if you have problems after you go home?	0-10	5.93 ± 2.42	1	10	
<b>Coping ability</b>	<b>0-10</b>	<b>5.94 ± 2.29</b>	<b>1.33</b>	<b>10.0</b>	<b>Low</b>
12. How much do you know about restrictions (what you are allowed and not allowed to do) after you go home?	0-10	6.03 ± 2.43	1	10	
13. How much do you know about what happens next in your follow-up medical treatment plan after you go home?	0-10	5.50 ± 2.71	0	10	
14. How much do you know about services and information available to you in your community after you go home?	0-10	5.51 ± 2.78	0	10	
<b>Expected support</b>	<b>0-10</b>	<b>6.61 ± 2.32</b>	<b>1.25</b>	<b>10</b>	
15. How well will you be able to handle the demands of life at home?	0-10	6.15 ± 2.35	2	10	<b>Low</b>
16. How well will you be able to perform your personal care at home?	0-10	6.14 ± 2.45	1	10	
17. How well will you be able to perform your medical treatments at home?	0-10	5.53 ± 2.42	0	10	
18. How much emotional support will you have after you go home?	0-10	6.78 ± 2.39	2	10	
19. How much help will you have if needed with your personal care after you go home?	0-10	6.63 ± 2.38	1	10	
20. How much help will you have if needed with household activities after you go home?	0-10	6.57 ± 2.40	1	10	
21. How much help will you have if needed with your medical care needs (treatments, medication) after you go home?	0-10	6.46 ± 2.52	1	10	
<b>Total</b>	<b>0 - 10</b>	<b>6.06 ± 2.10</b>	<b>2.10</b>	<b>9.76</b>	<b>Low</b>

### *Factors Predicting Hospital Discharge Readiness*

As shown in Table 3, there was no statistically significant difference in discharge readiness perceptions between male and female participants ( $p > 0.05$ ). However, factors such as age, living conditions, planned admission, previous admission for the same diagnosis, and

length of hospital stay were significantly associated with readiness for discharge ( $p < 0.01$ ). These variables were included in the multivariable linear regression analysis, which revealed that age, living conditions, planned admission, previous admission for the same diagnosis, and length of

hospital stay collectively accounted for 78.5% of the variance in discharge readiness ( $F= 77.626$ ,  $p<0.001$ ). Of these factors, the most influential predictor was previous admission for the same

diagnosis ( $\beta= 0.341$ ,  $p< 0.001$ ), followed by planned admission ( $\beta = 0.324$ ,  $p< 0.001$ ) (Table 4).

**Table 3.** Factors related to the readiness for hospital discharge (N=112)

	Variables	Mean	Standard deviation	p
<b>Gender</b>	Male	6.28	2.08	0,131*
	Female	5.65	2.09	
<b>Economic status</b>	Poor and near-poor households	4.01	0.99	<0,01*
	Middle-income and above households	6.50	2.01	
<b>Living condition</b>	Live alone	3.49	0.85	<0,001*
	Live with relatives	6.52	1.91	
<b>Planned admission</b>	Yes	7.48	1.32	<0,01*
	No	4.31	1.48	
<b>First hospitalization</b>	Yes	4.2	1.41	<0,01*
	No	7.03	1.77	
<b>Previous admission for the same diagnosis</b>	Yes	7.69	1.28	<0,01*
	No	4.60	1.53	
<b>Age</b>		r = - 0.39		<0,001**
<b>Length of hospital stay</b>		r = 0,58		<0,001***

\*Independent samples T-test; \*\* Pearson correlation, \*\*\* Spearman's rho

**Table 4.** Multivariable linear regression analysis between influencing factors and readiness for hospital discharge (N= 112)

Variables	Regression coefficient	Beta	
Age	- 0.02*	- 0.154	Intercept = 3.693** R <sup>2</sup> = 0.785 F = 77.626**
Living condition	0.914*	0.162	
Planned admission	1.362**	0.324	
Previous admission for the same diagnosis	1.423**	0.341	
Length of stay in hospital	0.102**	0.247	

\* $p<0.01$ , \*\*  $p < 0.001$

## Discussion

The study involving 112 participants who underwent hip replacement surgery revealed that overall discharge readiness remained low. All four subcategories—personal status, knowledge, coping ability, and expected support—were similarly rated low. These findings are consistent with those reported by Brent (2013) and Bi & Wang (2019) (12, 13), although our results are notably lower than those found by Rahmahwati (2021) (4). The disparity may stem from the fact that discharge readiness is often seen as an indicator of discharge planning effectiveness and a predictor of the quality of care transitions (22). Low readiness for discharge, particularly regarding personal status, was closely linked to patients' complaints about pain and discomfort, which restricted their mobility and ability to perform daily tasks. Although many patients reported improvements in mobility and ease of getting in and out of bed, their capacity for self-care at home remained inadequate. Knowledge gaps related to self-care, medication

management, complication prevention, and available community healthcare services were evident. In terms of coping ability, participants struggled to independently manage self-care and postoperative recovery, further complicating their transition home. Additionally, a significant need for support was identified, particularly concerning home care and assistance from family members, with 15.2% of patients living alone, exacerbating their challenges with discharge preparedness.

The relationship between age and discharge readiness in this study indicates that older patients felt less prepared for discharge. This aligns with findings from Coffey (2013), Brent (2013), and Hydzik (2021) (12, 23, 24). However, compared to those studies, our results showed even lower readiness levels in the subcategories of knowledge and coping skills among patients recovering from hip replacement surgery. Factors such as anxiety, fatigue, medication side effects, and age-related memory decline may hinder the patient's ability to absorb health education provided by nurses pre-

discharge (6). This suggests that older patients may require more targeted education and preparation prior to leaving the hospital.

Living conditions also significantly influenced discharge readiness, as patients living alone reported lower readiness compared to those living with family members. This supports earlier research by Weiss (2007) and Brent (2013), who found that living alone was associated with lower discharge readiness scores (6, 12). The importance of family support and continuity of care during the transition from acute to community-based care is well documented (25). Family support plays a critical role in the transition from hospital care to home, as highlighted by Coffey and McCarthy (2013), who reported that reduced post-discharge family support correlated with lower readiness levels (24). In our study, those living with relatives showed the highest readiness scores, particularly in the expected support subcategory, emphasizing the importance of a support system for successful recovery post-discharge.

Participants with planned admissions demonstrated higher discharge readiness compared to those without prior plans (Table 3). This finding is supported by the fact that many of these patients had chronic hip conditions and were able to prepare themselves mentally, physically, and financially for the surgery during the waiting period. They had more time to gather information, consult with family, and adapt to mobility aids, which enhanced their coping skills and discharge preparedness. Previous studies, including that of Rahmahwati (2021), also found that planned admissions positively impacted patients' discharge readiness (4).

Similarly, participants with a history of prior hospitalization for the same diagnosis showed higher levels of discharge readiness compared to first-time patients. In our study, 52.7% of participants had previously been hospitalized for the same condition, such as femoral head necrosis or hip osteoarthritis, which provided them with valuable experience and knowledge about the treatment and recovery process. These patients were better equipped to manage their postoperative care and were less anxious about the transition home, further

supporting findings from Weiss (2007) and Rahmahwati (2021) (4, 6).

Finally, the length of hospital stays also played a role in discharge readiness. Many participants in this study were elderly with multiple comorbidities, which required careful management alongside their hip replacement recovery. Shorter hospital stays, often a result of enhanced recovery protocols, may leave patients feeling unprepared for discharge, as they have less time to adapt and receive adequate discharge planning (6, 8, 26). However, prolonged hospital stays allowed patients more time to recover, both physically and psychologically, before transitioning home. This aligns with previous research, which demonstrated that longer stays contribute to a greater sense of discharge readiness (4, 6). Encouraging early mobilization and ensuring proper discharge planning for older patients can reduce complications, decrease healthcare costs, and improve overall outcomes (27, 28).

## **Conclusion**

This study reveals that hospital discharge readiness among patients following hip replacement surgery is generally low. Key factors influencing discharge readiness include age, living conditions, planned admission, previous hospitalization for the same diagnosis, and the length of hospital stay. Notably, prior hospitalization for the same condition emerged as the strongest predictor of discharge readiness.

While these findings contribute valuable insights into discharge readiness in post-hip replacement patients, several areas require further exploration. The use of a convenience sampling method limits the generalizability of the results to the broader population. Future studies should adopt more robust sampling techniques to enhance representativeness and explore additional predictors that may influence discharge readiness. Furthermore, research is needed to inform the development of nursing interventions aimed at improving discharge preparedness, with a particular focus on enhancing the quality of discharge education and transitional care—two critical areas not fully addressed in this study.

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## Conflict of interest

The authors declare that there is no conflict of interest in this study.

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