Perceived Quality of Discharge Teaching and Readiness for Hospital Discharge Among Chinese Patients After Knee Replacement Surgery in Zhoukou, China*
คุณภาพการสอนและความพร้อมก่อนจำหน่ายตามการรับรู้ของผู้ป่วย หลังผ่าตัดเปลี่ยนข้อเข่าเทียมในโจวโข่ว ประเทศจีน*

Yu   Fang**   หยู   ฟาง**
Suparat   Wangsrikhun***   สุภารัตน์   วังศรีคูณ***
Chanchai   Yothayai****   จันทร์ฉาย   โยธาใหญ่****

Abstract

Effective discharge teaching and readiness for hospital discharge are critical for the postoperative recovery of patients at home after knee replacement surgery. This descriptive correlation study aimed to examine the perceived quality of discharge teaching and the perceived readiness for hospital discharge among patients receiving total knee replacement, and their relationship. The participants were 84 total knee replacement patients from an orthopedic hospital in Zhoukou City, the People's Republic of China. The research instruments included the Readiness for Hospital Discharge Scale Chinese Version (RHDS-Ch) and the Quality of Discharge Teaching Scale Chinese Version (QDTS-Ch). The RHDS-Ch and QDTS-CH were tested for their reliability and yielded Cronbach's alphas of .92 and .80, respectively. Descriptive statistics and Spearman's rank-order correlation were used for data analysis.

The results revealed that the quality of discharge teaching as perceived by participants was at a high level (M = 8.73, SD = 0.25). Readiness for hospital discharge as perceived by participants was at a high level (M = 8.33, SD = 0.50). There was a statistically significant positive correlation between quality of discharge teaching and readiness for hospital discharge (r = 0.41, p < 0.01).

The study findings highlight the importance of quality discharge teaching in facilitating readiness for hospital discharge among patients after knee replacement surgery.

Keywords: Readiness for hospital discharge; Quality of discharge teaching; Knee replacement surgery

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บทคัดย่อ

　　คุณภาพการสอนและความพร้อมก่อนจำหน่าย มีความสำคัญต่อการฟื้นตัวหลังผ่าตัดที่บ้านของผู้ป่วยหลัง ผ่าตัดข้อเข่าเทียม การศึกษาเชิงพรรณนาหาความสัมพันธ์ครั้งนี้ มีวัตถุประสงค์เพื่อศึกษาคุณภาพการสอนและ ระดับความพร้อมก่อนจำหน่าย ตามการรับรู้ของผู้ป่วยหลังผ่าตัดเปลี่ยนข้อเข่าเทียม และศึกษาความสัมพันธ์ ระหว่างตัวแปรทั้งสอง กลุ่มตัวอย่าง คือ ผู้ป่วยหลังผ่าตัดเปลี่ยนข้อเข่าเทียมจำนวน 84 คน จากโรงพยาบาล โรคกระดูกและข้อในเมืองโจวโข่ว สาธารณรัฐประชาชนจีน เครื่องมือวิจัยประกอบด้วยแบบวัดความพร้อม ก่อนจำหน่ายฉบับภาษาจีน และแบบวัดคุณภาพการสอนก่อนจำหน่ายฉบับภาษาจีน นำแบบวัดความพร้อม ก่อนจำหน่ายฉบับภาษาจีนและแบบวัดคุณภาพการสอนก่อนจำหน่ายฉบับภาษาจีนไปตรวจสอบความเชื่อมั่น ได้ค่า Cronbach's alpha เท่ากับ .92 และ .80 ตามลำดับ วิเคราะห์ข้อมูลโดยใช้สถิติเชิงพรรณนา และ สถิติ Spearman's rank-order correlation

　　ผลการวิจัยพบว่า คุณภาพการสอนก่อนจำหน่ายตามการรับรู้ของกลุ่มตัวอย่างอยู่ในระดับมาก (M = 8.73, SD = 0.25) ความพร้อมก่อนจำหน่ายตามการรับรู้ของกลุ่มตัวอย่างอยู่ในระดับมาก (M = 8.33, SD = 0.50) คุณภาพการสอนก่อนจำหน่ายและความพร้อมก่อนจำหน่ายมีความสัมพันธ์ทางบวกอย่างมีนัยสำคัญทางสถิติ (r = 0.41, p < 0.01)

　　ผลการศึกษาครั้งนี้ แสดงให้เห็นความสำคัญของการสอนก่อนจำหน่ายอย่างมีคุณภาพต่อการส่งเสริมความ พร้อมก่อนจำหน่ายของผู้ป่วยหลังผ่าตัดข้อเข่าเทียม

คำสำคัญ: ความพร้อมก่อนจำหน่าย คุณภาพการสอนก่อนจำหน่าย การผ่าตัดเปลี่ยนข้อเข่าเทียม

* วิทยานิพนธ์หลักสูตรพยาบาลศาสตรมหาบัณฑิต (หลักสูตรนานาชาติ) คณะพยาบาลศาสตร์ มหาวิทยาลัยเชียงใหม่

** นักศึกษา หลักสูตรพยาบาลศาสตรมหาบัณฑิต (หลักสูตรนานาชาติ) คณะพยาบาลศาสตร์มหาวิทยาลัยเชียงใหม่

*** ผู้เขียนหลัก ผู้ช่วยศาสตราจารย์ คณะพยาบาลศาสตร์ มหาวิทยาลัยเชียงใหม่ e-mail: suparat.w@cmu.ac.th

**** ผู้ช่วยศาสตราจารย์ คณะพยาบาลศาสตร์ มหาวิทยาลัยเชียงใหม่

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Background and significance

Total knee replacement (TKR) is a common surgical procedure performed in patients with advanced knee osteoarthritis (Lo et al., 2019). In recent years, the global case numbers of persons receiving TKR have rapidly grown (Long et al., 2022), and this includes China (Feng et al., 2021). The lengths of stay in hospital among TKR patients are often short but vary from 1.3 days in America (American Academy of Orthopaedic Surgeons [AAOS], 2022) to 8.4 days in China (Han et al., 2021).

At discharge, TKR patients usually have a surgical wound that is not yet fully healed, moderate to severe pain, and limitation of mobility, while also needing to perform self-care at home. After being discharged home, TKR patients must perform self-care activities to regain normal function and prevent postoperative complications, such as joint stiffness, infection, and prosthesis loosening (Li et al., 2022). They need to engage in many months of rehabilitation exercises such as range-of-motion exercises, motor function training (balance, walking, movement, and symmetry), and use of walking aids (Causey-Upton et al., 2019; Jette et al., 2020). To fully engage in self-care at home, TKR patients must be prepared to ensure their readiness for discharge.

Based on the transition theory (Meleis, 2010), discharge from the hospital to home is a trigger event for transition. TKR patients being discharged face the transition from being hospital patients to being individuals responsible for self-care at home. Their readiness for hospital discharge (RHD) is crucial for a smooth transition. RHD refers to a judgment or perception regarding the patient's immediate state and perceived abilities that relate to managing care needs in the home environment (Weiss & Piacentine, 2006). It is an essential indicator for determining safe patient discharge (Galvin et al., 2017). Having a high level of RHD is associated with positive results after being discharged from the hospital, including improved quality of life, reduced rates of readmission, fewer unscheduled clinic visits, and better ability to cope with post-discharge challenges (Causey-Upton et al., 2019; Zhang et al., 2021).

Readiness for discharge is influenced by several factors, including the quality of discharge teaching. Discharge teaching, viewed as nursing therapeutics in the transition theory, can facilitate the transition process by providing patients and their caregivers with the necessary knowledge and skills to manage their health condition post-discharge (Meleis, 2010). High-quality discharge teaching ensures patients' and caregivers' understanding of medications, treatment plans, self-care techniques, and signs of potential complications, which empower them to take an active role in their healthcare management. Additionally, discharge teaching promotes a sense of self-efficacy and confidence in patients and caregivers, which are essential components of readiness for discharge (Meleis, 2010).

Nurses are responsible for providing quality discharge teaching which is an important factor in enhancing readiness for hospital discharge among patients (Guan & Feng, 2023). It refers to the composite of all teaching, including content and delivery, received by the patient during

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hospitalization in preparation for discharge home and coping with the posthospitalization period from the patient's perspective (Weiss et al., 2007). The content of teaching for total knee replacement patients should cover medication management, wound care, recognition of potential complication signs and symptoms, physical therapy exercises, use of assistive devices, and the importance of follow-up appointments (Khan, 2023).

Discharge teaching delivery skills are integral to the provision of high-quality patient care and the successful transition from hospital to home. Nurses with effective communication, teaching, and assessment skills can empower patients to participate in care, which leads to improved health outcomes and decreased healthcare utilization (Kwame & Petrucka, 2021). High quality of discharge teaching is associated with better self-care practices post-discharge. Inadequate discharge teaching has been linked to negative outcomes following discharge, including prescription mistakes and a higher likelihood of hospital readmission (Pellet et al., 2020).

In China, TKR patients usually stay in the hospital for 8.4 days before being discharged home (Han et al., 2021). After surgery, they receive immediate post-operative care, acute care, and rehabilitation in the hospital from a primary nurse. Before being discharged home, they receive individual discharge teaching from their primary nurses. The number of teaching sessions may vary depending on the healthcare institution and the patient's needs. Multiple teaching sessions are typically provided to cover several topics, including wound care, pain management, medication administration, physical therapy exercises, and activity restrictions. Oral teaching with educational materials and leaflets is common. In this study's setting, the practice of discharge teaching is similar to that mentioned above. TKR patients in the setting typically receive multiple oral individual teaching sessions from their primary nurse with leaflets.

At present, information regarding the quality of discharge teaching and RHD as perceived by TKR patients is limited. A study in a Thai tertiary hospital reported moderate RHD, good quality of discharge teaching, and a moderate correlation between the two variables (r = .459, p < .01) (Kardosod et al., 2021). A study from Shandong, China, published in 2024, found that 12.8% of TKR patients had low RHD, and those perceiving low RHD had lower perceived quality of discharge teaching than those perceiving high RHD (Li et al., 2024). In China, there have been several studies conducted to examine the quality of discharge teaching and RHD among other groups of patients, including breast cancer (Li et al., 2022), laryngectomy (Zhao et al., 2020), hysterectomy (Guan & Feng, 2023), and stroke patients (Chen et al., 2022). The quality of discharge teaching varied from low to high levels among these studies. Similarly, RHD varied from moderate to high levels.

Nurses working in various hospital contexts may provide different discharge teaching for TKR patients, both in content and delivery methods. TKR patients from different backgrounds and cultures may also perceive RHD and quality of discharge teaching differently. Therefore, the results from the previous study of TKR patients in Thailand (Kardosod et al., 2021) cannot be generalized to China.

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In a recently conducted study from China, only TKR patients were included (Li et al., 2024). Those receiving first-time TKR and those with TKR experience may perceive RHD and quality of discharge teaching differently. Additionally, the results from studies conducted in China among other groups of patients could not be generalized to TKR patients in China since TKR and other groups of patients have different limitations resulting from their diseases and treatments, require different self-care at home, and need different details from discharge teaching. This study aimed to examine the perceived quality of discharge teaching and perceived readiness for hospital discharge among TKR patients and their relationship among total knee replacement patients in Zhoukou, China.

Objectives

To examine the perceived quality of discharge teaching and perceived readiness for hospital discharge among total knee replacement patients in Zhoukou, the People's Republic of China, and their relationship.

Conceptual Framework

The conceptual framework was based on Meleis' middle-range theory of transition (Meleis, 2010). Four elements involved in transition include the nature of transition, transition conditions, patterns of response, and nursing therapeutics (Meleis, 2010). Discharge from the hospital to home is a trigger event for transition. The nature of transition in TKR patients being discharged to home includes health and illness, and situational transition. TKR patients face a transition from being patients in a hospital to individuals responsible for self-care after discharge home.

This study focused on two elements: patterns of response and nursing therapeutics. RHD represents patients' pattern of response during a transition from hospital to home. It refers to a judgment or perception regarding the patient's immediate state and perceived abilities that relate to managing care needs in the home environment and is composed of four attributes, including personal status, knowledge, coping ability, and expected support (Weiss & Piacentine, 2006). Quality of discharge teaching, which is a part of nursing therapeutics, refers to the composite of all teaching received by the patient during hospitalization in preparation for discharge home and coping with the posthospitalization period from the patient's perspective (Weiss et al., 2007). Quality of discharge teaching has a positive relationship with patients' RHD which it can facilitate by increasing their knowledge and preparation for self-care after discharge. High-quality discharge teaching ensures that patients have the necessary knowledge, skills, and confidence to manage their recovery at home. Additionally, discharge teaching promotes a sense of self-efficacy and confidence in patients, which are essential components of readiness for discharge (Meleis, 2010).

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Methods

Population and sample

The target population was patients receiving total knee replacement surgery in the People's Republic of China.

The participants were 84 TKR patients at discharge from Zhoukou Xiehe Orthopedic Hospital in Zhoukou City, Henan Province, the People's Republic of China. The inclusion criteria were 1) being at least 20 years old, 2) having first knee replacement surgery, 3) having a physician's plan to discharge home, 4) being able to communicate in Chinese, and 5) voluntarily taking part in the research. TKR patients discharged to other healthcare facilities were excluded. The sample size was calculated based on power analysis at an alpha level of .05, power of 0.80, and effect size of 0.3, yielding an estimated sample size of 84 (Bujang & Baharum, 2016).

Research instruments

1. The Demographic Data Record Form. This was developed by the researcher based on the literature review.

2. The Readiness for Hospital Discharge Scale Chinese Version (RHDS-Ch). The RHDS original version was developed by Weiss and Piacentine (2006) and translated into Chinese by Lin and colleagues (2014). It has 23 items. Item 1 is a dichotomous yes/no question for determining a patient's perception of being ready for discharge. The other 22 items are divided into four subscales, namely, personal status (7 items), knowledge (8 items), coping ability (3 items), and expected support (4 items). Each item is rated from 0 to 10 points, according to various answer scales including 'not ready' to 'totally ready'; 'know nothing at all' to 'know all'; 'not at all' to 'extremely well'; and 'none' to 'a great deal'. Total score and subscale scores are calculated by adding each item's scores and dividing by the number of items with a possible range of 0 to 10. The RHDS can be divided into four levels based on cut-off points of standardized scores (<7 = low, 7-7.9 = moderate, 8-8.9 = high, and 9-10 = very high) (Weiss et al., 2014).

3. The Quality of Discharge Teaching Scale Chinese Version (QDTS-Ch). The original version was developed by Weiss et al. (2007) and translated into Chinese by Wang and colleagues (2016). There are 18 items divided into the content and delivery subscales. The content subscale contains six parallel items that represent the amount of content received during teaching in preparation for discharge (items 1b-6b) and the amount of content needed (items 1a-6a). The delivery subscale consists of 12 items (items 7-18). All items are scored using an 11-point Likert scale with response ranges from 0 to 10 as in 'None' to 'A great deal'. The content and delivery subscale scores are calculated separately. The content received and delivery subscale scores are calculated using the mean of item scores (sum items and divide by number of items). Content needed is calculated similarly. The QDTS can be divided into four levels based on cut-off points of standardized scores (<7 = low, 7-7.9 = moderate, 8-8.9 = high, and 9-10 = very high) (Weiss et al., 2014).

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Validity and reliability of research instruments

The validity of the RHDS-Ch was confirmed by Lin and colleagues' study (2014) while that of the QDTS-Ch was confirmed in Wang and colleagues' study (2016). Both instruments were used without any modification; thus, their validities were not tested in this study.

The reliabilities of the RHDS-Ch and QDTS-Ch were tested with 10 subjects who met the inclusion and exclusion criteria but were not included in the sample. The Cronbach's alpha values were .92 and .80, respectively.

Ethical considerations

The study was approved by the Institutional Review Board of the Faculty of Nursing, Chiang Mai University (COA No. 118/2023). Permission for data collection was also obtained from the administrator of Zhoukou Xiehe Orthopedic Hospital. All the participants were provided with written and verbal information about the study objectives and processes, protection of confidentiality and anonymity, and the right to refuse or withdraw from the study at any time. Informed consent was obtained from each participant before data collection.

Data collection

The researcher wore polite clothes with a name tag, but not the hospital nurse uniform, during data collection, to prevent coercion issues. The researcher obtained the name list of patients who would be discharged home from the unit staff nurses. The researcher then approached potential participants, explained the purpose of the research, and informed them of the confidentiality and anonymity of their responses. Participation in the study was voluntary. Those who agreed to participate were asked to sign an informed consent form. All data collection was done within four hours before discharge in a private and quiet room. The researcher read each question item and answer option for the participants to answer without any further explanation to prevent bias. It took approximately 20 minutes for each participant's data collection.

Data analysis

Data were analyzed using statistical software. Normal distribution of RHD and quality of discharge teaching scores were checked by Kolmogorov-Smirnov tests. The RHD score was normally distributed, while the quality of discharge teaching score was not normally distributed. Therefore, Spearman's rank order correlation test was used to analyze the relationship between RHD and quality of discharge teaching.

Results

There were 84 participants. All of them were older adults who lived with family. Most of them were female (70.24%). More than half of the participants (58.33%) had never been admitted to hospital before. The average length of hospital stay was 14.18 (±0.56) days (Table 1).

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Table 1. Demographic characteristics of the participants (n = 84)

Demographic characteristics	Frequency	Percentage
Age (years old) (mean = 70.80, SD = 3.52, range 62-78)		
< 65 years old	3	3.00
65-75 years old	73	87.00
> 75 years old	8	10.00
Gender		
Females	59	70.24
Males	25	29.76
Education level		
College or above	4	4.76
Junior high school or high school	30	35.71
Primary school	38	45.24
No formal education	12	14.29
Previous admission		
No	49	58.33
Yes	35	41.67

Regarding the perceived readiness for hospital discharge, 79 participants (94%) answered that they were ready, while five participants (6%) were not ready. Participants' overall readiness for hospital discharge scores were at a high level (mean 8.33 ± 0.50). All subscale scores were also at high levels. Based on the overall readiness for hospital discharge scores, 27.38%, 63.10%, and 9.52% of the participants had moderate, high, and very high levels of readiness, respectively (Table 2).

Table 2. Readiness for Hospital Discharge score of participants (n = 84)

Readiness for hospital discharge	Mean (SD)	Levels of readiness			
		Low n (%)	Moderate n (%)	High n (%)	Very high n (%)
Subscale					
Personal status	36.8 (0.55)	0 (0)	20 (23.81)	54 (64.29)	10 (11.90)
Knowledge	28.8 (0.57)	1 (1.19)	28 (33.33)	41 (48.81)	14 (16.67)
Coping ability	8.33 (0.59)	1 (1.19)	17 (20.24)	44 (52.38)	22 (26.19)
Expected support	8.35 (0.67)	1 (1.19)	17 (20.24)	47 (55.95)	19 (22.62)
Overall score	8.33 (0.50)	0 (0)	23 (27.38)	53 (63.10)	8 (9.52)

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The perceived quality of discharge teaching among the participants was at a high level with a mean score of 8.73 ± 0.25. The scores for the content (content received) and the delivery subscales were also at high levels. Most participants perceived the quality of discharge teaching at a high level (85.71%) (Table 3).

Table 3. Quality of discharge teaching scores of the participants (n = 84)

Quality of discharge teaching	Mean (SD)	Levels of quality of discharge teaching			
		Low n (%)	Moderate n (%)	High n (%)	Very high n (%)
Content					
Content needed	68.8 (41.0)	N/A	N/A	N/A	N/A
Content received	73.8 (34.0)	0	0	60 (71.43)	24 (28.57)
Delivery	8.74 (28.0)	0	1 (1.19)	66 (78.57)	17 (20.24)
Overall	8.73 (0.25)	0	0	72 (85.71)	12 (14.29)

There were statistically significant positive correlations between overall score of readiness for hospital discharge and quality of discharge teaching (r = 0.41, p < 0.01) (Table 4).

Table 4. Correlation between readiness for hospital discharge and quality of discharge teaching (n = 84)

Readiness for hospital discharge	Quality of discharge teaching		
	Content received	Delivery	Overall
Personal status	0.34**	0.40**	0.44**
Knowledge	0.36**	0.29**	0.39**
Coping ability	0.18	0.19	0.20
Expected support	0.26*	0.22*	0.29*
Overall	0.36**	0.34**	0.41**

Note. *****Spearman's rank order correlation test, p < .05, ******Spearman's rank order correlation test, p < .01

Discussion

The results showed that the TKR participants had high levels of readiness for hospital discharge (Table 2), which was consistent with a previous study conducted among TKR patients in Thailand (Kardosod et al., 2021), and another study from China conducted with gynecologic patients after day surgery (You et al., 2022). The high level of perceived readiness for hospital discharge in this study may come from some of the patient's characteristic factors. Firstly, most of the participants in this study were exposed to some level of education (Table 1). This means that besides listening to oral teaching they could read provided leaflets, which may contribute

to their perceived readiness.

Secondly, in this study, all participants lived with their spouse or one child. Residing with an individual who is capable of delivering in-home care increases discharge readiness (Baksi et al., 2020). Studies conducted with surgical patients revealed that the individuals living with a caregiver or with their family had a high-level readiness (Brent & Coffey, 2013; Nurhayati et al., 2019). Patients living with a person who could provide care at home had higher levels of RHD as they felt more self-confidence (Baksi et al., 2020).

Another factor that could influence perceived readiness for hospital discharge may come from quality of discharge teaching. In this study, the participants perceived the quality of discharge teaching at a high level which reflected both nurses' knowledge of discharge content and their skill at delivering it. Most participants rated the content received and delivery method at high or very high levels, and the mean scores of content received were higher than content needed (Table 2). The discharge teaching content that the participants in this study received from nurses in the research setting included wound care, home medication, mobilization method, and rehabilitation exercises at home. In the teaching process, nurses allow patients to practice rehabilitation exercises under supervision to build confidence and ensure proficiency before discharge. Moreover, the nurses routinely provide printed teaching materials, which are written in plain language and have vivid pictures to facilitate the understanding of patients.

The positive correlation between perceived readiness for hospital discharge and perceived quality of discharge teaching found in this study was consistent with a previous study conducted with TKR patients in Thailand (Kardosod et al., 2021), and studies conducted with other groups of patients in China (Chen et al., 2022; Guan & Feng, 2023). The correlation is congruent with the transition theory. Discharge teaching is a part of nursing therapeutic, and readiness for hospital discharge measured in this study is a pattern of response. Based on the transition theory, nursing therapeutic practices can influence patterns of response during a transition (Meleis, 2010). In this study, the participants rated the quality of discharge teaching at a high level. High-quality discharge teaching ensures that patients and their caregivers understand their medications, treatment plans, self-care techniques, and signs of potential complications, thereby empowering them to take an active role in their healthcare management.

Additionally, discharge teaching promotes a sense of self-efficacy and confidence in patients and caregivers, which are essential components of readiness for discharge (Meleis, 2010). Effective discharge teaching fosters a supportive relationship between healthcare providers and patients/caregivers, wherein patients feel comfortable asking questions, seeking clarification, and expressing concerns about their care. This relationship enhances patients' trust in their healthcare providers and strengthens their sense of preparedness for discharge (Meleis, 2010). Effective discharge teaching empowers patients with the knowledge and skills necessary to manage their health post-discharge (Becker et al., 2021). By addressing patients' informational, psychological, and emotional needs throughout the transition process, healthcare providers can

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enhance patients' readiness for discharge and promote positive post-transition outcomes.

Applications of research findings

The findings of this research revealed a positive correlation between quality of discharge teaching and readiness for hospital discharge among TKR patients. Nurses should provide quality discharge teaching, including all necessary content for self-care after discharge and with effective delivery methods, to ensure readiness for hospital discharge among TKR patients.

Suggestion for further research

A study to examine the relationship between quality of discharge teaching and patient outcomes, such as in terms of self-care ability and coping ability at home, which reflects a successful transition, should be conducted.

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