ปัจจัยที่มีความสัมพันธ์กับความสุขสบายก่อนการผ่าตัดของผู้สูงอายุที่กระดูกสะโพกหัก ในเมืองเหวินโจว ประเทศจีน
Factors Related to Pre-operative Comfort of Older Adults with Hip Fracture in Wenzhou, China

นิพนธ์ต้นฉบับ **Original Article**

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บทคัดย่อ

วัตถุประสงค์: เพื่อศึกษาระดับความสุขสบายก่อนการผ่าตัดและปัจจัยที่สัมพันธ์ในผู้ป่วยสูงอายุที่กระดูกสะโพกหัก ในเมืองเหวินโจว ประเทศจีน **วิธีการศึกษา:** ตัวอย่าง คือ ผู้สูงอายุที่กระดูกสะโพกหักและตรงตามเกณฑ์การคัดเลือกเข้าศึกษา จำนวน 128 คน จากการสุ่มอย่างง่าย รวบรวมข้อมูลระหว่างเมษายน - มิถุนายน ค.ศ 2022 โดยใช้แบบสอบถามข้อมูลส่วนบุคคล แบบคัดกรอง แบบสอบถามความรู้เกี่ยวกับการผ่าตัดกระดูกสะโพก ความพร้อมต่อการผ่าตัด ความสุขสบาย และการสนับสนุนทางสังคม วิเคราะห์ปัจจัยสัมพันธ์โดยการทดสอบสเปียร์แมน **ผลการศึกษา:** ความสุขสบายก่อนการผ่าตัดของผู้สูงอายุอยู่ในระดับปานกลาง (ค่าเฉลี่ย = 68.50 ± 7.34 จากทั้งหมด 112 คะแนน) พบว่าความสุขสบายก่อนการผ่าตัดสัมพันธ์ทางบวกอย่างมีนัยสำคัญทางสถิติกับความพร้อมต่อการผ่าตัด (r = 0.333, P-value < 0.001) ความรู้เกี่ยวกับการผ่าตัดกระดูกสะโพก (r = 0.296, P-value < 0.001) และการสนับสนุนทางสังคม (r = 0.226, P-value = 0.010) **สรุป:** ความสุขสบายก่อนการผ่าตัดสัมพันธ์กับความพร้อมต่อการผ่าตัด ความรู้เกี่ยวกับการผ่าตัดกระดูกสะโพก และการสนับสนุนทางสังคม ผู้ป่วยสูงอายุที่กระดูกสะโพกหักสามารถมีความสุขสบายก่อนการผ่าตัดด้วยการสนับสนุนความพร้อมต่อการผ่าตัด ความรู้เกี่ยวกับการผ่าตัดกระดูกสะโพก และการสนับสนุนทางสังคม

คำสำคัญ: ผู้สูงอายุที่กระดูกสะโพกหัก; ความสุขสบายก่อนการผ่าตัด; ความพร้อมต่อการผ่าตัด; ความรู้เกี่ยวกับการผ่าตัดกระดูกสะโพก; การสนับสนุนทางสังคม

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Abstract

Objective: To determine level of pre-operative comfort and its related factors among older adult patients with hip fractures in Wenzhou, China. **Method:** Simple random sampling was used to recruit 128 older adults who had hip fractures and met the criteria. Data were collected from April to June 2022 using demographic data form, a screening questionnaire, and four questionnaires assessing knowledge about the hip operation, readiness for the operation, Kolcaba's comfort level, and social support. Spearman correlation analysis was used to examine correlations. **Result**: Mean score of the pre-operative comfort was at a moderate level (mean = 68.50 ± 7.34 out of 112 points). Pre-operative comfort was significantly positively correlated with readiness for operation (r = 0.333, P-value < 0.001), knowledge about hip fracture (r = 0.296, P-value < 0.001), and social support (r = 0.226, P-value = 0.010). **Conclusion:** Pre-operative comfort was correlated with readiness for operation, knowledge about hip fracture, and social support. The patients with hip fracture undergoing the surgery could have more comfort through enhancing readiness for the operation, knowledge about hip fracture operation, and social support.

Keywords: older adults with hip fractures; pre-operative comfort; readiness for operation; knowledge about hip fracture; social support

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Introduction

Hip fracture is a common orthopedic problem. Based on preliminary epidemiological data, it is estimated that approximately 4.5 million hip fractures occur globally every year, with China accounting for over 30% of the world's total.[1] Due to the loss of flexibility and flexibility of the body in the old people, the elderly are often accompanied by osteoporosis. Hip fractures are more likely to occur after falls or knocks than younger people.[2,3] Statistical data showing that the number of fractures increases with age, and hip fracture is most common between 60 and 79 years old.[4] As a country with a large population in the world, hip fracture will become one of the major medical and social problems faced by China as it enters the aging society.[5] The number of hip fractures in China is expected to exceed 500,000 by 2040. At age 90, approximately one in four women and one in eight men have experienced a hip fracture.[6] Hip fracture greatly affects older individuals' quality of life. It leads to decreased mobility, impaired quality of life, increased dependence on family, higher demand for social health services, and financial burden.[7-9] A survey found that 15% to 40% of patients with hip fractures died of complications within a year, and nearly 66% of the survivors were disabled and unable to recover to their

previous levels of function.[10,11] Furthermore, long periods in bed during care make older adults vulnerable to complications like pressure ulcers, urinary tract infections, and lung infections.[12] Inadequate care can lead to negative outcomes and disability rates of up to 50%. Failure to manage hip fractures can result in higher mortality rates and disability rates compared to individuals of the same age.[13] At present, the conventional treatment of hip fracture includes surgical treatment and non-operative treatment.[14] Operation as the main means of treatment, can alleviate pain, reduce hospital stays, lower the risk of complications and death, improve quality of life, and lighten the burden on relatives.[15]

According to literature review, pre-operative surgical knowledge plays an important role in improving the comfort of patients undergoing orthopedic surgery.[16] Confusion caused by lack of knowledge will make patients have no hope for treatment, reduce compliance and delay the best treatment opportunity.[17] Also, perfect pre-operative preparation is conducive to the handover between the operating room and the ward, ensuring the operation as planned, avoiding the occurrence of adverse medical events, improving medical quality and ensuring medical safety.[18] Kolcaba defines comfort as an umbrella term encompassing physical, psychosocial, and environmental factors. It is not necessarily the absence of disease, but a state of relief, tranquility, and even happiness and adaptation to challenges. Thus, knowledge about hip fracture operation and readiness for the operation can be claimed as supportive factors for comfort in term of theory and practice but still lack of research evidence in term of correlational or predictive study in elderly hip fracture patients.[19]

In order to ensure better surgical results and patient satisfaction, more researchers have found that there is a certain correlation between the patient's preoperative comfort and surgery, postoperative results and recovery. Pre-operative comfort refers to the measures taken to ensure that a patient is relaxed and at ease before undergoing a surgical procedure. This may involve providing emotional support, managing pain and anxiety, and optimizing the patient's physical condition before the operation. The objective of pre-operative comfort is to minimize stress and discomfort, which can help the patient feel more serene and composed during the procedure, leading to a smoother recovery. The improvement of pre-operative comfort can effectively reduce the negative impact of hip fracture surgery on older adults. Pre-operative comfort is associated with the success of health seeking behavior and is an important indicator of preoperative preparation.[20,21] The Comfort theory suggests that increased comfort can cause patients to consciously or subconsciously engage in behaviors that move them toward a happy state.[22] When a patient's perceived pre-operative comfort is achieved, they can experience physiological and psychological comfort. A patient who feels comfortable both physically and mentally is more likely to cooperate with treatment, improve treatment compliance, and transition from passive cooperation to active cooperation and active nursing. This can ultimately result in a better prognosis for the patient.[23] The study by Niyomrat et al[24] also found that social support is positively related to comfort in patients with non-invasive ventilator support. The veracity of this association needs to be established in elderly individuals with hip fractures as well. The conceptual framework operationalizes the theory's dimensions (i.e., physical, psychospiritual, sociocultural, and environmental) into measurable variables namely pre-operative comfort (dependent variable) related to patient understanding, pre-operative preparation, and social support (independent variables) (Figure 1).

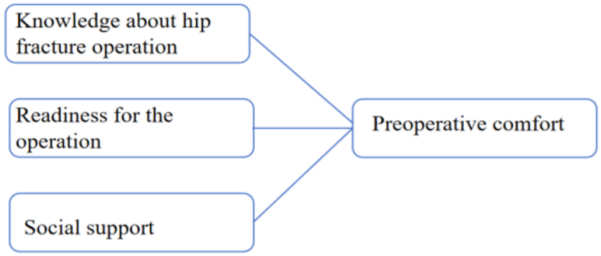

Figure 1 Research framework of the study.

At present, there are few studies that have paid attention to the relationship between hip fracture knowledge, surgical preparation, social support and pre-operative comfort in Wenzhou. Therefore, this study aimed to investigate the factors related to pre-operative comfort in Chinese elderly people who underwent hip fracture surgery specifically 1) knowledge of hip fracture, 2) readiness for the operation, and 3) social support to compensate for the relevant knowledge gaps and improve patient care.

Pre-operative care is particularly crucial for elderly patients undergoing hip fracture surgery, who may experience heightened anxiety and vulnerability. By understanding the factors related to pre-operative comfort, nurses can tailor interventions to address individual patient needs. This may involve providing educational resources about hip fractures and the surgical process, facilitating open communication about concerns, and collaborating with social workers to ensure adequate support systems are in place. Ultimately, improving pre-operative comfort can lead to better surgical outcomes, faster recovery times, and a more positive hospital experience for our patients.

Methods

With a predictive correlation design, this study was conducted in older hip fracture patients who had an operation at the second affiliated hospital of Wenzhou Medical University (WMU) in Wenzhou, China. The study was conducted from April to June 2022. To be eligible, the participant had to be an older adult (i.e., 60 years old or older), with a hip fracture who was about to have surgery in a short term, be diagnosed with hip fracture, have good cognitive function as defined by low scores of 0 – 7 points of the 6-Item Cognitive Impairment Test (6-CIT) administered at the admission to the medical ward for operation, and be able to communicate fluently in Chinese. Individuals with the following attributes were excluded: presence of severe chronic conditions such as malignant tumors, significant liver or kidney dysfunction, or impairment in major organ functions, severe hearing or visual impairment affecting participation in this study, or concurrent severe psychiatric disorders impeding cooperation.

The sample size was estimated using the G*Power 3.1 for a Spearman correlation test. With a type I error of 5%, a power of 95%, and an effect size of 0.30, a total of 111 subjects were required.[25] To account for a 15% incomplete data rate, a total of 128 were recruited.[26]

Research instruments

The questionnaire collected demographic data including age, education level, religion, marital status, residence, length of marriage, occupational status, medical payment method, family income, detailed diagnosis of hip fracture, and treatment method.

The questionnaire assessing study independent and dependent variables included perceived pre-operative comfort of Kolcaba, knowledge about hip operation, readiness for the operation, and social support. The Kolcaba questionnaire and the social support questionnaire have been authorized for translation by the translator. The remaining two questionnaires were developed by the authors as tested for internal consistency reliability in 30 individuals with characteristics comparable to the participants and for content validity by three experts in the field of orthopedics and nursing.

The **knowledge about hip operation questionnaire** was developed by the researchers. A 10-question positive-only questionnaire assessed patients' understanding of hip fracture surgery. With a score of 0 point for an incorrect answer and 1 point for a correct one, the possible total score was 0 to 10 points, where the higher score indicates a higher understanding of the health knowledge about hip fracture surgery. The questionnaire had a high internal consistency reliability (Cronbach’s alpha coefficient of 0.94) and a good content validity with a Content Validity Index (CVI) of 1.

Readiness for the operation questionnaire was developed by the researchers. The 10 questions had a response of a 5-pointrating scale ranging from 1-strongy disagree, to 2-disagree, 3-somewhat agree, 4-agree, and 5-strongly agree. With the possible total score of 10 to 50 points., higher scores indicate better preparation. The questionnaire had a high internal consistency reliability (Cronbach’s alpha coefficient of 0.95) and a good content validity with a Content Validity Index (CVI) of 1.

The **Kolcaba questionnaire** was used to measure the pre-operative comfort in patients with hip fractures.[27] With a total of 28 questions and a response scale of 1 to 4 points, a possible total score of 28 to 112 points was obtained with higher scores indicating higher comfort level. Comfort level is categorized as low, moderate and high (28 - 56, 57 - 85, and 86 – 114 points, respectively) based on the formula of Best (1981). In this present study, the questionnaire has a high internal consistency reliability (Cronbach’s alpha coefficient of 0.99).

The **social support rating scale (SSRS)** questionnaire developed by Xiao Shuiyuan in 1996[28] was used to measure the pre-operative social support of patients with hip fractures.

The questionnaire has a high internal consistency reliability in this study (Cronbach's alpha coefficient of 0.94).

Ethical consideration for participant protection

The approval for this study was obtained by the Institutional Review Board (IRB), Burapha University, Thailand (G-HS092/2565) and the Research Ethics Committee of the Second Affiliated Hospital of Wenzhou Medical University (2022-K-300-01). Participants signed informed consent, with the option to withdraw at any time without treatment impact. Anonymity was maintained through code numbers on questionnaires, and data were destroyed post-publication for confidentiality.

Data collection procedure

Patients meeting inclusion criteria were identified through ward registration records. Patients answered six questions of the 6-CIT, with doctors scoring based on accuracy, deducting points for incorrect answers. Patients scoring between 0 and 7 were included, while those scoring above 7 were excluded. The researcher explained the study process, roles, and human rights to eligible patients, obtaining voluntary participation with signed consent forms. The data collection involved administering self-reported survey questionnaires during the waiting period for medical services which took about 30 minutes to complete. Data completeness was verified by the researcher.

Data analysis

Descriptive statistics including mean with standard deviation and frequency with percentage were used to summarize demographic and clinical characteristics and study variables. Pearson's correlation analysis or Spearman's correlation analysis was used to test correlation between pre-operative comfort and each independent variable, as appropriate. Statistical significance was set at a type I error of 5% (or P-value < 0.05). All statistical analyses were done using the software program SPSS version 22.0.

Results

Of the 128 participants, the majority of them were men (65.60%), in their 76 – 80 years of age (26.60%), married (93.00%), with elementary school or lower (77.30%), and residents of rural areas (50.80%) (Table 1). About half of them had no previous hospitalization (50.80%). Most of them lived with their spouse (91.40%). About two-thirds had miscellaneous jobs (64.80%) such as farmers and freelancers. Most reported debt-free deposits (92.20%). Slightly more than half had doctor visit (52.30%) and as high as 76.60% had no history of surgery (Table 1).

Table 1 Demographic and clinical characteristics of participants (N = 128).

Characteristics	N	%
Gender		
Female	44	34.40
Male	84	65.60
Age (years) (*M* = 48.76, *SD* = 10.42, min = 28, max = 72)		
60 - 65	18	14.10
66 - 70	30	23.40
71 - 75	21	16.40
76 - 80	34	26.60
81 - 85	11	8.60
86 - 90	11	8.60
91 - 95	3	2.30
Marital status		
Divorced	1	0.80
Married	119	93.0
Unmarried	1	0.80
Widowed	7	5.50
Education level		
College	1	0.80
Elementary school and below	99	77.30
High school	4	3.10
Junior high school	24	18.80
Place of residence		
City	13	10.20
Countryside	65	50.80
Town	50	39.10
History of previous hospitalization		
No	65	50.80
Yes	63	49.20
Family member		
Others	11	8.60
Spouse	117	91.40
Occupation		
Civil servant	8	6.30
Merchant	26	20.3
Others	83	64.80
Teacher	1	0.80
Worker	10	7.80
Family financial status		
Having deposit more than debt	10	7.80
Having deposit without debt	118	92.20
History of doctor visit in this hospital		
No	61	47.70
Yes	67	52.30
History of previous surgery		
No	98	76.60
Yes	30	23.40

The majority had a moderate level of pre-operative comfort (43.0%) followed by a low level (30.5%. Accordingly, the mean

score was 68.50 ± 7.34 out of 112 points) (Table 2). Mean scores of independent variables are shown in Table 3.

Table 2 Level of pre-operative comfort (N = 128).

Pre-operative comfort level	N	%	Mean	SD
High	34	26.6	77.53	4.92
Moderate	55	43.0	68.27	2.19
Low	39	30.5	60.95	4.55
Overall			68.50	7.34

Table 3 Mean scores of study variables (N = 128).

Variables	Possible range	Actual range	Mean	SD
Knowledge about hip fracture operation	0 - 10	4 - 10	8.18	1.50
Readiness for operation	5 - 50	31 - 50	41.73	3.56
Social support	12 - 66	20 - 54	39.81	6.20
Pre-operative comfort	28 - 112	41 - 96	68.50	7.34

Pre-operative comfort was significantly positively correlated with all independent variables with the highest extent with readiness for operation (r = 0.333, P-value < 0.001), followed by knowledge about hip fracture operation and social support (Table 4).

Table 4 Correlation coefficient (r)† between selected factors and pre-operative comfort (N = 128).

	1	2	3	4
1. Knowledge about hip fracture operation	1			
2. Readiness for operation	0.217*	1		
3. Social support	0.129	-0.029	1	
4. Pre-operative comfort	0.296**	0.333**	0.226*	1

† Spearman's correlation coefficient.

* P-value < 0.05; ** P-value < 0.001.

Discussions and Conclusion

The result showed that there was a moderate level of preoperative comfort (mean = 68.50 ± 7.34 out of 112 points) in older patients with hip fractures. This suggests patients experienced some relief from stress and a sense of safety within the environment. According to Kolcaba (2003), pre-operative comfort is "the immediate state of being strengthened by having the needs for relief, ease, and transcendence addressed in the four contexts of holistic human experience: physical, psychospiritual, sociocultural, and environmental." It indicated that older patients with hip fractures had some relief from stress, ease and feeling safe with the environment. The result of this stance may be that 93.30% of the subjects were married, and 91.40% lived with their spouse. Moreover, the report demonstrated the stable financial condition as having a deposit and no dept. Reduced financial worries can decrease stress levels and contribute to a more positive emotional state.[29] These reasons reflect the social support dimension which provides psychological safety, companionship, physical assistance, and financial support.

Family is a human being's basic physiological and safety needs that fulfil a sense of belonging and encouragement whenever a person face difficult times. As China has core traditional cultural values that influence the psyche of the Chinese people which include harmony, kindness, justice, politeness, wisdom, honesty, loyalty, and family concern. Family support plays an important role to bring encouragement and inspiration for crossing over obstacles and nourishing the sense of comfort. This reasoning corresponds to the result from the study in cholecystectomy surgery which found that patients with higher scores on the family Cohesion Scale demonstrated better post-surgery recovery.[30] Importantly, the moderate level of pre-operative comfort was congruent with the correlational result of this study as well. The study showed that social support correlated with pre-operative comfort. Thus, the power of family support would be the main factor to support the pre-operative comfort from this present study.

Furthermore, the high percentage of respondents classified under "other" occupations (64.80%) suggests a significant portion of the population may have limited access to specialized healthcare resources. This aligns with the Health Literacy Theory[31], which posits that an individual's ability to understand and utilize health information significantly impacts their health outcomes. Limited access to medical information due to occupation or language barriers could contribute to pre-operative anxiety. Additionally, residing in rural areas (50.80%) might limit access to healthcare services and advanced medical facilities compared to urban areas. This aligns with the Social Determinants of Health framework[32], which recognizes factors like geographic location impacting health outcomes. Rural residents may have less exposure to educational resources or specialists, potentially affecting their preparedness for surgery. These factors may contribute to the moderate level of pre-operative comfort reported by some participants and support the theory that meeting patients'

needs through nursing and medical care can improve their comfort levels.

The correlation between knowledge about hip fracture operation and pre-operative comfort was a positive correlation (r = 0.296, P-value < 0.001). This could be explained that patients who are well-informed about their medical condition and the available treatment options are more likely to feel comfortable and prepared before undergoing surgery. Individuals who possess more knowledge about the operation and understand the potential risks and benefits of the procedure are more likely to feel comfortable and prepared before undergoing the procedure. Having a comprehensive understanding of the surgery can also help alleviate anxiety and fear associated with medical procedures. Thus, having more knowledge creates more comfort. These theoretical reasons are close to the study of 98 orthopedic patients. The research found that surgical knowledge plays an important role in improving anxiety in orthopedic surgical patients.[16] Another study found that confusion resulting from a lack of knowledge can cause patients to lose hope for treatment, reduce compliance, and delay optimal treatment opportunities.[17] The results of this present study have confirmed the relationship between the knowledge regarding hip fracture operations and pre-operative comfort.

The readiness for the operation was significantly positively correlated with pre-operative comfort (r = 0.333, P-value < 0.001). Readiness for the operation in patients is focused on how to get ready for hip operation physically and mentally. The hospitalized patients can benefit from the positive effects of preparation, including pain relief and faster recovery of function.[33-35] The Kolcaba's Comfort Theory (2003)[27] hypothesized that physical and psychospiritual support will promote comfort in patients. That can imply that the patients who are ready for the operation will be provided with physical and psychological support to ensure their safety and recovery. All the encouragement will promote preoperative comfort. This is consistent with Yi Zeng (2016) who argued that adequate pre-operative preparation facilitates handover between the operating room and ward, ensures surgery according to plan, avoids adverse medical events, improves medical quality, and ensures medical safety.[36] This concept can be confirmed by the result from this present study which found that readiness for the operation was significantly positively related to pre-operative comfort. It is also consistent with a study that proposed that surgical preparation has a positive relation to pre-operative comfort for patients with hip fractures.[37]

The study demonstrated positive correlation between social support and pre-operative comfort (r = 0.226, P-value = 0.050). According to Kolcaba's Comfort Theory (2003), social support is claimed as a sociocultural and environmental dimension that could promote comfort in a person. As discussed before, the report from this study showed strong evidence of family support such as marriage status, living with a spouse, and family financial support. If patients feel secure and have companionship, convenience, and hope, they will have a more relaxed mind, which will lead to a sense of comfort before surgery. The result from the present study is consistent with the study in patients with non-invasive ventilator support which found that comfort had positively correlated with social support (r = 0.89, P-value < 0.001).[27]

In nursing practice, nurses and healthcare providers can prepare the patients for surgery by considering the condition of pre-operative comfort. These include providing knowledge and instructions, answering questions, and addressing any concerns or fears regarding operation. Additionally, the readiness is assessed to understand patients and fulfills the needed issues for them. Furthermore, nurses and healthcare providers can work with patients to identify sources of social support, such as family members, friends, or support groups. This can provide emotional and practical assistance to patients, which can help them feel more comfortable and prepared for surgery.

According to nursing education, nurses should focus on promoting patient comfort, which involves knowledge about hip operation, readiness for operation, and social support to improve pre-operative comfort and lead to better outcomes for patients undergoing hip fracture operations. Furthermore, healthcare providers would be provided with in-service training about pre-operative comfort to fulfill their competency for preoperative care in older adults with hip fractures.

In conclusion, this study demonstrated that pre-operative comfort of elderly hip fracture patients in Wenzhou, China, was significantly positively correlated with selected factors, namely knowledge about hip fracture operation, readiness for the operation, and social support. This study provides evidence-based guidance for emphasizing those three factors. Nurses

and healthcare providers should be concerned with improving pre-operative comfort by promoting knowledge about hip fractures, readiness for operation, and social support.

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