



Evaluation of the Post-discharge Recovery Process in Elderly Patients Undergoing Surgical Intervention for Hip Fracture

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Abstract

Objectives: The aim of this study was to evaluate the post-operative and discharge recovery processes of elderly patients who underwent surgical intervention for hip fracture.

Methods: The descriptive and correlational study was conducted with 167 patients. Data were collected using the “Descriptive Information Form” and “Post-discharge Surgical Recovery Scale.”

Results: In this study conducted with 167 patients aged 56–86 years who underwent surgical treatment for hip fracture, it was determined that the mean score of the Post-discharge Recovery Scale was 39.38 ± 12.38 , the mean score of the Post-discharge Recovery Scale was higher in patients aged 65 years and younger than in patients aged 76 years and older, and the mean score of the Post-discharge Recovery Scale of married patients was positively higher than that of single patients and the difference between them was significant.

Conclusion: According to the data obtained in this study, when age groups categorized as patients aged 65 years and younger, patients aged 66–75 years and patients aged 75 years and older were compared, significant positive differences were found in the recovery process, and duration of patients aged 65 years and younger compared to patients aged 76 years and older.

Keywords: Elderly patient, hip fracture, recovery process.

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With the increase in life expectancy, the number of elderly individuals in the population is also increasing. By 2050, the elderly population is expected to triple the current population rate.^[1] In Türkiye, the proportion of elderly population is increasing gradually. In 2017, the proportion of the population aged 65 and over in the total population was 8.5%, while this rate increased to 9.9% in 2022.^[2] In parallel with the increase in the elderly population, the risk of hip fracture is also increasing. Hip fractures constitute 84% of bone lesions in the elderly population. Hip fracture is the fracture type

with the highest mortality and morbidity in the elderly.^[3] When factors such as comorbidity, fragility, polypharmacy, nutrition, body mass index, risk of embolism, and difficulty in patient compliance are added, this complicates the treatment and increases the mortality rate. The mortality rate in the 1st year after hip fracture has been reported to be 20%. In elderly patients with a similar history of hip fracture, delayed surgery has been associated with mortality.^[4] Many factors affect the healing process of hip fracture. The decrease in physiological reserves with advancing age leads to a higher incidence of comorbidities. Existing

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chronic diseases, other traumas accompanying the hip fracture, and the mental state of the patient are among the reasons affecting the healing process. Therefore, hip fracture in elderly individuals requires a multidisciplinary approach in the healing process.^[3] Forty-two percentages of elderly individuals with hip fracture cannot fulfill their pre-fracture functions. The aim of surgical interventions and treatment after hip fracture should be to restore the limb functions to the pre-fracture level, to be able to perform daily tasks on their own, to return to their former welfare status, to minimize disability, to relieve pain, to restore the patient's pre-fracture physical health with rapid rehabilitation, to return to their pre-fracture welfare status, and to continue their remaining life independently. Hip fracture causes a 20% reduction in life expectancy and 20–50% of these patients need an assistant for the rest of their lives.^[5,6] Many studies on hip fractures have aimed to minimize the number of surgical operations performed continuously with the observation of undesirable conditions in fractures and the surgical methods used have been specified.^[7] In this study, it was aimed to evaluate the post-discharge recovery processes in elderly patients who underwent hip fracture operation.

Materials and Methods

Type of Study

The research was descriptive and correlational.

Population and Sample of the Study

To determine the adequacy of the sample size in this study, the tables published by the World Health Organization were used. The significance level was 5%, power 95%, and the incidence of hip fracture in Türkiye was 17.23/10.000, and the sample size was found to be 136 to estimate this value within the absolute percentage of 0.06.^[8] Considering the missing data, the study was completed with a larger sample (n=167).

Data Collection Tools and Methods

Data were collected using the Descriptive Information Form including the descriptive characteristics of the participants and the Post-discharge Surgical Recovery Scale.

Descriptive information form: The descriptive characteristics form, which was prepared by the researchers by reviewing the literature, consists of questions about the sociodemographic characteristics of the patients (gender, age, income status, educational status, etc.).

Post-discharge surgical recovery scale: The assessment tool was developed by Kelinback in 2000 to measure

patients' surgical recovery after discharge. The Turkish validity and reliability study was conducted by Eti Aslan et al.^[9] in 2019. The assessment tool consists of 15 items and the items of the scale are scored as "1=strongly disagree, ..., 10 = strongly agree." The scale consists of five main themes: Health status, activity, fatigue, work ability, and ethnographic. The score calculation of the scale provides the determination of the percentage of the patient's readiness for discharge. The highest score that can be obtained from the assessment tool is 150, and the lowest is 15. The score obtained from the scale is divided by the total possible score and multiplied by 100 (For example, $120/150 \times 100 = 80\%$). The score obtained gives the post-discharge recovery as a percentage.

Permission and Ethics Committee Approval

Before starting to collect the data, permission was obtained from Van Yüzüncü Yıl University Non-interventional Ethics Committee (date: December 09, 2022, decision no: 2022/12–03). It was stated in the informed consent form that participation in the study was voluntary. In the same form, explanations were added that the "principle of confidentiality and protection of confidentiality" would be complied with and the "principle of anonymity and security" would be fulfilled. The Declaration of Helsinki was adhered to.

Evaluation of the Data

The Statistical Package for the Social Sciences (SPSS) 25.0 (SPSS Inc., Chicago, Illinois, USA) package program was used for the quantitative evaluation of the data. In the evaluation of descriptive data, arithmetic mean, standard deviation, percentages, and minimum-maximum values were calculated. For the normality distribution of the data, the skewness kurtosis value ranges were taken into consideration and it was checked whether the data were normally distributed or not. Independent sample t-test and one-way ANOVA test were used for normally distributed data. Türkiye and Tamhane multiple comparison tests were used to determine which groups were different in the three-group significant data. All test data were evaluated at a 95% confidence interval and 0.05 significance level.

Results

When the distribution of the descriptive characteristics of the patients was analyzed, it was determined that 52.7% were between 66 and 75 years of age, 76.6% were female, 72.5% were married, and 48.5% were not employed. At the same time, it was determined that 70.1% of the patients had no previous surgery before hip fracture surgery and 34% of those who had surgery

Table 1. Descriptive information form (n=167)

	n	%
Diagnosis		
Hip fracture surgery	167	100
Age		
65 years and under	46	27.5
66–75 years old	88	52.7
76 years and older	33	19.8
Gender		76.6
Female	128	
Male	39	23.4
Marital status		72.5
Married	121	
Single	46	27.5
Profession		
Not working	81	48.5
Housewife	57	34.1
Self-employment	9	5.4
Retired	20	12
Previous surgery		
Yes	50	29.9
No	117	70.1
Types of surgery for those who have had previous surgery (n=50)		
GIS surgery	11	22
Heart surgeries	17	34
Orthopedic surgeries	10	20
Other surgeries	12	24

GIS: Gastrointestinal system.

before surgery had cardiovascular interventions such as angioplasty, bypass, and heart valve (Table 1).

It was determined that 78.4% of the patients who underwent hip fracture surgery had chronic diseases and 23.4% had diabetes, 24% had hypertension, 25.1% had respiratory diseases such as Asthma/Coah/Shortness of breath, and 28.7% had other chronic diseases (Table 2).

The mean score of the Post-discharge Recovery Scale of patients who underwent hip fracture surgery was 39.38 ± 12.38 (Table 3).

When the total mean scores of the Post-discharge Recovery Scale were compared according to the descriptive characteristics of the patients, it was determined that there was a significant relationship between the age descriptive characteristic of the patients and the Post-discharge Recovery Scale ($p < 0.05$). In the Türkiye multiple comparison test, which was performed to understand which groups were different among the categorized age groups, it was determined that the mean score of the Post-discharge

Table 2. Presence of concomitant diseases and illnesses (multiple answers)

	n	%
Presence of concomitant disease (n=131)		
Yes	131	78.4
No	36	21.6
Diabetes	39	23.4
Hypertension	40	24
Respiratory diseases such as Asthma/Coah/Shortness of breath	42	25.1
Other diseases	48	28.7

Recovery Scale was higher in patients aged 65 years and younger than in patients aged 76 years and older (Table 4).

When the relationship between the marital status descriptive feature of the patients and the Post-discharge Recovery Scale was examined, it was determined that the mean score of the Post-discharge Recovery Scale of married patients was positively higher than that of single patients, and the difference between them was significant ($p < 0.05$) (Table 4).

Discussion

In this study, the post-discharge recovery processes of 167 patients aged 65 years and older who underwent hip fracture operations were evaluated. As the number of elderly people increases, bone problems also increase. Orthopedic problems are the first cause of hospitalization in the elderly population. The deterioration of bone integrity as a result of accidents experienced by hospitalized patients over 65 years of age indicates the need for orthopedic surgeries. Even if surgical interventions allow individuals to continue their daily life, they cannot fulfill their activities as much as before the fracture.^[10] Again, loneliness and depressed mood are common in geriatric patients because hip fractures limit their activities. It is important that the family and relatives of these patients take care that the patients are not alone and visit them.^[11]

In this study, the mean score of the Post-discharge Recovery Scale of patients who underwent hip fracture surgery was 39.38 ± 12.38 %. This score indicates a low degree of improvement in the overall recovery level of the patients. These findings indicate a lower recovery rate when compared with the results obtained in other studies. For example, in a study conducted by Halat Topal et al.^[12] to investigate the level of recovery after discharge in operated patients (neurosurgery, orthopedics, general surgery, and urology), the percentage of recovery after discharge was found to be 69%, indicating that the recovery process was

Table 3. Distribution of the mean scores (%) and min-max value range of the scale of post-discharge recovery scale of hip fracture surgery patients

	Min-max value	Total point
Post-discharge recovery scale (%)	15.0–150.0	39.3892±12.38806

Table 4. Comparison of post-discharge recovery scale total scores according to descriptive characteristics of hip fracture surgery patients

Identifying features	Post-discharge recovery scale
Age	
65 years and under ^a	42.66±12.28
66–75 years old ^b	39.15±12.11
76 years and older ^c	35.45±12.38
Test value	F=3.385 p=0.036 a>c
Gender	
Female	38.59±11.73
Male	42.00±14.16
Test value	t= -1.509 p=0.133
Marital status	
Married	40.95±12.36
Single	35.27±11.59
Test value	t=2.695 p=0.008
Profession	
Not working	38.95±14.71
Housewife	38.45±8.79
Self-employment	45.25±8.2
Retired	41.16±12.21
Test value	F=0.951 p=0.417
Presence of concomitant disease	
Yes	38.72±12.35
No	41.79±12.38
Test value	t= -1.319 p=0.189
The presence of previous surgery	
Yes	36.93±13.09
No	40.43±11.97
Test value	t= -1.684 p=0.094
Surgeries performed	
GIS surgery	40.90±13.89
Heart surgery	37.52±14.06
Orthopedic surgery	29.13±13.06
Other surgery	38.94±9.22
Test value	F=1.696 p=0.181

^a: 65 years and under, ^b: 66–75 years old, ^c: 76 years and older, p<0.05 significance level. F: One-way ANOVA, t: Independent sample test, GIS: Gastrointestinal system.

faster or more effective. However, while the study of Halat Topal et al.^[12] evaluated the recovery levels of patients after surgical procedures in different branches, different diseases and treatment methods may have been used in the sample. This may be a factor that causes the results to change. When these findings are evaluated together with the findings in the literature, it shows that the recovery processes of patients who undergo a special surgical intervention such as hip fracture may follow a different course from more general procedures. Differences in sample size, treatment methods, and patient characteristics may be the source of the differences between these two studies. In addition, it may be considered that the recovery process after hip fracture surgery is more affected by factors such as age of the patients and social support.

In this study, 76.6% of the patients were found to be female. In close group studies in the literature, it is reported that hip fractures are more common in women than in men. In this ratio, it is known that the incidence of hip fractures in women is 2–4 times higher than in men.^[13] Being of the female gender is an important risk factor in hip fracture. The most important reasons why hip fractures are more common in women than in men are listed as the lack of sufficient Vitamin D and calcium with advancing age and the withdrawal of estrogen from the body with menopause. Here, it is important for women to organize their living spaces in a way to minimize the risk of falling and to eat a diet rich in Vitamin D and calcium, which are important for bone health with adequate and balanced nutrition despite menopause and advancing age.^[10,14]

As people age, their physical capacity decreases. In addition, the presence of cognitive disorders such as depression, Alzheimer's disease, and dementia and impaired balance mechanisms predispose the elderly to falls, leading to an increased incidence of hip fractures. Impairments in perception, vestibular functions, proprioception, and circulatory functions are most common in the elderly and may be associated with balance disorders. Loss of vibration sense, decreased pain perception, lack of acyl, and quadriceps reflexes also increase the risk of hip fracture during falls.^[15,16] In this study, when the total mean scores of the Post-discharge Recovery Scale were compared according to the descriptive characteristics of the patients, it was found that there was a significant relationship between the age descriptive characteristic of the patients and the Post-discharge Recovery Scale. Among the categorized age groups, it was found that the mean score of the Post-discharge Recovery Scale was higher in patients aged 65 years and younger than in

patients aged 76 years and older. In the study of Halat Topal et al.,^[12] when the relationship between the demographic variables of the participants and the recovery percentages was examined, significant relationships were found with age demographic data.^[12] It was determined that the mean score of the post-discharge recovery scale of patients aged 18–65 years was higher than the patients aged 65–74 years and 75 years and older. The findings of this study emphasize the effect of age on the post-operative recovery process. In particular, the fact that patients aged 65 years and younger had higher Post-discharge Recovery Scale scores than patients aged 76 years and older indicates that age is an important factor in the recovery process. As we age, factors such as physiological changes in the body, decreased muscle strength, balance disorders, and loss of reflexes can negatively affect the speed of recovery of patients. In addition, the presence of cognitive disorders such as depression, Alzheimer's disease, and dementia may increase the risk of falls in the elderly, making the healing process of traumas such as hip fracture difficult. In addition to the age factor in our study, the findings of Halat Topal et al.^[12] similarly revealed that age had a significant effect on recovery. This suggests the need for further research on how aging shapes recovery processes and the importance of age-specific customization of treatment plans. Going forward, a better clinical understanding of different age-related recovery processes may contribute to improving rehabilitation and care strategies.

In this study, when the relationship between the marital status descriptive feature of the patients and the Post-discharge Recovery Scale was examined; it was determined that the mean score of the Post-discharge Recovery Scale of married patients was positively higher than single patients and the difference between them was significant. It is also stated in the literature that married patients have an easier recovery process than single patients. It is thought that the high comfort level of married patients affects the recovery processes.^[17] This study reached an important finding by examining the effect of patients' marital status on post-operative recovery. The fact that married patients had higher Post-discharge Recovery Scale scores than single patients reveals the critical role of social support factors in the recovery process. In the literature, it is stated that married individuals have stronger social networks and more emotional support, and therefore, they may have a faster and smoother recovery process.^[17] It is thought that married patients experience a better psychological and physical recovery with the effect of their social support. It is also suggested that married individuals' responsibilities at home provide a stronger source of motivation for

care and support. The findings of the study suggest that marital status is an important factor to be considered in the post-operative recovery process and indicate that strategies related to social support can play a critical role in supporting recovery processes.

Conclusion

In this study conducted with 160 patients aged 56–86 years who underwent surgical treatment for hip fracture, it was determined that the mean score of the Post-discharge Recovery Scale was 39.38 ± 12.38 , the mean score of the Post-discharge Recovery Scale was higher in patients aged 65 years and younger than in patients aged 76 years and older, and the mean score of the Post-discharge Recovery Scale of married patients was positively higher than that of single patients and the difference between them was significant.

Clinical Relevance

The statistically significant difference between age groups reflects the influence of physiological aging on recovery; younger patients have better physical resistance, leading to faster and more complete recovery. This finding may guide clinical decisions, emphasizing the need for tailored rehabilitation plans that take into account age-related differences in recovery rates. Furthermore, the positive association between marital status and recovery scores emphasizes the importance of social support in the recovery process. Married patients may benefit from stronger social networks, which may contribute to a more supportive environment post-discharge and potentially lead to better outcomes. Clinicians may consider addressing these psychosocial factors, such as increasing social support for single patients, to optimize recovery after hip fracture surgery.

Disclosures

Ethics Committee Approval: The study was approved by the Van Yüzüncü Yıl University Non-interventional Ethics Committee (no: 2022/12–03, date: 09/12/2022).

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