



The Effect of Homecare on Mortality in Post-operative Hip Fracture Patients

Kalça Kırığı Cerrahisi Sonrası Evde Bakım Hizmetlerinin Mortaliteye Etkisi

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ABSTRACT

Aim: Hip fractures are an important cause of mortality in the geriatric population. Even if a patient's general condition is good in the post-operative period, mortality is often observed due to complications after patient discharge. This study aimed to investigate the effect of homecare services on mortality after hip fracture surgery.

Material and Method: Between October 2013 and September 2018, a total of 228 patients who underwent surgery for hip fractures were retrospectively reviewed for homecare services follow up documents. Age, type of homecare service, number of homecare visits, whether the patient was healthy or exitus, and the otherwise healthy period after fracture treatment were recorded, and the relationships between these facts were statistically analyzed using the Pearson correlation method.

Results: 82 (43.3%) of 189 patients who did not receive homecare services and 7 (18.9%) of 37 patients who did receive homecare services were recorded as exitus. The average number of homecare visits to patients receiving homecare services was 5.13. There is a strong correlation between the number of homecare visits and post-operative life expectancy ($p < 0.01$). The number of homecare visits reduced the exitus numbers significantly ($p < 0.05$). Both of these correlations were found to be stronger in patients younger than 65 years.

Conclusion: It is thought that the dressing of wounds and mobilization of patients by homecare services personnel can provide early diagnosis of serious complications and can decrease the risk of wound infection and embolism. Routinely planned home care for patients with hip fractures in the post-operative period will have positive effects on both life expectancy and quality of life.

Keywords: Hip fracture, home care, geriatric mortality

ÖZ

Amaç: Kalça kırıkları geriatrik popülasyonda önemli bir ölüm nedenidir. Ameliyat sonrası dönemde hastanın genel durumu iyi olsa bile taburculuk sonrasında gelişen komplikasyonlar nedeniyle sıklıkla mortalite gözlenmektedir. Bu çalışmada kalça kırığı ameliyatı sonrası evde bakım hizmetlerinin mortaliteye etkisinin araştırılması amaçlandı.

Gereç ve Yöntem: Ekim 2013 ile Eylül 2018 tarihleri arasında kalça kırığı nedeniyle ameliyat edilen toplam 228 hastanın evde bakım hizmetleri takip belgeleri geriye dönük olarak incelendi. Yaş, evde bakım hizmeti türü, evde bakıma başvuru sayısı, hastanın sağlıklı olup olmadığı, kırık tedavisi sonrası diğer sağlıklı dönemler kaydedildi ve bu veriler arasındaki ilişkiler Pearson korelasyon yöntemi kullanılarak istatistiksel olarak analiz edildi.

Bulgular: Evde bakım hizmeti almayan 189 hastanın 82'si (%43,3) ve evde bakım hizmeti alan 37 hastanın 7'si (%18,9) çıkış olarak kaydedildi. Evde bakım hizmeti alan hastaların ortalama evde bakım ziyaret sayısı 5,13 oldu. Evde bakıma başvuru sayısı ile ameliyat sonrası yaşam beklentisi arasında güçlü bir ilişki vardır ($p < 0.01$). Evde bakıma başvuru sayısı çıkış sayılarını anlamlı derecede azalttı ($p < 0,05$). Her iki korelasyonun da 65 yaş altı hastalarda daha güçlü olduğu görüldü.

Sonuç: Evde bakım hizmetleri personeli tarafından yaraların pansumanlanması ve hastaların mobilize edilmesinin ciddi komplikasyonların erken teşhisini sağlayabileceği, yara enfeksiyonu ve emboli riskini azaltabileceği düşünülmektedir. Kalça kırığı olan hastaların ameliyat sonrası dönemde rutin olarak planlanan evde bakımı hem yaşam beklentisi hem de yaşam kalitesi üzerinde olumlu etkiler yaratacaktır.

Anahtar Kelimeler: Kalça kırığı, evde bakım, geriatrik mortalite

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INTRODUCTION

Hip fractures are among the leading causes of mortality in the elderly population. Presently, mortality rates associated with hip fractures are 37.1% in men and 26.4% in women (1). The highest mortality is observed in the early post-operative period and then the rate decreases gradually (2). In addition, half of the patients who live an active lifestyle before a hip fracture cannot return to their independent lives again ever (3).

Hip fractures include fractures of the proximal femur and are named by the ICD-10 codes: S72.0 (femoral neck fracture), S72.1 (pertrochanteric fracture of the femur), S72.1A (intertrochanteric fracture of the femur), S72.1B (trochanteric fracture of the femur), and S72.2 (subtrochanteric fracture of the femur). Surgical intervention is needed in these fracture types. Decisions about the surgical technique are made by the surgeon according to the patient's age, type of fracture, joint osteoarthritis, bone quality, past activity levels, and the future expectations of the patient.

Complications can be divided into orthopedic and medical complications. Orthopedic complications include dislocations, non-union of the fracture and avascular necrosis, leg-length discrepancy, pain, heterotopic ossification, implant relaxation, nerve injuries, and wound infections (4). Medical complications include deep vein thrombosis, cardiovascular diseases, pulmonary dysfunction (pulmonary edema, pneumonia), urinary tract infection, pressure sores, and delirium. However, serious complications and life-threatening conditions still occur during the post-discharge period, which makes further medical visits vital. In the geriatric population, a long-term hospital stay of patients with good general condition can cause complications such as wound infection, sepsis, and delirium (5,6).

Providing homecare services for wound dressing enables the patient to benefit from other services as well. Besides the wound dressing, general condition assessment, catheter requirements, bed wound control, physical therapy for mobilization, and examinations for general health problems are routinely performed during homecare visits. At the same time, as recommended by the surgeon, having homecare personnel bring the patient to the outpatient clinic may decrease morbidity and mortality.

Homecare services are initiated with the mission of delivering high standard health care for patients in the setting of their own homes. The effectiveness of homecare services and their impact on mortality rates have not been thoroughly evaluated. The main purpose of this study is to compare the post-operative healthy life duration of patients who received homecare services after hip fracture surgery, with those who did not.

MATERIAL AND METHOD

Between October 2013 and September 2018, 228 patients who underwent fracture fixation surgery for proximal femur fractures were retrospectively reviewed. Besides the demographic data of patients, mortality rates, the otherwise healthy period after fracture treatment, homecare referral, and the number of homecare visits were evaluated and statistically analyzed. Mortality rates of patients receiving and not receiving home care were compared. Patients who received homecare services were divided into two groups: below 65 and over 65 years of age. Correlation between mortality rates and homecare visits were also analyzed separately for these subgroups.

RESULT

82 (43.3%) of 189 patients who did not receive homecare services and 7 (18.9%) of 37 patients who did receive homecare services were recorded as exitus. The average number of homecare visits to patients receiving homecare services was 5.13. Demographic data of hip fracture patients receiving and not receiving home care are shown in **Table 1**. Data obtained on patients receiving home care are shown in **Table 2**.

Table 2. Data of the homecare patients.

	Total patients	Total homecare visits	Average homecare visits	Average homecare follow-up time (days)
Home care	37	190	5.13	77.9

There is a strong correlation between the number of homecare visits and post-operative life expectancy ($p < 0.01$). The number of homecare visits decreased the number of exitus significantly ($p < 0.05$). Both of these correlations were found to be stronger in patients younger than 65 years.

Table 1. Demographic data of hip fracture patients.

Groups	n	Exitus	Exitus %	65 years old	65 years old	General anesthesia	Proximal femur nail	Bipolar endoprosthesis
Received home care	37	7	18.9	21	16	3	6	31
Did not receive home care	189	82	43.3	116	73	18	58	131
Total	228	89	39	137	89	21	64	164



DISCUSSION

The importance of preventive health care is becoming better understood by governments worldwide; thus, these governments reserve a greater financial budget for primary care every year. This foresighted action helps to avoid vast hospital expenses over the shoulders of social security institutions and patients alike.

As Pala et al. stated in their study, preventative services increased the prevalence and awareness of one of the most important medical and public health issues: hypertension. We believe that preventative healthcare services can also help prevent and diagnose post-surgery-related complications (7).

Çopuroğlu et al. found that in a study conducted on 923 patients with hip fractures between 2000 and 2009, the incidence of hip fractures increases every year. Also, the average age of patients diagnosed with hip fractures rises annually (8). Obviously, as the average life expectancy increases, hip fractures will continue to be an elderly care problem worldwide. The number of hip fractures throughout the world by the year 2050 is expected to be 6.3 million (9-11).

A homecare visit for wound dressing and mobilization provides a chance for patients to be evaluated by a healthcare professional, which can lead to intervention in the early period of any possible complication. In a 2006 study by Sahlen et al., researchers investigated whether preventive homecare visits postpone mortality. Outcomes indicated that mortality is altered by preventive homecare visits. Plus, many senior participants described visits provided a certain sense of security and a feeling of importance. They also reported improved overall healthiness over the course of the visits (12). This also shows the positive psychological effects of home care. However, these positive outcomes are achieved only as long as visits are continued systematically and regularly.

Homecare services have developed in recent years and have become a comprehensive and high-quality service in Turkey. Services provided by homecare professionals are listed below (**Table 3**) (13,14)

Fast-track surgery has been a hot topic in recent years. Its main target is to operate on the patient within 24 hours of admission, achieving a quick post-operative mobilization, providing adequate nutrition, and minimizing the use of analgesic drugs (15). Zuckerman et al. reported that a delay of more than two days for an operation was a major cause of mortality within a year for patients with an active life before the fracture, and that operation would be optimal within two days after admission to the hospital (16). Early surgical intervention, early mobilization, and active physical rehabilitation are all proven to improve outcomes and reduce mortality rates in the geriatric population.

Sarıcaoğlu et al.'s study conducted on 392 geriatric femur fractures shows that anesthesia types significantly impacted both intensive care unit (ICU) stays and total hospitalization periods; however, it did not affect complication or mortality rates. It is shown that patients who received general anesthesia have prolonged hospital stays compared to those who received regional anesthesia (17).

Mutlu et al. also carried out a study comparing the 30-day mortality of patients who underwent surgery for hip fractures and are over 90 years of age. They found no significant difference between patients who died within the 30-day period after surgery and the survivor group regarding anesthesia type, fracture localization, and duration of surgery (18).

Tüzün et al. emphasized the fact that in the subacute period after surgery, independent mobilization is the main goal, and also preparation for further rehabilitation processes, which will also take place in the patient's permanent residence. The pre-operative functional state of the patient is also important in guidance of post-operative rehabilitation and actual mobility expectancy (19).

Table 3. Services provided by a homecare service unit in Turkey from 2012-2017.

Service Name	Number Supplied	Service Name	Number Supplied
Patient Exam	3,563,826	Tracking with Ventilator	2774
Oxygen Inhalation Treatment Session	17,287	Enteral Hyperalimentation Tracking	9327
Consultation	372,132	Burn Dressing	22,200
Subcutaneous Injection	101,229	Wound Dressing	1,471,351
Health Committee Report (Medical Device)	62,028	Connecting the Patient to the MEK Ventilator	2336
Suturing	40,432	Electrocardiogram Shooting at Home	12,433
Health Committee Report (Treatment)	105,202	Injection	347,590
Total Parenteral Nutrition Tracking	6232	Intravenous Drug Infusion	257,634
Steam Treatment	4940	Physical Therapy Practices	60,400
Drug Application with Nebulizer	446	Educational Practices	1,438,282
Enema	15,591	Bladder Probe Application	525,925
Expert Physician Report (Medication)	213,336	Rehabilitation Practices	56,112
Phototherapy	1143	Pacemaker Control	454
Nasogastric Probe Application	40,612	Psychiatric Practices	41,174
Blood Collection for Examination	788,725	TOTAL	9,581,153

Patients' subacute rehabilitation periods are usually spent in the hospital. In this period, patients are educated and aided by physiotherapists and prepared for long-term rehabilitation. The aim of long-term rehabilitation is to return the patient to his or her day-to-day activities in the long run. It is important for the activities in this period to be carried out in the safest place possible for the sake of the treatment. For most patients, the home is the best place since arrangements can be made individually to prevent indoor accidents. Physical therapy, which is included in homecare services, is crucial in returning patients with hip fractures to their everyday lives (19,20).

In a study carried out by Patzelt et al. in 2016, the question, "What do you associate with 'healthy aging?'" was directed to 4 elderly focus groups: women aged 65 to 75 years, men aged 65 to 75 years, men aged 76 years and older, and women aged 76 years and older. "Physical activity" was the single common answer of all focus groups (21). As seen here, physical activity and independence in mobility is the utmost important issue from an elderly point of view, and must be carefully addressed, especially in post-operative hip fracture patients.

At the same time, home healthcare services are much more beneficial for both the individual and the government in terms of economy. According to the study conducted by Karabağ, patients' short- and long-term homecare costs are much lower compared to the costs of hospitalization (22).

In light of these data, homecare services provide benefits in terms of mortality, morbidity, early return to daily activities, and overall cost in post-operative hip fracture patients. We recommend homecare services be routinely planned for patients who have experienced hip fractures.

CONCLUSION

In this study, the importance of home care services was tried to be emphasized with the patient questionnaire and cost-effectiveness. Clearly, a more detailed study with accompanying co-morbidities of patients, mean length of hospital stay, length of post-operative ICU days (if any), and broader-scale sampling with more patients would be valuable. Also, we did not have data on patients' daily drug use, smoking habits, and alcohol consumption, as well as patients' physiological status quo including body mass index, disease severity, and sociodemographic status. With these limitations in mind, it is possible to widen and improve investigations related to this subject and make sweeping changes in national healthcare systems.

ETHICAL DECLARATIONS

Ethics Committee Approval: This study was approved by Kütahya Health Science University Non-interventional Clinical Research Ethics Committee (Date: 09.01.2019, Decision no: 2019/01).

Informed Consent: Because the study was designed retrospectively, no written informed consent form was obtained from patients.

Referee Evaluation Process: Externally peer-reviewed.

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