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RESEARCH

# FACTORS AFFECTING THE DURATION OF ADMISSION AND DISCHARGE IN A PALLIATIVE CARE CENTER FOR GERIATRIC PATIENTS

## ABSTRACT

***Introduction:*** The factors that have an impact on the stay and discharge of geriatric patients who were admitted to palliative care center (PCC) were investigated.

***Materials and Method:*** 111 were included in the study. Age, gender, marital status, primary diagnoses, nutritional status, decubitus ulcer, pain issues, palliative performance scale (PPS) scores, duration of PCC and "wanting to be discharged" status of patients were recorded.

***Results:*** Distribution of patients were as follows: neurological disease 47 (42.3%), cancer 26 (23.4%), chronic systemic conditions 46 (41.4%), infections 12 (10.8%), nutritional problems 58 (52.2%), decubitus ulcers 45 (40.5%) and pain 14 (12.6%). The median duration of PC was 24 days. Duration of hospitalization in patients with nutrition and decubitus ulcers were detected longer ($p<0.05$). "Wanting to be discharged" rate was lower in patients with neurological disease, poor PPS scores, decubitus ulcer and nutritional problems whereas higher in patients with cancer. According to the binary logit model, a diagnosis of cancer and PPS score were increased whereas nutritional problems and decubitus ulcers were decreased the probability of wanting to be discharged.

***Conclusions:*** A coordinated effort between palliative care and home health care may shorten the duration of in-patient palliative care and hasten the process of discharge.

***Key Words:*** Geriatrics; Palliative Care; Home Health Nursing; Patient Discharge.

ARAŞTIRMA

# GERİATRİK YAŞ GRUBUNUN PALYATİF BAKIM MERKEZİNDEKİ YATIŞ SÜRESİ VE TABURCULUĞUNDA ETKİLİ FAKTÖRLERİN İNCELENMESİ

## ÖZ

***Giriş:*** Bu çalışmada palyatif bakım merkezinde yatırılarak palyatif bakım sağlanan geriatrik yaş grubununun yatış süresi ve taburculuklarında etkili faktörlerin incelenmesi amaçlandı.

***Gereç ve Yöntem:*** 111 hasta çalışmaya dahil edildi. Hastaların yaşı, cinsiyeti, medeni durumu, primer tanıları, beslenme, dekibüt ülseri ve ağrı problemleri, palyatif performans skalaları (PPS), PB kalış süreleri ile taburculuğu isteyip istemedikleri kaydedildi. "Taburcu olmayı isteme" üzerinde olası etkili faktörler için Binary Logit modeli oluşturuldu.

***Bulgular:*** Nörolojik hastalıklar 47 (%42,3), kanser 26 (%23,4), kronik sistemik hastalık 46 (%41,4) ve enfeksiyon 12 (%10,8) tanısı ile takip edilen hastaların 58 (%52,2) de beslenme, 14' (%12,6) de ağrı ve 45 (%40,5) de ise dekibüt ülseri mevcuttu. PB kalış süreleri 24 gün olarak belirlendi. Beslenme ve dekibüt ülseri olan hastaların PB kalış süresi daha uzun idi ($p<0,05$). "Taburcu olmayı isteme" oranı nörolojik hastalığı, kötü PPS skorlu, dekibüt ülserli, beslenme problemi bulunan hastalarda düşük, kanser tanısı olanlarda yüksekti. Binary logit modeli sonuçları değerlendirildiğinde taburcu olmayı isteme olasılığını kanser tanısı ve PPS değerinin artırdığı, beslenme ve dekibüt ülserinin ise azalttığı tespit edildi.

***Sonuç:*** Palyatif bakım ve evde bakım hizmetlerinin birlikte koordine çalıştırılması yoluyla hastaların eve taburculuğu hızlanabilir ve bu sayede palyatif bakımda yatış süresinin kısalabileceğini düşünüyoruz.

***Anahtar Sözcükler:*** Geriatrik; Palyatif Bakım; Evde Bakım; Taburculuk.

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## Introduction

Recent data shows a global increase in the proportion of elderly individuals in the general population, leading to increased incidence of chronic and degenerative diseases (1). Consequently, the annual rate of deaths is also expected to rise continuously and reach 74 million by the year 2030 (2). Despite the absence of a universal definition of old age, many countries accept an age limit of over 65 years of age as defining the geriatric population. The World Health Organization (WHO) accepts a chronological age of 65 years or older as people who are of "old age" and ≥85 years as people who are of a "very old age" Gerontologists divide the elderly population into these three groups: young elderly (65–74 y), moderately old elderly (75–84 y), and old elderly (> 85 y) (3, 4). According to data provided by the Turkish Statistics Agency, the proportion of individuals ≥65 years of age in the general population of Turkey was 4.2% in 1995, 4.7% in 2000, 5.7% in 2010, and 7.8% in 2015. This percentage is expected to double within 20 years and Turkey is expected to harbor the highest number of elderly individuals in Europe by the year 2050 (5). A direct consequence of the increase in the number of elderly people within a given society is the increased need for palliative care services. WHO considers the development of public health policies to address the palliative care of the geriatric age group as a priority (6). In many developed countries, the majority of the deaths of elderly patients have been reported to occur in hospitals, where they have been admitted into against their wishes (7). A significant proportion of the elderly patients discharged from hospitals may not experience a complete clinical and functional recovery. The less the functional recovery, the higher the dependence on others, hence, the higher use of socio-economic resources (8, 9). Several conditions including cancer, ischemic heart disease, diabetes mellitus, hemorrhagic or ischemic stroke, hypertension, musculoskeletal disorders, chronic lung diseases, and nutritional problems occur more commonly in the elderly than in other age groups (10). Also, the need for palliative care is on the rise among the elderly and is reaching significant proportions, except for cancer patients (11). As in other countries, in Turkey, there is an urgent need to improve the availability and quality of palliative care services to alleviate such health problems associated with multi-systemic conditions that are common in the geriatric population and to provide care for elderly Turkish individuals and their family members. According to a report from the Turkish Public Hospitals Association (August 2015), the total number of in-bed facilities for palliative care in Turkey is 1049, which is exceedingly far below the actual need (12). Creating a better definition of the patient profile and factors that have an impact on the duration of in-patient palliative care in existing palliative care centers may provide further insights into the need for the number of patient beds as well as contribute to more effective use of existing services. Therefore, our objective was to identify the duration of inpatient care and factors affecting the discharge process in geriatric patients admitted to this center.

## Materials and Method

This study was conducted in accordance with the Principles of the Declaration of Helsinki. The study protocol was approved by the Ankara Numune Research and Training Hospital Ethics Committee (Nov 11, 2015; No. 636). There were 120 case reports for the initial retrospective screening of patients over 65 years of age admitted to the Palliative Care Center, Ulus State Hospital, Ankara between January 2013 and October 2015. Of the initial population screened, nine were excluded due to missing data, leaving 111 patients in the study. Age, gender, marital status, neurological conditions, cancer, chronic systemic diseases (chronic pulmonary, cardiac, renal conditions, and diabetes mellitus) and infections, nutritional status, need for percutaneous endoscopic gastrostomy (PEG), nasogastric tube (NGT), or total parenteral nutrition (TPN), decubitus ulcers, pain, palliative performance scale (PPS) scores, and the duration of palliative care were recorded. The PPS is based on an 11-point scale in 10% increments up to 100% and assesses five domains: level of consciousness, nutrition, self-care, activity, and mobility. These domains are assessed at the time of admission. A score of 0% signifies death. A score of 10% indicates complete dependence and a bed-ridden patient, and a score of 100% indicates a normal activity level with no requirement for special care (13). Also, the number of patients who could not be discharged due to problems arising after an initial decision to discharge the patient was recorded. These patients were categorized as patients who did not want to be discharged.

### Statistical Analyses

Data obtained from the patients in the study who received palliative care was recorded digitally with appropriate verifications for correctness. The normal distribution of the continuous variables (age and duration of hospital stay) was assessed using a Shapiro-Wilk test and displayed in graphics. Variables with normal distribution were tested using a Student's t-test, and those without normal distribution were evaluated using a Mann-Whitney U test. Cross-tables were prepared for

the association between categorical variables, which were assessed using the chi-square test. In cross-tables, numbers (%) and mean ± standard deviation or median (IQR) were used depending on the distribution of variables in other tables. A Binary Logit model was developed to identify potential factors that may influence patient requests to be discharged. A P-value of less than 0.05 was considered statistically significant for all analyses.

All statistical analyses were performed using MS-Excel 2010, IBM SPSS Statistics Ver. 23.0 (IBM Corp. IBM SPSS Statistics for Windows, Armonk, NY: IBM Corp.) and EViews (ver. 9). A P-level of less than 0.05 was considered statistically significant.

## RESULTS

A total of 120 patients over 65 years of age who were admitted to the Palliative Care Center, Ulus State Hospital, Ankara, Turkey between January 2013 and October 2015 were screened. Of the initial population screened, nine were excluded due to missing data leaving 111 patients in the study with a mean age of 78.0±7.2 years (range: 65-94). Of the participants 51 (45.9%) were female and 60 (54.1%) were male with respective mean ages of 79.8±6.8 and 76.5±7.3 years and a significantly higher age in females than in males (p<0.05). Their illnesses included: neurological disease 47 (42.3%), cancer 26 (23.4%), chronic systemic conditions (chronic pulmonary, cardiac, and renal disease, and diabetes mellitus) 46 (41.4%), and infections 12 (10.8%). Also, 58 patients (52.2%) had nutritional problems, 14 (12.6%) were suffering with pain, and 45 (40.5%) had decubitus ulcers (Table 1).

The median duration of time for in-patient care was 24 days (6-212). Table 2 shows the average duration of in-pati-

**Table 1—** Demographic and Clinical Characteristics of the Patients at Presentation

| Variable | | Value |
|---|---|---|
| Age* | | |
| | Female | 79.8±6.8 |
| | Male | 76.5±7.3 |
| | Total | 78.0±7.2 |
| Gender** | | |
| | Male/Female | 51/60 (45.9/54.1) |
| Marital status** | | |
| | Married/Single | 55/56 (49.5/50.5) |
| Diagnosis** | | |
| | Neurologic disease | 47 (42.3) |
| | Cancer | 26 (23.4) |
| | Chronic systemic disease | 46 (41.4) |
| | Infection | 12 (10.8) |
| Comorbid conditions** | | |
| | Nutrition | 58 (52.2) |
| | Pain | 14 (12.6) |
| | Decubitus ulcers | 45 (40.5) |
| PPS** | | |
| | Poor and Very Poor (≤40) | 59 (53.2) |
| | Moderate and Good (>40) | 52 (46.8) |

*Values are presented as mean ± standard deviation. Assessed by Student's t test (p=0.014).

** Values are presented as percentage n (%)

**Table 2—** Duration of Inpatient Palliative Care According to Demographic Data, Diagnosis, and Comorbid Conditions

| Variables | Duration of Hospital Stay Median (IQR) | p |
|---|---|---|
| Gender | | |
| Female (n=51) | 24.0 (32.0) | 0.663 |
| Male (n=60) | 23.0 (28.0) | |
| Marital status | | |
| Single (n=56) | 20.0 (32.0) | 0.426 |
| Married (n=55) | 26.0 (28.0) | |
| Neurologic Disease | | |
| No (n=64) | 22.0 (27.0) | 0.639 |
| Yes (n=47) | 26.0 (38.0) | |
| Cancer | | |
| No (n=85) | 22.0 (32.0) | 0.492 |
| Yes (n=26) | 27.5 (26.0) | |
| Infection | | |
| No (n=99) | 21.0 (27.0) | 0.136 |
| Yes (n=12) | 35.0 (35.0) | |
| Chronic systemic Disease | | |
| No (n=65) | 26.0 (39.0) | 0.126 |
| Yes (n=46) | 20.0 (23.0) | |
| Nutrition problems | | |
| No (n=53) | 20.0 (22.0) | **0.036*** |
| Yes (n=58) | 30.5 (48.0) * | |
| Pain | | |
| No (n=97) | 22.0 (29.0) | 0.335 |
| Yes (n=14) | 27.5 (34.0) | |
| Decubitus ulcers | | |
| No (n=66) | 20.0 (22.0) | **0.001*** |
| Yes (n=45) | 38.0 (64.0)* | |

*p<0.05

ent palliative care according to patient characteristics. Patients with nutritional problems or decubitus ulcers had significantly longer in-patient care than those without these conditions ($p < 0.036$ and 0.001, respectively). For other patient health problems, the median duration of in-patient palliative care was similar ($p > 0.05$). The PPS scores in the study patient group varied between 30 and 60. Two sub-group of patients were defined based on the PPS scores, i.e. those with moderate to good scores (score > 40) and those with a poor to very poor scores (score ≤ 40). The number of patients requesting to be discharged was assessed in relation to PPS scores and illustrated in cross-tables. Accordingly, 40 of the 59 patients (69.0%) patients with poor or very poor PPS said they wanted to be discharged versus 51 of the 52 patients (96.2%) with a PPS score defined as moderate to good ($c^2=13.933$; $p < 0.001$) asked to be discharged.

The proportion of patients who wish to be discharged was 70.2% of those with neurological disorders and 90.6% of those without neurological disorders, for a statistically significant difference between the two groups (p=0.006). Also, this figure was significantly higher among patients with no nutritional problems (p<0.001), decubitus ulcers (< 0.001) or who had a diagnosis of cancer (<0.032). Other patient health issues showed no meaningful association with the wish to be discharged (p>0.05). The proportion of patients wanting to be discharged in relation to patient health issues is shown in Table 3.

According to the Binary Logit model, the following were found to be significant: a diagnosis of cancer, presence of nut-

**Table 3—** Willingness for Discharge According to the Patient Characteristics

| | Wish to Be Discharged | | |
|---|---|---|---|
| **Variables** | **Yes n (%)** | **No n (%)** | **p** |
| Gender | | | |
| Female (n=51) | 44 (86.3) | 7 (13.7) | 0.278 |
| Male (n=60) | 47 (78.3) | 13 (21.7) | |
| Marital status | | | |
| Single | 48 (85.7) | 8 (14.3) | 0.302 |
| Married | 43 (78.2) | 12 (21.8) | |
| Neurologic Disease | | | |
| No (n=64) | 58 (90.6) * | 6 (9.4) | 0.006 |
| Yes (n=47) | 33 (70.2) | 14 (29.8) | |
| Cancer | | | |
| No (n=85) | 66 (77.6) | 19 (22.4) | 0.032 |
| Yes (n=26) | 25 (96.2) * | 1 (3.8) | |
| Infection | | | |
| No (n=99) | 83 (83.8%) | 16 (16.2%) | 0.144 |
| Yes (n=12) | 8 (66.7%) | 4 (33.3%) | |
| Chronic systemic Disease | | | |
| No (n=65) | 50 (76.9) | 15 (23.1%) | 0.099 |
| Yes (n=46) | 41 (89.1%) | 5 (10.9%) | |
| Nutrition problem | | | |
| No (n=53) | 51 (96.2%) * | 2 (3.8%) | <0.001 |
| Yes (n=58) | 40 (69.0%) | 18 (31.0%) | |
| Pain | | | |
| No (n=97) | 78 (80.4%) | 19 (19.6%) | 0.257 |
| Yes (n=14) | 13 (92.9%) | 1 (7.1%) | |
| Decubitus ulcers | | | |
| No (n=66) | 65 (98.5%) * | 1 (1.5%) | <0.001 |
| Yes (n=45) | 26 (57.8) | 19 (42.2%) | |

* Significantly higher number of subjects wish to be discharged p<0.05

**Table 4—** The Results of The Binary Logit Model for the Patient Wish to Be Discharged. R-square Estimated as =0,64

| Variable | Coefficient | Z | p | Odds Ratio |
|---|---|---|---|---|
| Constant | -2.3511 | -1.3455 | 0.1784 | 0.0953 |
| Cancer | -4.0758 | -1.9665 | 0.0492 | 0.017 |
| Nutrition problems | 2.2414 | 1.9296 | 0.0537 | 9.4064 |
| Decubitus ulcers | 3.0046 | 2.395 | 0.0166 | 20.1783 |
| Length of stay | 0.0309 | 2.5419 | 0.011 | 1.0313 |
| PPS | -1.9233 | -2.5423 | 0.011 | 0.1461 |

ritional problems or decubitus ulcers, duration of palliative care, and PPS score. Of these, a diagnosis of cancer and a higher PPS score were associated with a 0.0170- and 0.1461-fold increase in the wish to be discharged, while patients with nutritional problems or decubitus ulcers or those with a more prolonged in-patient palliative care stay were less likely to express a wish to be discharged. The presence of decubitus ulcers reduced requests for discharge by 20.17-fold. This figure was 9.40-fold for patients with nutritional problems. Table 4 shows the variables that had a significant impact according to the Binary Logit model.

## Discussion

In the study, geriatric patients admitted for in-patient palliative care, nutritional problems and decubitus ulcers were associated with an increase in the duration of care, and an increase in an unwillingness to be discharged. While a higher PPS score (moderate or good scores) and a diagnosis of cancer resulted in more requests to be discharged, the presence of nutritional problems and decubitus ulcers were associated with 9.40- and 20.17-fold decreases in requests to be discharged, respectively.

In a retrospective study by Kelly et al. that examined the duration of hospital stays in geriatric patients, a shorter duration of in-patient care was found for cancer patients than for patients who suffered cardiac disease or stroke (14). The length of hospital stays in cancer patients was of short or medium duration with quickly worsening bodily functions, while it was longer with more gradual and progressive functional loss in chronic cardiac or stroke patients. In the instant study, although there were no significant differences in terms of the duration of palliative care in patients with different diagnoses, individuals with cancer were more likely to want to be discharged than patients diagnosed with other chronic conditions such as neurological disease or cardiac disease.

In a 2003 study by Haupt et al. that examined the length of stay and discharge process among a group of patients admitted to a hospice care facility, a longer duration of stay was found among patients who had limited daily activities or who were immobile. The length of the hospice stay in mobilized patients was 29.4 days vs. 56.7 days in immobile subjects (15). Primary diagnosis also had an effect on the average length of stay which was 16.2 days for those with cerebrovascular conditions, 43.3 days for malignant tumors, and 61.2 days for patients with cardiac disease. The shorter duration of hospice stays in that study among patients with cerebrovascular disease compared to the results in the instant study may be explained by way of the fact that there is more widespread availability and accessibility of hospice or long term care centers in the US. These facilities in the US are not available in our country. Therefore the great majority of geriatric patients are hospitalized by palliative care centers in Turkey. Longer duration of stays in our country may be resulted from the absence of those facilities.

According to Carlsson et al., the single most important unmet need in the management of stroke patients is in the lack of adequate nutritional intake and the associated complications (16). Treatment directed at improving the underlying illnesses of patients in the instant study who also had nutritional problems included several approaches such as nutritional support, feeding through a nasogastric tube, and percutaneous endoscopic gastroscopy. Forty-four percent of our patients had nutritional problems which caused them to need significantly longer in-patient care (mean 30.5 days) than those without such problems (mean 20.0 days; $p = 0.036$). Similarly, Rodriguez found longer durations of hospice/in-patient palliative care in geriatric patients with symptoms such as nausea, vomiting, decubitus ulcers, or weight loss (17). Again, patients with decubitus ulcers in the instant study had significantly longer durations of palliative care than those without such ulcers (38.0 and 20.0 days respectively; $p = 0.001$).

Factors that were reported to preclude speedy discharge for elderly patients in a study by Popejoy et al. included the need for ventilation support, hemodialysis, chemotherapy, radiotherapy, wound vacuum therapy, and the need for care due to mental impairment (18). Mudge investigated the re-admission rates in the first six months after discharge of elderly patients and found unscheduled re-admissions in 37% of the patients due to chronic disease, depressive symptoms, or weight loss. These authors emphasized the importance of nutritional and psychological counselling to reduce such re-admissions (19). Combined utilization of hospital and home care for geriatric patients has been reported to increase the effectiveness of planned discharge (20). Multi-disciplinary, home-based, end-of-life care and treatment were also shown to lead to increased patient satisfaction and decreased days of nursing care and the use of emergency care services (21).

In a study by Naylor carried out between August 1992 and March 1996 with a group of older individuals, it was shown that the duration of time between discharge and re-admission was longer when discharge was planned by advanced nurse practitioners in conjunction with home care interventions, which also led to reduced healthcare costs (22). The results of a study by Arbaje et al. also suggests that a more comprehensive implementation of interventions such as wound care and nutritional strategies before and after discharge may help reduce early re-admissions. Such interventions may also include home-based provisions for health care, patient activation, and comprehensive discharge planning (23).

A review by Teasell and coworkers in 2003 (24) reported that patients receiving home-based management had shorter durations of hospital stays with similar functional outcomes between home-based or in-patient treatment approaches.

In another study, two proposed potential factors for delayed discharge included inadequate discharge planning and a lack of alternative care strategies after the discharge (25). Discharge planning is not a common practice in Turkey, and the Palya-Türk project initiated in 2010 for palliative care has not yet been implemented nationwide. In our palliative care center, discharge planning is also not being implemented at an institutional level and most of the after care for geriatric cases continues to be provided by family members due to the lack of proper home care services. However, if issues such as nutritional problems or decubitus ulcers, which have precluded patients from being discharged and increased the need for palliative in-patient care, can be effectively dealt with by home-care teams, the available in-patient facilities may be used more efficiently and may support an increase in the number of patients benefiting from such services.

In conclusion, specific health problems associated with aging and multi-systemic conditions in geriatric patients are associated with an increased need for palliative care. However, the availability of palliative care services is far from adequate, even in developed countries. Obviously, the existing palliative care facilities should also function more efficiently to meet the increasing requirements for palliative care. A cooperative effort between in-patient and home-based care teams will facilitate earlier discharge and help reduce re-admission rates in patients with conditions such as decubitus ulcers and nutritional problems, especially with continued nutritional support and decubitus ulcer care at home. These additional strategies can lead to shortened durations in hospital stays.

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