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From The Editor In Chief

"Basic Geriatrics Courses" are the traditional education activities of Turkish Geriatrics Society for many years, and the last one was held on 27th of May, 2017 in Ankara where Ankara Chamber of Medical Doctors was the host organization.

The scientific program was prepared due to the feedbacks of the attendees of former courses and the requests of the general practicioners and the family physicians.

The education team was composed of the experienced scientific board members of Turkish Geriatrics Society.

The main subjects of the lectures were; "Aging World and Aging Human", "Comminucation with the Elder Persons", "Check-up for the Elder Persons", "Physical Activity for Elder Persons", "Immunization for the Elder Persons", "Differential Diagnosis of Dementia, Depression and Delirium in Elder Persons", "Basic Principles of Nutrition for Elder Persons" and "Basic Principles of Skin Care and the Prevention of Pressure Ulcers for Elder Persons".

Because of the great interest and the admiration of the participants, the committee decided to organize new courses in which the scientific program will be planned according to the spesific requests of the general practicioners and the family physicians mainly.

Prof. Yeşim GOKCE KUTSAL, M.D.

Editor in Chief

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RESEARCH

FREQUENCY OF CARDIOVASCULAR DISEASES AND DRUG USE IN TURKISH ELDERLY POPULATION FOLLOWED UP AT CARDIOLOGY CLINICS: THE ELDERTURK STUDY

Abstract

Introduction: In Turkey, there is a lack of data on the frequency of cardiovascular diseases, risk factors, co-morbid diseases, and drug usage among the elderly population. We aimed to compile a data of frequency of cardiovascular diseases, cardiovascular risk factors, concomitant diseases, and drug usage among elderly patients visiting cardiology clinics in Turkey.

Materials and Method: This non-interventional, multicenter study evaluated 5694 patients aged 65 years or older and who were followed up at cardiology clinics. Cardiovascular diseases, risk factors, co-morbidities, and medication use were surveyed.

Results: Mean age of patients was 73.5±6.3 years (males: 49.8%). The frequency rates were 73% for hypertension, 28.8% for diabetes mellitus, 35% for hyperlipidemia, 50% for previous myocardial infarction, 27.3% for atrial fibrillation, and 11.5% for chronic renal failure. The body mass index of participants was 27.7±4.4 kg/m2, systolic blood pressure was 130±18 mmHg, diastolic blood pressure was 77.1±11 mmHg, and resting heart rate was 76±14 bpm, 66.3% of the study population used beta blockers, 71.7% angiotensin system inhibitors, 59.6% diuretics, 7.9% digoxin, 30.5% calcium channel blockers, 34% lipid-lowering agents, 71.5% acetylsalicylic acid, and 25.9% oral anticoagulants. The most common non-cardiovascular medications were vitamins (12.3%) and nonsteroidal anti-inflammatory drugs (11.2%).

Conclusion: Valuable data of Turkey's elderly population at cardiology clinics, pertaining to cardiovascular and co-morbid diseases was collected. The identification of risk factors for cardiovascular diseases as well as concomitant diseases, and medication use in elderly patients may lead to interventions that could improve the health of elderly in the general population.

Keywords: aged, cardiovascular disease, risk factors

ARAŞTIRMA

KARDİYOLOJİ KLİNİKLERİNDE TAKİP EDİLEN YAŞLI TÜRK NÜFUSUNDA KARDİYOVASKÜLER HASTALIK SIKLIĞI VE İLAÇ KULLANIMI: ELDERTURK ÇALIŞMASI

Öz

Giriş: Türkiye'deki yaşlı popülasyonda kardiyovasküler hastalık sıklığı, risk faktörleri, ko-morbid hastalıklar ve ilaç kullanımına ait bir veri yoktur. Amacımız, Türkiye'de kardiyoloji kliniklerince takipli yaşlı nüfusta kardiyovasküler hastalık sıklığı, kardiyovasküler risk faktörleri, eşlik eden hastalıklar ve ilaç kullanımları ile ilgili bir veri oluşturmaktır.

Gereç ve Yöntem: Çalışmamız müdahalesiz ve çok merkezli bir çalışmadır. Kardiyoloji kliniklerince takip edilen 65 yaş ve üzeri 5694 hasta çalışmaya dahil edilmiştir. Kardiyovasküler hastalıklar, risk faktörleri, eşlik eden hastalıklar ve ilaç kullanımları sorgulanarak kaydedilmiştir.

Bulgular: Çalışma popülasyonunda ortalama yaş 73.5±6.3 idi (erkek oranı %49,8). Hipertansiyon %73, diyabet %28,8, hiperlipidemi %35, geçirilmiş miyokard enfarktüsü %50, atrial fibrilasyon %27,3 ve kronik böbrek hastalığı %11,5 oranında görülmekteydi. Çalışmaya katılanların ortalama vücut kitle indeksi 27.7±4.4 kg/m^2, sistolik kan basıncı 130±18 mmHg, diyastolik kan basıncı 77.1±11 mmHg ve istirahat kalp hızı 76±14 vuru/dakika idi. Çalışma popülasyonunun %66,3'ü beta bloker, %71,7'si anjiyotensin sistem inhibitörleri, %59,6'sı diüretik, %7,9'u digoksin, %30,5'i kalsiyum kanal blokeri, %34'ü lipid düşürücü ajanlar, %71,5'i asetil salisilik asit ve %25,9'u oral antikoagülan kullanmaktaydı. En sık kullanılan kardiyovasküler sistem dışı ilaçlar vitaminler (%12,3) ve non-steroid anti-inflamatuar ilaçlardı (%11,2).

Sonuç: Gözlemsel çok merkezli çalışmamızda, yaşlı Türk popülasyonundaki kardiyovasküler ve ko-morbid hastalıklarla ilgili değerli veriler elde ettik. Yaşlı hastalardaki kardiyovasküler hastalıklar için risk faktörlerinin belirlenmesi, eşlik eden hastalıklar ve kullanılan ilaçların tanımlanması, tüm yaşlı nüfusun sağlığı için uygun ve gerekli girişimlerin yapılmasına yardımcı olabilir.

Anahtar kelimeler: yaşlı, kardiyovasküler hastalık, risk faktörleri

INTRODUCTION

There is a remarkable increase in the elderly population aged over 65 years worldwide. In Turkey, which is known to have a predominantly young population, the 8% elderly population recorded in 2014 is anticipated to grow to approximately 10.3% in 2023 (1). Aging, not only leads to an increase in socioeconomic problems, but also is an independent risk factor for cardiovascular diseases. Cardiovascular diseases are specifically most dominant in this age group, and the disease profile differs among the different population groups across the world. Turkey is a developing country and has seen rapid changes in life-style, and consequently in disease prevalence. Region-specific data are markedly important for preventing and controlling the pathogenesis of cardiovascular diseases and risk factors. However, in Turkey, there is no data on the frequency of cardiovascular diseases, risk factors, comorbid diseases, and drug usage, especially among the elderly population. Cardiovascular diseases are the leading cause of death among elderly people in the country, accounting for a mortality rate of 46.8% (1), which is greater than the rate in Europe, 42% (2).

The elderly population with cardiovascular diseases comprises a group that needs special interest and care. In particular, comorbid diseases and polypharmacy in this group deserve attention. Cardiovascular drugs account for more than one third of the total adverse drug interactions in the elderly (3). Today, there are no age-specific guidelines for the treatment of cardiovascular diseases and the goals are mainly the same as for the middle-aged population. Suitable profiling of this specific group to define areas of focus for prevention and treatment is required.

Our primary aim was to create a data on the frequency of cardiovascular diseases, risk factors, co-morbid diseases, and drug usage in the elderly population visiting cardiology clinics. We believe, our study reflected a valuable data of the specific elderly group with multiple co-morbidities and risk factors, though this data can not be generalized to the whole elderly population. To provide a better and specific health-care system for this age group, we need to know more about the population profile and determine the priorities of the national elderly health-care program.

MATERIALS AND METHOD

Study population

This non-interventional, multicentric, observational trial evaluated the cross-sectional data of patients older than 65 years of age who were followed up at cardiology clinics, after they had provided written informed consent for study participation. Both inpatient and outpatient cardiology clinics were included for patient enrollment. There was no specific treatment protocol, because this was an observational study; patients were treated according to the local clinical practice of the center. At least 2500 patients followed up at cardiology clinics were the target for inclusion in this study conducted over a 10-month period. No follow-up protocol was defined for this study. Cardiovascular disease profile, coexisting risk factors, comorbidities and drug usage of the patients were evaluated and recorded.

Patient enrollment commenced in March and ended in December 2015. Inclusion criteria were being older than 65 years of age, follow-up at cardiology clinics, and provision of informed consent for study participation. Our study was approved by the local ethics committee of Ankara Kecioren Training and Research Hospital (date: 11/March/2015, number: ISM.4.06.68.49) and we followed the principles of the Declaration of Helsinki (as revised in Brazil, 2013).

Demographic information of patients, such as date of birth, sex, weight, height, body mass index (BMI), and current tobacco use were recorded. Validated digital office scale was used for weight measurements and BMI was calculated by the formula recommended by World Health Organisation (kilograms/meter^2). Physical activity



level was recorded, and patients performing at least 30 minuntes of moderate exercise at least 3 days a week were recorded as regular exercisers. Patients were considered hypertensive if they were on antihypertensive medications or had high blood pressure on examinations (>140/90 mmHg), performed twice for confirmation. Blood pressure measurements were done as office measurements with validated digital sphingomanometer. Patients were deemed diabetic if they were using antidiabetic medication or insulin, or had a fasting blood glucose higher than 126 mg/dL. Hyperlipidemia was diagnosed in patients on lipid lowering drugs or who were newly prescribed for their lipid levels according to the lipid guidelines of the European Society of Cardiology (4). Anemia was diagnosed according to recommendation of World Health Organisation (hemoglobin level <12 g/dL in women and <13 g/dL in men). History of cardiovascular interventions, such as percutaneous coronary interventions or bypass grafting; history of myocardial infarction, dysrythmia, peripheral arterial disease, valvular disease (patients with moderate or severe valvular disease); co-morbidities such as cerebrovascular diseases, pulmonary, hepatic, renal, thyroid diseases, musculoskeletal disorders, malignancies; outpatient or emergency department visits, and medication history (including over-the-counter drugs) were questioned and recorded after searching the medical records of study subjects. On physical examination, heart rate and blood pressure were recorded and the patient was questioned about hypotensive episodes, defined as symptomatic episodes with blood pressure lower than usual. Electrocardiography of each patient was evaluated by the cardiologist and arrhythmias with clinical significance were reported as dysrythmia. For the laboratory data, patient's most recent blood biochemistry and complete blood count values studied at the clinic were recorded. There were no invasive interventions or pharmacological drug usage during the trial. During the study, patient data were recorded on electronic case report forms, with each center having password-controlled access to the data of only their own patients.

Statistical analysis

Study centers were designed to represent the 12 territorial units of Turkey, accepted by the National Statistics Unit. All statistical analysis were conducted using SPSS, version 16 (SPSS Inc., Chicago, IL, USA) for Windows XP. Summary of data analysis was planned to be shared as tables. Because it was an observational, non-interventional study, there were no specific hypotheses to be tested, no comparisons and no end points. Continuous variables were presented as mean ± standard deviation and data on frequency were presented as percentage (%).

RESULTS

Clinical characteristics

We enrolled 5694 patients from 73 centers in Turkey between March and December 2015. The mean age of the patient group was 73.5±6.6 years, and 41.5% were older than 75 years. Male/female ratio was almost 1, because the percentage of males was 49.8%. Mean value for BMI was 27.4±4.4, and mean resting heart rate was 76±14 bpm. The proportion of regular exercisers was 21.7%. Mean systolic and diastolic blood pressure were 130±18 and 77.1±11 mmHg, respectively, and 4.6% of subjects reported hypotensive episodes. Levels of LDL cholesterol, creatinine and fasting blood glucose were 117±38, 1.2± 0.5, and 117±43 mg/dL, respectively. Mean value of estimated glomerular filtration rate (eGFR, calculated by the MDRD equation) was 68.7±23 mL/min/1.73 m^2. In the study population, 16.3% had anemia, 6.2% had hypothyroidism, and 4% had malignancy. Cardiovascular risk factors of hypertension, diabetes mellitus, and hyperlipidemia were detected in 73%, 28.8%, and 35% of subjects, respectively. Current smokers comprised 11.3% of the study population. Details of cardiovascular disease and comorbidities are presented in Table 1.

Table 1. Cardiovascular and comorbid diseases

Disease	Frequency (%)
Prior MI	50
History of PCI	49.2
History of CABG	66.9
History of stroke	18.7
Atrial fibrillation*	27.3
Non-ischemic cardiomyopathy	3.6
Chronic kidney disease**	11.5
Prosthetic heart valve	5
Pacemaker	4
Anemia	16.3
Hypothyroidism	6.2
Alzheimer	1.6
COPD or asthma	15
Anemia	16.3
Malignancy	4

Values are given as frequencies.

*All types of atrial fibrillation (paroxysmal, permenant, persistant) were recorded.

**Patients with GFR<60 mL/min for at least 3 months were recorded as chronic kidney disease.

CABG: Coronary artery by-pass grafting, COPD: Chronic obtructive pulmonary disease, MI: Myocardial infarction, PCI: Percutaneous coronary intervention.

Cardiovascular medications

In the study population, 66.3% were using beta-blockers, 38.6% angiotensin-converting enzyme inhibitors, 33.1% angiotensin receptor blockers, 59.6% diuretics, 7.9% digoxin, 30.5% calcium channel blockers, 34% lipid-lowering agents (statins and non-statins), 25.9% oral antidiabetic drugs, 3% insulin, 71.5% acetylsalicylic acid (100 mg), and 25.9% oral anticoagulants (61% warfarin). Fenofibrates, alone or in combination with statins, were 5.2% of the lipid-lowering agents used. Cardiovascular medications used by the patients and their frequency of use are listed in Table 2. Most common noncardiovascular medications included vitamins (excluding oral iron and calcium; 12.3%), nonsteroidal anti-inflammatories (11.2%), and antidepressants (10.3%). Herbal products were used by only 1% of our study population. Four or more prescription medications were used by 25% of the overall study population.

Table 2. Cardiovascular medications

Drugs	Frequency (%)
Beta blockers	66.3
Diuretics	59.6
ACE inhibitors	38.6
ARBs	33.1
Calcium channel blockers	30.5
Lipid lowering agents	34
Asetyl salicylic acid	71.5
Oral anticoagulants (OAC)	25.9
Warfarin use among the OACs	61
Digoxin	7.9

Values are given as frequencies ACE: Angiotensing converting enzyme, ARB: Angiotensin receptor blocker.

Emergency room visits in the preceding year were recorded as 19%, and 73% of them were treated at cardiology inpatient wards. Visits to outpatient clinic more than 10 times a year was recorded as 18.9% in the study population.

DISCUSSION

This observational multicenter study collected valuable data from Turkey's elderly population, comprising patients who were followed up at cardiology clinics. Patient profile was outlined by demographic data, cardiovascular and comorbid diseases, and medication use.

In developing countries such as Turkey, rapid socioeconomic growth leads to an increase in cardiovascular risk factors. The prevalence of



hypertension (>140/90 mmHg) was reported to be 77% in women and 60.9% in men among the population aged over 70 years in the TEKHARF cardiovascular risk survey (5). The PatenT study reported that more than 70% of the population aged over 80 years were hypertensive (6). Recently, Ozkara et al. showed that 75.4% of the population aged over 60 years was hypertensive based on a cross-sectional survey (7). Our finding of 73% hypertensive patients was similar to the rate reported for the general elderly population. The prevalence of diabetes mellitus was reported to be 13.7% in the general Turkish population in the TURDEP study (8). Among the elderly population of Turkey, the prevalence of diabetes was shown to be 27.4% (7). The rate of hyperlipidemia in our population aged over 50 years was reported to be 32% (5). Our study, which was comprised of elderly at cardiology clinics, revealed the diabetes rate as 28.8% and hyperlipidemia rate as 35%. According to the National Institute of Health, obesity is defined as BMI> 30 kg/m² (9). In Turkey, the overall prevalence of obesity was approximately 32% among the adult population (8), and among the elderly, it was reported to be 27.2% (7). Mean BMI in our study population was 27.4±4.4. More than one quarter of the study population had atrial fibrillation, which increases the risk of stroke fivefold, and the stroke frequency in our study was 18.7%. In a study conducted in the United Stated (US), stroke prevalence in adults was 2.3% and more than three quarters of subjects were aged over 65 years (10). The high rate of cerebrovascular disease in our study could be attributed to the high risk profile of the study population of cardiology clinics, but this alarming profile should also make us consider and question the effectiveness of the risk scoring and anticoagulation undertaken in the country.

Turkey is a country with a poor reputation for cigarette smoking. Among the adult population, the rate of regular smokers was 23.2%, and among the elderly, the rate was 8.4% (1). In our study, the current smoker rate was 11.3%. We found that at least one out of ten patients being followed at cardiology clinics were current smokers, and it should be noted that 50% of the study population had a history of myocardial infarction. This remarkable data implied the insufficiency of educational programs against smoking, especially at the cardiology clinics. Smoking cessation rehabilitative programs need to be intensified and should receive further focus.

Cardiovascular drugs are the most commonly used drugs in the elderly population. Jörgensen et al. reported that 47.2% of the population aged over 65 years used cardiovascular drugs, particularly diuretics (11). There is an increase in the use of medicines among the elderly and when compared to past, the elderly are being more intensely treated according to the guidelines (12). Among all cardiovascular drugs, the most commonly used drugs were the angiotensin system inhibitors, both receptor blockers and enzyme inhibitors (used in 71.7% of the patient population). According to the latest guidelines for hypertension, this drug group is recommended as first-line therapy in hypertensive patients (13). Beta-blockers and diuretics were used by 66.3% and 59.6% of the patient group, respectively. These high frequencies were owing to the cardiovascular disease profile of our patient population. However, these numbers should generate caution about the high rate of probable side effects from these drug groups. In our study, 4.6% of the patient population reported hypotensive episodes, which could lead to falls and fractures that could be fatal in this age group. Another important fact to be considered is that old people have multiple medical conditions, which expose them to the risks of polypharmacy. In the literature, polypharmacy is usually defined as inappropriate drug use or taking five or more pills per day (excluding over-the-counter drugs) (14, 15). Jörgensen et al. found the average number of drugs per subject to be 4.3 in the elderly population (11). Bushart et al. reported a rate of six or more pill usage in the US general elderly population as being 29.4% (14). In a study from Spain, the rate of polypharmacy in patients older than 70 years in cardiology clinics was reported to be 84.5% (15). In our study, we

found that 25% of the study population was using four or more prescription medications. This was a lower rate than expected. We believe there could have been missed data due to these details having been recorded at only one visit; this is a limitation of our study.

The most commonly used noncardiovascular medication was NSAIDs, used by nearly one out of ten patients. When the dominance of oral anticoagulants and antiplatelet medications in this population is considered, much more care should be taken to question the use and necessity of NSAIDs. Drug drug interactions can lead to lethal results, especially in the elderly. Cardiovascular drugs accounted for more than one third of the adverse drug interactions among elderly people in a study by Tipping et al. (3). Concomitant use of prescription drugs and dietary supplements such as vitamins and herbal products can be much more frequent than estimated. The rate of concomitant use was reported to be 13% in the elderly in the US (16, 17), but the Ginkgo Evaluation of Memory study cohort found the rate to be 83% in people aged over 75 years (18). In our study we did not research concomitant use, but the most commonly used dietary supplements were vitamins, used by 12.3% of the study population. This drug group also has a potential risk for adverse drug interactions, and should be particularly considered during anticoagulant use and increased risk of bleeding (19).

Geriatric patients represent a special population for emergency services. It has been reported that the rate of emergency room visits of elderly patients was 13%-23% (20-22). Emergency admissions increase proportionally with increasing age. In our study, the rate of emergency room visits in the recent year was recorded as 19%. In another study, cardiac problems were the most common reason for admission to the emergency room among older patients (23). In our study, the annual rate of more than 10 visits to the cardiology outpatient clinic was 18.9%, which was really high. We considered INR monitoring for warfarin therapy to be a contributor to the high rate in our study population.

CONCLUSION

This study was conducted to define the general profile of elderly patients in Turkey's cardiology clinics. This cross-sectional frequency data may potentially fascilitate further concentration on the specific needs and problems of this group of patients. One of the limitations of our study is that our data does not reflect the profile of the entire elderly population because only subjects being from cardiology clinics were included. However, we believe these results can enlighten the problems requiring focused attention, and as clinicians, we may notice some specific details that we have not considered earlier. By identifying and improving the needs of this specific group, we may generalize the benefits to the entire elderly population.

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Research

EVALUTION OF GERIATRIC INFECTIONS IN PAST SIX YEARS

Abstract

Introduction: Infections are one of the most important reasons for hospitalization, morbidity, and mortality among geriatric patients.

Materials and Method: The present study, retrospectively evaluated demographic characteristics, underlying diseases, and distribution of infections in patients aged 65 years who were hospitalized for treatment between January – 1, 2010 and December – 31, 2015, at the infectious diseases and clinical microbiology department of Ankara Numune Training and Research Hospital.

Results: Overall, 853 geriatric patients were included in this study, with 435 (51%) woman and 418 (49%) men, the mean age was 76.8 ± 7.3 years, and 86.2% of patients had at least one comorbid chronic disease. Hypertension, cardiovascular diseases and diabetes mellitus were most common comorbidities, and most common reasons for hospitalization included pneumonia (37.9%), urinary tract infection (22.9%) and cellulitis (7.7%). Moreover, beta-lactam antibiotics (88.2%), quinolones (21.1%) and macrolides (19.6%) were most frequent antibiotics used for treatment. The average length of hospital stay was 6.8 ± 5.1 days. Overall, 17 (2%) patients died during the study, 62 (7.3%) were transferred to other clinics, 53 patients (6.2%) were transferred to intensive care units, 51 (6%) were discharged with their current medical status, 670 (78.5%) were discharged with full recovery. Nursing home stay and being transferred from intensive care units were independent risk factors for mortality (p = 0.001).

Conclusion: The number of geriatric patients and their mean age are increasing as life expectancy increases. Advanced age and underlying diseases are predisposing factors for infections, and consequently, infections are one of the most common causes of hospitalization in elderly patients.

Key words: Geriatrics; Aged; Infection

Araştırma

GERİATRİK ENFEKSİYONLARIN 6 YILLIK DEĞERLENDİRMESİ

Öz

Giriş: Enfeksiyonlar geriatrik populasyonda hastaneye yatış, morbidite ve mortalitenin en önemli nedenlerinden biridir.

Gereç ve Yöntem: Çalışmamızda Ankara Numune Eğitim ve Araştırma Hastanesi enfeksiyon hastalıkları ve klinik mikrobiyoloji kliniğinde 01,01,2010 -31,12,2015 tarihleri arasında yatarak tedavi gören 65 yaş ve üzeri hastaların demografik özellikleri, altta yatan hastalıkları, enfeksiyonların dağılımı ve sıklığı retrospektif olarak değerlendirilmiştir.

Bulgular: Çalışmaya 853 geriatrik hasta dahil edildi. Hastaların 435'i (%51) kadın, 418'i (%49) erkekti. Yaş ortalaması 76,8 ± 7,3 idi. Hastaların %86,2'sinde eşlik eden kronik hastalık vardı. En sık eşlik eden kronik hastalıklar hipertansiyon, kardiyovasküler hastalıklar ve diabetus mellitus, en sık yatış sebebi ise sırasıyla pnömoni (% 37,9), üriner sistem enfeksiyonu (% 22,9) ve selülit (% 7,7) idi. Tedavide en sık kullanılan antibiyotikler beta laktamlar (%88,2), kinolonlar (%21,1) ve makrolidlerdi (%19,6). Yatış süresi ortalama 6,8±5,1 gündü. Sonuçlar değerlendirildiğinde hastaların 17 (%2)'si ölmüş, 62 (%7,3)'si başka kliniğe nakil verilmiş, 53 (%6,2)'ü yoğun bakıma nakil verilmiş,51 (%6)'i haliyle taburcu edilmiş, ve 670'i de (%78,5) şifa ile taburcu edilmiştir. Huzurevinde yaşama ve yoğun bakımdan nakil mortalite açısından bağımsız risk faktörü olarak saptandı (p=0,001).

Sonuç: Beklenen ortalama yaşam süresinin artmasına bağlı olarak geriatrik hasta popülasyonu ve yaş ortalamaları da giderek artmaktadır. İleri yaş ve altta yatan hastalıkların enfeksiyonlara zemin hazırlamasına bağlı olarak enfeksiyonlar hastane yatışına neden olan hastalıkların başında gelmektedir.

Anahtar kelimeler: Geriatri, ileri yaş, enfeksiyon

INTRODUCTION

The World Health Organization recognizes elderliness as age ≥ 65 years. Humans are living longer all over the world, particularly in developed countries, birth rates are decreasing, and geriatric population proportionally increases. The number of geriatric patients applying for medical services also increases in parallel to better life expectancy (1). Infections are among the most frequent causes of hospitalization and mortality in elderly patients, and it also has a marked impact on morbidity by exacerbating underlying diseases and deteriorating organ functions (2,3).

The present study evaluated the demographics, concomitant chronic diseases, and distributions of infections, treatments, courses and outcomes of geriatric patients were hospitalized at the infectious diseases and clinical microbiology department.

MATERIALS AND METHODS

Overall data of 853 geriatric patients who were hospitalized at infectious diseases and clinical microbiology department of Ankara Numune Training and Research Hospital, were retrospectively evaluated. Patients' demographic characteristics (age, sex), hospitalization dates and types, underlying diseases, nursing home history, diagnosis, and diseases courses over time, treatments of infections, as well as treatment courses and outcomes were analyzed. Changes over time were compared both overall throughout the 6-year period, and for periods of 2010-2012 and 2013-2015.

Hospitalization types were grouped as emergency department, outpatient clinics, transfer from another clinic, transfer from another hospital, and transfer from an intensive care unit; underlying diseases were grouped as hypertension (HT), diabetes mellitus (DM), cardiovascular disease (CVD), chronic obstructive pulmonary disease (COPD), malignancy, cerebrovascular disease (CVD), and chronic kidney failure (CKF); and disease outcomes were grouped as death, discharge with current status, discharge with full recovery, transfer to another clinic, and transfer to an intensive care unit.

Pneumonia and urinary tract infections (UTIs) were grouped as community-acquired, and iatrogenic.

Antibiotics used for treatment were grouped as beta-lactams (penicillin, cephalosporin, carbapenem, and beta-lactam/lactamase inhibitors), aminoglycosides (AGs), tetracycline, glycylcycline, macrolides, glycopeptides, lipopeptides, oxazolidinediones, quinolones, polymyxines, metranidasole, TMP-SXT, and rifampicin.

Statistical analyzes of mean values and frequencies were performed using SPSS 21 for Windows.

RESULTS

Of the 2133 patients hospitalized at our clinic between January 1, 2010, and December 31, 2015, 853 (40%) were aged ≥ 65 years. Of these elder patients, 51% (n=435) were women and 49% (n = 418) were men. Mean age of the women and men were 77.8 ± 7.4 years and 75.8 ± 7.1 years, respectively ($p < 0.001$). Frequency of hospitalization was highest in the year 2014 (24.2%,). 38.7% (n=330) during 2010-2012 and 61.3% (n = 523) during 2013-2015.

Concomitant chronic disease was present in 735 (86,2%) of the 853 patients, and most frequent diseases were HT, CVD, and DM. Moreover, the frequency of concomitant diseases among hospitalized patients was highest in last 3 years (82.7% vs. 88.3%; $p = 0.02$ - Table 1).

Table 1. Distribution of Concomitant Chronic Diseases

Chronic Diseases	2010-2012 N (%)	2013-2015 N (%)	p
Hypertension	200 (60.6)	307 (58.7)	0.5
CVD	96 (29.1)	208 (39.8)	0.001
Diabetes Mellitus	93 (28.2)	161 (30.8)	0.4
COPD	40 (12.1)	108 (20.7)	0.001
Cerebrovascular attack	60 (18.2)	82 (15.7)	0.3
Alzheimer	50 (15.2)	68 (13)	0.3
Malignity	35 (10.6)	72 (13.8)	0.1
Chronic kidney failure	13 (3.9)	65 (12.4)	0.08
Total	273 (82.7)	462 (88.3)	0.02

CVD: cardiovascular disease; COPD: chronic obstructive pulmonary disease
Furthermore, 6.1% of all patients were living in nursing homes.

The mean days of hospitalization was 6.8 ± 5.1 days. Men were hospitalized longer than women ($p = 0.007$). Types of hospitalizations were 58.3% from emergency department, 21.8% from outpatient clinic, 11.6% from transfer from intensive care unit, 6.2% from transfer from other clinic, and 2.1% from transfer from other hospital. The mean age of patients transferred from intensive care units was greater compared with all other subgroups, and the mean ages of patients from emergency department was greater than that of patients transferred from outpatient clinic or another hospital ($p < 0.001$). The comorbid disease rate among patients transferred from intensive care unit was 92.9%, which was significantly higher compared with other hospitalization types ($p = 0.03$).

The most frequent diagnoses at hospitalization were as pneumonia (37.9%), UTI (22.9%), skin and soft-tissue infection (7.7%), and fever etiology (6.1%) (Table 2).

Table 2. Distribution of infections at hospitalization

Diagnosis	N	%
Pneumonia	323	37,9
Urinary tract infection	195	22,9
Skin and soft_tissue infection	66	7,7
Fever etiology	52	6,1
Acute gastroenteritis	28	3,3
Urosepsis	22	2,6
Crimean_Congo hemorrhagic fever	17	2
Other	150	17,5
Total	853	100



On evaluation of pneumonias were evaluated, 77.1% (n = 249) were community-acquired pneumonia (CAP), and 22.9% (n = 74) were iatrogenic pneumonia (IP). The mean age of CAP and IP patients was 77.7±7.3 and 79.2±7.5 years (p = 0.1). CAP patients had longer hospitalizations (p = 0.02). Furthermore, CAP was more frequent in women, and IP was more frequent in men and patients with concomitant disease (p = 0.001). Treatment period was longer for IP patients than for CAP patients (p < 0.001).

Most frequently identified agent in UTI was Eschericia coli (60.4%), and 43.4% of it was extended-spectrum beta-lactamase (ESBL) positive (Table 3).

ESBL_ positive E. coli was more frequent in iatrogenic than in community-acquired infections (p = 0.001), but it was not significantly different from ESBL_ positive Klebsiella spp. and vancomycin_ resistant enterococcus (p = 0.9 and p = 0.7, respectively).

Table 3. Distribution of microorganisms in UTI

Agent	%	ESBL positive (%)	Quinolone Resistant (%)	TMP-SXT resistant (%)
E.coli	60.4	43.4	41.4	47.4
Klebsiella spp.	15.8	56.6	42.3	57.6
Enterococcus spp.*	10.3			
Pseudomonas spp.	6			
Candida spp.	5.6			
Enterobacter spp.	2.6			

*Vancomycin_ resistant enterococcus: 25.2%

The mean duration of hospitalization for UTI was longer for men than for women (p = 0.001). Of these cases, 59% had community-acquired and 41% had iatrogenic UTI. Community-acquired UTI was more frequent in women, whereas iatrogenic UTI was more frequent in men (p = 0.04). Treatment duration was longer for iatrogenic UTI than for community_ acquired UTI (p < 0.001). On evaluation of diagnoses of 48 patients pre-diagnosed with fever of unknown etiology (FUE), 50.2% were related to infections (Table 4), 21% were to non-infectious causes, whereas 28.8% (n = 14) could not be diagnosed.

Table 4. Distribution of infections in patients with FUE

Diagnosis	N	%
Urinary tract infection	8	16.7
Pneumonia	4	8.3
Skin and soft_ tissue infections	3	6.3
Tuberculosis	3	6.3
Brucellosis	1	2.1
Salmonellosis	1	2.1
Leptospirosis	1	2.1
Discovertebral infection	1	2.1
Intraabdominal infection	2	4.2
Total	24	50.2

On evaluation of disease trends over years, rates of urosepsis, brucellosis, and Crimean_ Congo hemorrhagic fever were found decreased, tularemia cases were no longer observed, whereas FUE rates had increased (Table 5).

Table 5. Disease trends over years

Disease	n (%) (2010_ 2012)	n (%) (2013_ 2015)	P
Pneumonia	128 (38.8)	195 (37.3)	0.6
Urinary tract infection	61 (18.5)	133 (25.4)	0.01
Skin and soft-tissue infection	27 (8.2)	39 (7.5)	0.7
Urosepsis	13 (3.9)	9 (1.7)	0.04
Acute gastroenteritis	10 (3)	18 (3.4)	0.7
Crimean-Congo hemorrhagic fever	10 (3)	7 (1.3)	0.08
Tularemia	7 (2.1)	0 (0)	0.001
Fever of unknown etiology	4 (1.2)	16 (3.1)	0.9
Brucellosis	4 (1.2)	1 (0.2)	0.07

Antibiotics were administered in 91.2% (n = 778) of patients; most frequently used antibiotics were beta lactams (88.2%), quinolones (21.1%), and macrolides (19.6%). Combination antibiotic were administered in 40.8% of patients, and most frequently used combinations were beta lactam + macrolide (44.8%) and beta lactam + quinolone (27.9%) (Table 6).

Tigecycline usage was significantly increased during the last 3 years (p = 0.02).

Table 6. Distribution of antibiotic combinations used for treatment

Combinations	%
Beta-lactam + macrolide	44.8
Beta-lactam + quinolone	27.9
Beta-lactam + glycopeptide	5.3
Beta-lactam + linezolide	5.1
Beta-lactam + daptomycin	3.9
Other	13
Total	100

The mean treatment duration was 6.9 days for hospitalization, 8.4 days for after discharge, and 13.1 days in total. Outcomes of patients were as follows: full recovery, 78.5%; discharge with current status, 6%; transfer to other clinic, 7.3%, transfer to intensive care unit, 6.2%; and exitus, 2%. On evaluating the relationship between mean age and disease outcomes patients transferred to intensive care units were older than patients those transferred to another clinic, discharged with full recovery, and discharged with current status (p = 0.03).

Of patients who died, 23.5% (n = 4) had a history of living at a nursing home. The mortality rate of patients who lived at nursing homes was higher than other patients (p = 0.016). A significant association was observed between mortality and hospitalization type, and the mortality rate of patients transferred from intensive care units was higher than all other patients (p = 0.03). Multivariate analyzes revealed that living at nursing home and being transferred



from intensive care are units were independent risk factors for mortality (p = 0.001).

DISCUSSION

Infections are among the top 10 causes of hospitalization and the top 5 causes of mortality in individuals aged > 65 years (4).

Overall, 40% of patients hospitalized at our clinic were aged > 65 years this rate has been reported as 28.6%, 13.5%, and 33.1% in different studies from our country (5,6,7). The mean patient age in this study was 76.8 ± 7.3 years whereas that reported in similar previous studies was 67 and 76.4 ± 6.9 years (7,8). The mean age and proportions of hospitalized geriatric patients among all hospitalized individuals have been increasing in parallel to aging of the population in our country.

Concomitant chronic diseases are precipitating factors for infections (9). The concomitant disease rate was 86.2% (HT 40.6%, CVD 35.6%, and DM 29.8%) in our study ; similar previous studies have reported rates as 30.8% (HT 19.4%, COPD 17.2%, and DM 16.1%), and 89% (HT 54.5%, DM 29.5%, and CVD 28%) (2,3). Çağatay et al. (10) evaluated 185 geriatric patients and reported that infections were more prevalent among patients with concomitant diseases, and the most frequent infection was pneumonia. Similarly, in our study, pneumonia was more frequent among patients with concomitant chronic diseases (p = 0.001).

Consistent with available literature data most frequent diseases that caused hospitalization in geriatric patients in our study were pneumonia and UTI (5,6,7,8). Moreover disease trends over time revealed that urosepsis, brucellosis, and CCHF cases have decreased in the last three years, tularemia is no longer detected, whereas incidence of FUE has increased.

Most frequent infections that caused FUE among geriatric patients were complicated UTI, tuberculosis, endocarditis, and abscess. The rate of undiagnosed patients was 9% (11). In a study that followed up 185 cases with fever, 72.9% of cases had fever due to infections, such as pneumonia (22.1%), UTI (14%), skin and soft- tissue infections (14%), CNS infections (5.4%), tuberculosis (4.2%), brucellosis (3.2%), and non-infectious diseases (17.3%) including rheumatologic diseases (4.3%), hematological malignancies, (5.4%) solid tumors (3.7%), and vasculitis (3.7%), and 9.7% of patients could not be diagnosed (12). In another study with 301 geriatric patients from our country, patients with FUE (n = 16) had collagen tissue disease (n = 8), brucellosis (n = 2), salmonellosis (n = 1), malignancy (n = 1), and infective endocarditis (n = 1), while 3 patients could not be diagnosed (8). In our study, we found that most frequent infections that caused fever were UTI (16.7%), pneumonia (8.3%), and cellulitis (6.3%), which was in accordance with available literature data. In geriatric individuals, cellular immunity and specific cytokines (IL-2) decrease, and vulnerability to infections due to intracellular pathogens increase ; and our results also revealed that tuberculosis (6.3%), brucellosis (2.1%), and salmonellosis (2.1%) were the predominant causes of geriatric FUE. The proportion of undiagnosed patients (28.8%) was in line with available literature.

In this study, 77.1% of pneumonia cases were CAP, 22.9% were IP ; CAP was more frequent among women, and IP was more frequent among men (p = 0.01). The rate of concomitant chronic disease was higher in IP cases than in CAP cases (95.9% vs. 89.6%, p = 0.09). Grenier et al. (13) evaluated 3295 pneumonia cases and determined CAP in 83%, and IP in 17% of cases; moreover, the mean ages of IP patients was higher (p < 0.001), and both types of pneumonia were more frequently seen in men than in women (p = 0.2). Several studies have revealed that IP is more severe than CAP, and has higher mortality rates, with longer hospitalization periods (14,15). In our study as well, hospitalization was longer for IP than for CAP (p = 0.02).

In elderly men, residual urine volume increases owing to prostate hypertrophy and causes complicated UTI. Resistant gram_ negative bacilli are more frequently identified in complicated UTI than in uncomplicated UTI. Frequently observed agents in uncomplicated UTI are E. coli (75% - 95%), Proteus

mirabilis, Klebsiella pneumoniae, and Staphylococcus saprophyticus (16), whereas Pseudomonas spp., Serratia spp., Providencia spp., enterococcus, staphylococcus, and fungi are observed more often in complicated UTI (17). Similar to complicated UTI, most frequent agents in iatrogenic UTI are generally resistant gram_ negative bacilli (18). In our study, ESBL_ positive E. coli was more frequent in iatrogenic infections than in community_ acquired infections ($p = 0.001$), but no significant differences were noted for ESBL_ positive Klebsiella spp. and vancomycin_ resistant enterococcus ($p = 0.9$, and 0.7, respectively). Agents causing complicated UTI are generally resistant microorganisms, which are resistant to oral antibiotics, and consequently, such patients require hospitalization for antibiotic treatment (19). Most male patients in our study had history of surgery or catheterization because of benign prostate hypertrophy (BPH) ; iatrogenic UTI was more frequently reported in these patients, and the hospitalization duration was longer for these patients than for women ($p = 0.04$, $p < 0.001$).

In this study, the most frequent agent identified in UTI was E. coli (50.8%). A meta-analysis from our country that evaluated antibiotic resistances in E. coli strains isolated from urine cultures reported a piperacillin tazobactam resistance rate of 17.53%, a ceftriaxone resistance rate of 19.22%, an imipenem resistance rate of 2.85%, and a ciprofloxacin resistance rate of 30.98% (20). In the present study, 43.4% of E. coli strains were ESBL_ positive, the quinolone resistance rate was 41.4%, and the TMP-SXT resistance rate was 47.4%. Considering the high resistance rate and adverse effects on central nervous system of quinolone, particularly in geriatric patients, quinolone use for UTI in this study was low (3.1%).

History of nursing home stay in geriatric population is important for healthcare_ related infections. Previous studies have revealed that infectious agents in nursing home patients were generally resistant strains. In addition, mortality among patients living at nursing homes is high owing to the presence of accompanying diseases. Chong et al. (21) revealed that living at nursing homes was an independent risk factor for mortality. Similarly, in our study, living at nursing home was an independent risk factor for mortality ($p = 0.004$).

Typically, geriatric patients, need intensive care owing to exacerbations of underlying diseases or multi-organ system issues. Approximately half of intensive care patients are elderly individuals (22). In our study the mean age (79.6 ± 7.2 years) and accompanying diseases of patients transferred from intensive care units were significantly higher compared with all other patients ($p < 0.001$, $p = 0.03$). Another important point was the mortality rates in these patients ; we found that being transferred from intensive care was an independent risk factor for mortality ($p = 0.03$). Vosylius et al. (23) reported that mortality and morbidity in patients hospitalized in intensive care units were higher, and the mortality rate in patients aged ≥ 75 years was twice that in patients aged < 65 years. Rosenthal et al. (24) evaluated over 150,000 patients, and found that age was independently associated with in-hospital mortality regardless of disease severity and other prognostic factors. Another study including patients hospitalized in intensive care units reported that only age was not sufficient to predict outcomes, and primary diagnosis, presence of accompanying chronic disease, and disease severity were critical as well (25). The higher mortality rates observed in our study can perhaps be explained by both the higher mean patient age as well as the higher rates of concomitant chronic diseases in patients transferred from intensive care units.

In conclusion, on considering our and other studies on geriatric infections, we foresee that geriatric patients will be more prevalent in the coming years, and will mostly be followed- up at hospitals. Medical education before and after graduation should involve training in geriatric medicine to ensure the follow-up of geriatric patients using an appropriate approach. Necessary actions must be taken to introduce the approach to geriatric patients into the specialty training. It was determined that most geriatric patients are admitted to hospital through the emergency department, and it would be appropriate to prioritize emergency physicians in geriatric medicine training considering the fact that elderly patients have higher



demand for acute care services. Concomitant chronic diseases further complicate geriatric cases, and thus, patient management becomes more challenging.

Adequate knowledge regarding management of chronic diseases (particularly HT, CVD, and DM) in such patients will ease follow-up of geriatric patients. Healthcare planning and research must target healthy aging as well as addressing the health problems of geriatric patients. Infections in elderly patients follow atypical courses, with occasionally fever being the only symptom ; such patients also depict changes in mental status, making it hard for them to remain focused, which makes the diagnostic process difficult. Although such patients do not present typical symptoms during assessments, looking for signs and symptoms of common infections will help diagnosis and treatment. In our study, the most frequent infections that caused fever were UTI (16.7%) and pneumonia (8.3%). Diagnostic examinations of geriatric patients hospitalized with the diagnosis of FUE should primarily involve examinations targeting pneumonia and UTI.

According to our results, age, presence of comorbidities, and mortality among patients transferred from intensive care units were high, and thus, this group of special patients should be more closely monitored. Taken together, it will be useful for healthcare facilities to calculate the proportion of their elderly patient population, and establish low-cost palliative care units for management of elderly patients with critical diseases. In our study, the mortality is higher among patients transferred from the intensive care units or nursing homes. So expeditious diagnosis by the clinicians and early institution of treatment are of vital importance in these patients.

Epidemiology, agents and resistance status in geriatric infections are changing day by day, and following these changes will provide an insight to approach to these patients, and we have evaluated our patients also with this aspect.

The limitations of the present study include its retrospective design and being a single-site study. Prospective and multi-site studies would enable acquisition of more accurate information.

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Research

RETROSPECTIVE ANALYSIS OF FACTORS AFFECTING INTENSIVE CARE UNIT MORTALITY IN PATIENTS OVER 75 YEARS OF AGE

Abstract

Aim: This study aimed to investigate the value of the APACHE II scoring system in predicting mortality and identify the factors affecting mortality in advanced-age patients in the intensive care unit.

Material and Methods: The medical records of patients >75 years of age who were hospitalized at the intensive care unit of Dr. Lutfi Kirdar Education and Research Hospital between January 1, 2012 and December 31, 2012 were examined. The patients were divided into two groups according to the diagnosis upon their hospitalization: medical and surgical. Total lymphocyte and leukocyte counts, as well as blood/serum levels of glucose, electrolytes and creatinine, were recorded on the day of hospitalization. Correlation of mortality with Glasgow Coma Scale, APACHE II score, and laboratory findings was studied upon admission.

Results: While mortality was associated with higher APACHE II score, factors such as advanced age on admission, higher serum creatinine levels, lower mean arterial pressure (<60 mmHg), need for inotropic agents within the first 24 hours, longer duration of mechanical ventilation, and presence of acidosis during intensive care unit stay could increase risk of mortality. Regression analysis showed that APACHE II score was more related and could therefore serve as a better predictor of mortality than SAP 3 score.

Conclusion: The predictors of intensive care unit mortality were found to be the same, regardless of the age group. Higher APACHE II score was a valuable scoring system for advanced-aged patients as well as for all age groups.

Key Words: geriatrics, APACHE , intensive care unit

Araştırma

75 YAŞ ÜSTÜ HASTALARDA YOĞUN BAKIM MORTALİTESİNE ETKİ EDEN FAKTÖRLERİN RETROSPEKTİF ANALİZİ

Öz

Amaç: Bu çalışma yoğun bakımdaki ileri yaş hastalarda mortaliteye etki eden faktörleri belirlemek ve mortaliteyi tahmin etmede APACHE II skorunun değerini araştırmayı amaçlamaktadır.

Materyal ve Metodlar: 1 Ocak 2012-31 Aralık 2012 tarihleri arasında Dr. Lutfi Kırdar Eğitim ve Araştırma Hastanesi Yoğun Bakım Servisinde takip edilmiş olan 75 yaş üzeri hastaların tıbbi kayıtları gözden geçirildi. Yoğun Bakıma kabul edildikleri andaki tanılarına göre 2 gruba ayrıldılar: Medikal ve cerrahi. Hastanın yoğun bakıma kabul edildiği tarihteki total lenfosit ve lökosit sayıları, kan glukoz, elektrolit ve kreatinin değerleri kayıt edildi. Hastanın kabul edildiği andaki Glasgow Koma Skalası, APACHE II skoru ve laboratuar değerlerinin mortalite ile korelasyonu çalışıldı.

Sonuçlar: Mortalite yüksek APACHE II skoru ile ilişkili iken yoğun bakıma kabul anındaki ileri yaş, yüksek serum kreatinin düzeyleri, düşük ortalama arter basınçları (<60 mmhg), ilk 24 saat içersindeki inotropik ajan ihtiyacı, uzamış mekanik ventilasyon süresi ve yoğun bakım takibi sırasında asidoz varlığı da mortalite riskini artırabilir. Regresyon analizine göre APACHE II skorunun SAP 3 skoruna göre mortalite ile daha fazla ilişkili olduğu ve bu nedenle mortalitenin daha iyi bir belirteci olduğu ortaya çıkmıştır.

Son Söz: Yoğun bakım mortalite belirleyicileri yaş grubundan bağımsız olarak aynı bulunmuştur. Yüksek APACHE II skoru diğer yaş gruplarında olduğu gibi ileri yaştaki hastalarda da değerli bir skorlama sistemidir.

Anahtar Sözcükler: geriatri, APACHE, yoğun bakım

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INTRODUCTION

According to the World Health Organization, the cut-off age for being classified as elderly is 65 years; specifically, 65–74 years old is called early geriatrics, 75–84 years old is called advanced elderly, and >84 years old is called very advanced geriatrics (1). After the age of 65 years, an individual begins to benefit from social and health insurances after retirement; therefore, this age is accepted as the social and economic beginning of geriatrics (2).

In the intensive care unit (ICU) geriatric individuals account for the majority of admitted patients and their treatment may be different from that of younger patients. In fact, the duration of ICU stay was found to be seven times longer in patients over 75 years of age compared with individuals less than 65 years of age (3). Mechanical ventilation (MV) demand was 10 times more in patients over 85 years old compared to patients less than 55 years old. Moreover, one study found that 30% of patients over 85 years of age die in the ICU (4).

Today, advanced age is not a contraindication to ICU admission. Although most geriatric patients who need hospital admission have progressive, irreversible, and highly fatal diseases, withholding ICU admission for such reasons is not rational because the gravity of the medical indications are the same for both geriatric and young patients (5). In surgical ICUs, majority of patients are admitted because of major surgical procedures, mostly cardiac, that need postoperative follow-up. In internal medicine ICUs, the major indications for ICU admission are acute respiratory insufficiency and sepsis; cardiac problems such as myocardial infarction, angina pectoris, arrhythmia, conduction defects, and congestive heart failure are also common. In general, 27% of patients over 65 years of age need ICU follow-up (6).

MATERIALS AND METHODS

We aimed to investigate the factors affecting the mortality of geriatric patients (>75 years of age) admitted to the ICU of Dr. Lutfi Kirdar Research and Training Hospital in a period of one year and to evaluate the value of the APACHE II scoring system as a predictor of mortality.

We recorded data on age, diagnosis, co-morbid conditions, duration of hospitalization, duration of MV, body temperature, Glasgow Coma Scale (GCS), APACHE II score, expected mortality rate based on the APACHE II score, and actual mortality rate. Patients followed-up for less than 24 hours were excluded.

The patients were divided into two subgroups based on the diagnosis upon their hospitalization: these groups included medical disorders and surgical disorders. Total lymphocyte count (TLC), leukocyte count, and levels of blood glucose, serum electrolytes, and serum creatinine were recorded. During ICU stay, data on MV need and duration; need for tracheostomy and duration; and use of positive inotropic agents were also recorded. The number of mortalities and its correlation with GCS, APACHE II, laboratory findings, and additional systemic disorder were evaluated.

Statistical Analysis

Statistical analyses were performed using the software Statistical Package for Social Sciences for Windows 13.0. Comparison of descriptive parameters was made by Student's t-test; whereas comparison of multiple variables was made by analysis of variance (ANOVA). A p value of <0.05 was defined as significant.

RESULTS

In this study, the medical records of 85 patients were retrospectively examined. Majority of patients were in the 81–85 years old group (n = 44), whereas the >90 years old group (n = 6) comprised the minority group; 42.4% of the patients were men and 57.6% were women (Table 1).



Table 1. Age and gender of the cases

Age group	Number of patients		%
	Male	Female	
Age ≤ 80	3	5	9.4%
80 < Age ≤ 85	18	26	51.8%
85 < Age ≤ 90	13	14	31.8%
Age > 90	2	4	7%

The longest duration of ICU stay was 32 days for the surgical group and 114 days for the internal diseases group. However, majority of the patients in the surgical diseases group (n = 6) and internal diseases group(n = 11) stayed in the ICU for only two days. The mean duration of ICU stay was 7.59 days in the surgical group and 15.95 days in the internal diseases group (Table 2). The longest duration of MV was 32 days (mean, 5.55 days) in the surgical group and 114 days (mean, 15.05 days) in the internal diseases group (Table 2).

APACHE II score had the highest mean value at 33.33 in the neurosurgery subgroup and the lowest value at 8 in the OBGYN subgroup in the surgical disorder group. In the internal diseases group, the highest APACHE II score was 32 in the gastrointestinal subgroup and the lowest was 27 in the nephrology subgroup.

The relationship between mortality and different parameters like arterial pH, blood glucose level on admission, serum creatinine level, white blood cell count, mean arterial pressure, body temperature, total lymphocyte count, tracheostomy status, duration of mechanical ventilation, need and type of positive inotropic agent, APACHE II score were shown on Table 3-6.

Increasing TLC had an insignificant tendency to decrease the duration of hospitalization (one-way ANOVA, p =0.747; Table 7).

In the regression analysis, a Pearson correlation coefficient (R)>0.90 indicated correlation with mortality rate. Both APACHE II score and TLC predicted mortality, but the former (R = 0.925) was more precise than the latter (R = 0.668) (Figures 1 and 2).

Table 2. Duration of hospitalization and mechanical ventilation according to diagnosis group

		Surgical	Internal	Total
Total hospitalization (days)	Mean	7.59	15.95	13.09
	Standard deviation	7.06	23.61	19.93
Mechanical ventilation (days)	Mean	5.55	15.05	11.81
	Standard deviation	6.93	23.87	20.24

Table 3. Relationship of mortality with parameters upon intensive care unit admission

Groups	Number of patients	Mortality (%)	Standard deviation	p value
pH < 7.1	6	100	0	0.046*
7.1≤ pH <7.2	17	82.4	39.3	
7.2≤ pH <7.3	18	66.7	48.5	
7.3≤ pH <7.4	11	36.4	50.5	
7.4≤ pH	33	66.7	47.9	
BGL < 70	4	75.0	50.0	0.792
70 ≤ BGL<110	15	66.7	48.8	
110 ≤ BGL<145	24	70.8	46.4	
145 ≤ BGL <165	9	77.8	44.1	
165 ≤ BGL <200	12	50.0	52.2	
200 ≤ BGL	21	71.4	46.3	
Creatinine < 0.81	16	50.0	51.6	0.016*
0.81 ≤ Creatinine < 1.44	26	53.8	50.8	
1.44 ≤ Creatinine < 2	13	69.2	48.0	
2 ≤ Creatinine < 4	23	87.0	34.4	
4 ≤ Creatinine	7	100.0	0	
WBC < 4000	6	66.7	51.6	0.212
4000 ≤ WBC < 14000	61	68.9	46.7	
14000 ≤ WBC < 20000	11	45.5	52.2	
20000 ≤ WBC < 30000	4	100.0	0	
30000 ≤ WBC	3	100.0	0	
MAP< 50	4	75.0	50.0	0.033*
50 ≤MAP< 60	12	100.0	0	
60 ≤MAP< 80	21	76.2	43.6	
80 ≤MAP< 100	24	62.5	49.5	
100 ≤MAP	24	50.0	51.1	
BT < 36	3	100.0	0	0.352
36 ≤ BT < 38.3	69	65.2	48.0	
38.3 ≤ BT	13	76.9	43.9	
TLC < 900	43	69.8	46.5	0.333
900 ≤TLC<1500	30	60.0	49.8	
1500 ≤ TLC	12	83.3	38.9	

*p < 0.05 (significant, by one-way ANOVA test)



Table 4. Relationship of mortality with parameters during intensive care unit admission

Groups	No. of patients	Mortality (%)	Standard Deviation	p value
Tracheostomy(+)	15	66.7	48.8	0.887
Tracheostomy(-)	70	68.6	46.8	
MV ≤ 3 days	39	48.7	50.6	<0.001*
MV > 3 days	46	84.8	36.3	
Inotropic agent(+)	41	43.9	50.2	<0.001*
Inotropic agent(-)	44	90.9	29.1	

*p < 0.05 (significant, by Student's t-test)

Table 5. Relationship of mortality with type of positive inotropic agent

Groups	No. of patients	Mortality (%)	Standard Deviation	p value
Dopamine	14	78,6	42,6	<0.001*
Dopamine + Steradine	30	96,7	18,3	
Not used	41	43,9	50,2	

*p < 0.05 (significant, by one-way ANOVA test)

Table 6. Relationship of mortality with APACHE II score

Groups	No. of patients	APACHE II EMR (%)	Mortality (%)	Standard Deviation	p value
APACHE II < 20	15	13	13.3	35.2	<0.001*
20 ≤ APACHE II	70	61	80.0	40.3	

*p <0.05 (significant, by Student's t-test)

Table 7. Relationship between TLC and duration of hospitalization

Groups	No. of patients	Duration of Hospitalization (day)	Standard Deviation	p value
TLC <900	43	13.93	22.70	0.747
900 ≤ TLC <1500	30	13.53	19.60	
1500 ≤ TLC	12	9.00	5.68	

*p <0.05 (significant, by one-way ANOVA test)

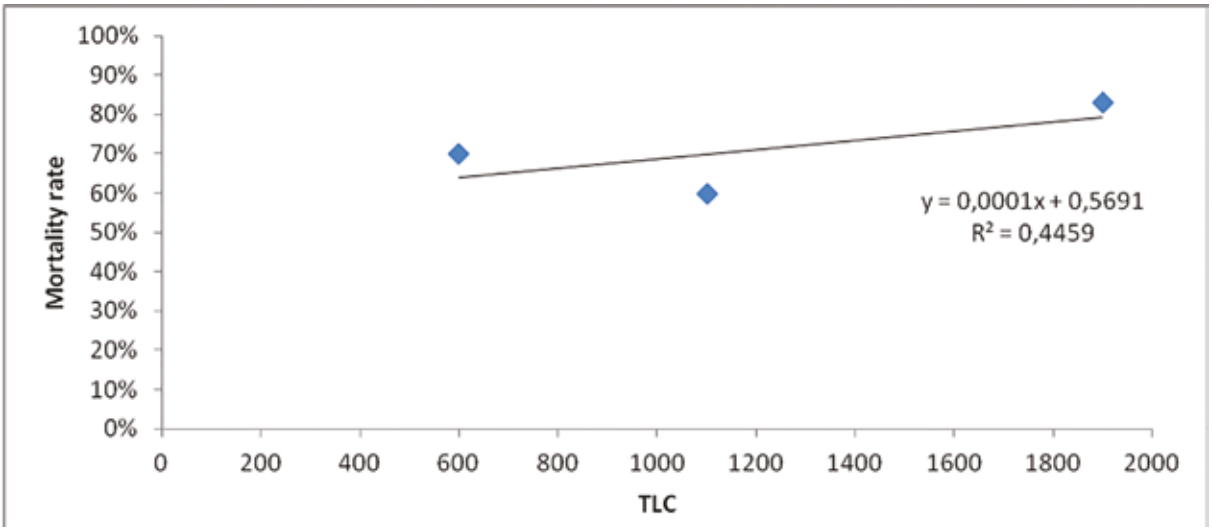


Figure 1: Regression analysis for TLC (Total Lymphocyte Count)

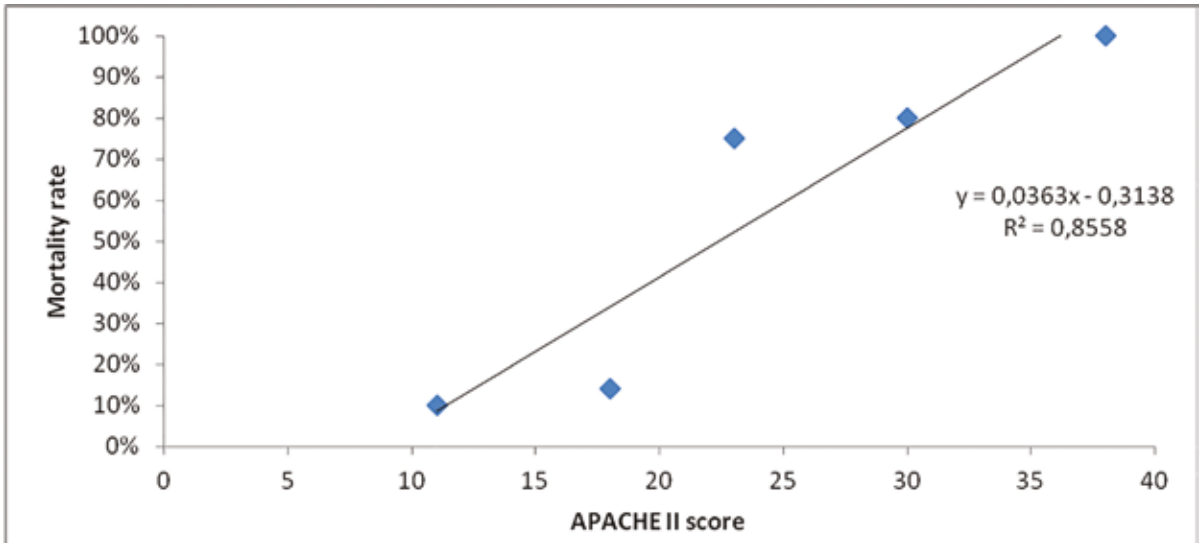


Figure 2: Regression analysis for APACHE II

DISCUSSION

Many researches have studied geriatric patients followed-up in the ICU according to different patient groups. Zampier et al (7) used the SAPS 3 score and Charlson Comorbidity Index (CCI) to examine the factors affecting morbidity and mortality in 1129 patients over 80 years of age. Mortality rate was significantly lower in patients who were admitted to the ICU for internal medicine problems and for elective surgery than those admitted for emergency surgical procedures. Moreover, mortality was high in patients admitted to the ICU for sepsis and renal



injury. The lowest mortality was observed in patients who underwent cardiovascular surgery. That study concluded that SAPS 3 and CCI were statistically and clinically correlated with mortality. Somme et al (8) studied the factors affecting mortality in patients >85 years of age and found that age was not the sole factor that determined ICU mortality. APACHE II score was related with short-term mortality, but not with mortality in the long-term or at one year after ICU discharge.

In this study, we found that APACHE II was more valuable than TLC in predicting mortality. Initially, we presumed that nutritional status, as reflected by the TLC, and the follow-up time in the ICU were related with mortality. However, our results showed otherwise.

Rooij et al (9) found that among patients in the 80–84 years age group,mortality was 85% when the admitting diagnosis was sepsis and 58% in patients with problems in the gastrointestinal system. Both APACHE II and SAP 3 scores were found to be similarly significant in predicting mortality.

The overall mortality rate was 68.24% in our study population, 48.28% for the surgical patients and 78.57% in the internal medicine patients. We presumed that this distribution was due to the presence of additional systemic disorders.

In a retrospective study of Fuchs et al (10) on the 28-day and one-year mortality rates of 7265 geriatric patients, the number of heart failure, severe cardiac arrhythmia, and valvular disorders as reasons for ICU admission was found to increase by age. The highest mortality rate was 56% in the >85 years age group and the lowest was 36% in the 65–74 age group. The SOFA score increased with increasing age and was found to increase mortality. This study claimed that in patients >75 years of age, mortality might be higher than expected; the necessity for special care for these patients was emphasized (10).

In this present study, the highest mortality rate was observed in neurosurgery patients and in patients with renal injury, among the other internal medicine patients; this trend was also reported by other studies (7,9,10). However, it is important to note that our patients with renal injury had lower APACHE II scores (mean 27) than the other internal medicine patients. Caution should be taken when interpreting these results because the small population size of the renal injury group might render the findings statistically and clinically insignificant. Similar to available literature (10), this study showed that low MAP and use of positive inotropic agent on ICU admission significantly correlated with mortality.

Although mortality was not affected by sex, it tended to be higher in women. Time of ICU follow-up was longer in women than in men, regardless of survival outcome. In general, hematocrit is relatively low in women; however, it was high in our female patients. This situation might have been due to the varying amounts of blood samples drawn, duration of ICU follow-up, and other confounding factors.

Burri et al (11) found that although arterial blood gas and pH values might be useful for the management of respiratory failure, these were not significant predictors of annual mortality. In contrast, our results showed that arterial blood gas analysis, especially the pH value, significantly correlated with mortality, which increased in patients with arterial pH <7.1.

Safavi et al (12) showed that patients with high BGL on ICU admission had increased mortality. Similarly, we found that mortality rate was highest in patients with BGLs >200 mg/dl on admission. However, we think that it would be more clinically relevant to combine BGL on admission, mean BGL during ICU follow-up, and detailed glycemic control. A retrospective three-year study by Ucgun et al (13) on 262 ICU patients with the same age as our study population and with non-malignant respiratory disease identified that mortality was associated with changes in the following laboratory values with respect to baseline values: serum BUN, creatinine, LDH, protein levels, arterial blood pH, BE, and bicarbonate levels. On multivariate analysis, 10 of 15 variables were identified to independently predict mortality; these included low systolic blood pressure, APACHE II score >21, LDH >876 IU, arrhythmia, respiratory failure needing MV, short duration of ICU follow-up, use of positive inotropic agent, presence of complications, high BUN, low protein, and acidosis

on arterial blood gas examination. Of these 10, the first three that were enumerated had the highest odds ratios.

In this study, bicarbonate, pH, and BE levels were significant factors in the univariate analysis, but not in the logistic regression analysis. Similarly, Hill et al(14) showed that arterial blood gas measurements did not affect mortality in ICU patients with chronic obstructive lung disease. In another study on chronic obstructive lung disease patients in the ICU, Breen et al (15) found that arterial carbon dioxide levels, not acidosis or alkalosis, on admission independently predicted mortality. On the other hand, we found a significant relationship between pH levels and mortality, but unlike Ucgun et al (13), we found no correlation between alkalosis and survival. Highest mortality was observed in patients with pH level <7.1 in our study. These differences may be accounted for by differences in patient populations and diagnosis groups.

Sudarsanam et al (16) similarly found that increase in mortality in ICU patients (mean age, 41 years) on MV was predicted by need for positive inotropic agents, but not by need for tracheostomy. The duration of MV was short in their patients who died; in contrast, we showed that MV duration >3 days was associated with higher mortality. In addition, they showed that high APACHE II score was related with mortality. Although they used a cut-off APACHE II score of 22 and the age groups were different from those in our study, we both demonstrated that need for positive inotropic agent and high APACHE II score can be used as determinants of mortality independent of age.

Although the patient groups in the four studies discussed above do not exactly overlap with those in our study, the high mean age of the population in these studies are comparable to that in our study. The significant increase in mortality with lower MAP on ICU admission in our study was similar to the results of Ucgun et al (13). Additionally we found that when MAP was <60 mmHg, highermortality was clinically and statistically significant. In that study, renal function was evaluated by BUN, which was shown to independently affect mortality at high levels. Our study showed similar results, except that we used creatinine level instead as a parameter of renal function. Similar to most studies, this present research showed that need for positive inotropic agents and mortality had a significant relationship; we further analyzed this effect by taking into account the type and number of positive inotropic agents used. We could not evaluate the need for MV as a predictor of mortality because all our patients were mechanically ventilated, unlike the study patients of Ucgun et al (17).

Anon et al (17) studied 1661 mechanically ventilated patients and found that age did not affect MV duration and frequency of tracheostomy and reintubation. However, patients >75 years of age had higher mortality than patients <75 years old. After adjusting for tracheostomy and reintubation, diagnosis groups, and sex distribution, mean APACHE II score was shown to be lower in patients >75 years of age. This significant difference in mortality rate between the two age groups made us think that age was a dependent determinant of the mortality. In our study, patients on MV >3 days had higher mortality than those with less duration on MV. In contrary to the study of Anon et al (17), we showed that increase in APACHE II score was correlated with increased age and mortality.

In ICU patients, nutritional deficiency affects all organ systems, especially the immune system. In these patients, TLC and T cell ratio are lower than normal; in addition, the number of non-functional cells and lymphocytes increase in response to mitogenes. TLC was reported to correlate with cellular immunity and a decrease its value indicated visceral protein deficiency (18). Although the TLC is frequently used to determine adequacy of nutrition in ICU patients, we found no study that examined its relationship with ICU mortality. In this study, TLC was not related with mortality, but duration of hospitalization was significantly shorter in patients with TLC>1500.

CONCLUSION

High APACHE II score is a valuable scoring system in advanced age group as in all other age groups.



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Research

EVALUATION OF GERIATRIC PATIENTS ADMITTED TO THE EMERGENCY DEPARTMENT DUE TO A TRAFFIC ACCIDENT

Abstract

Introduction: The aim of this study was to evaluate patients aged 65 years and older who were admitted to hospital due to a traffic accident through the last year retrospectively.

Materials and Methods: The study included 204 elderly patients admitted to the emergency department of Konya Training and Research Hospital due to a traffic accident between 1st November 2014 and 30th October 2015. The socio-demographic characteristics, accident stories, and treatments of these patients were examined. The data were analyzed by statistical tests.

Results: Of the patients, 64.7% (n = 132) were male and 35.3% (n = 72) were female. The traffic accidents occurred most frequently in the spring and summer time ($p < 0.001$). During winter months, the accidents occurred between 06.00 and 11.59 hours at most, but in other seasons they occurred between 12.00 and 17.59 hours more frequently ($p < 0.001$). Of the admitted patients, 4.4% (n = 9) lost their lives and 6.9% (n = 14) were hospitalized at the intensive care unit. While 56.4% (n = 115) of the patients were discharged from the emergency department by recovery, 43.6% (n = 89) of the patients were referred to 17 different clinics. Injuries were sustained to one or more parts of the body in 93.1% (n = 190) of the patients. The patients with head trauma had the highest mortality ($p < 0.001$).

Conclusion: New strategies are needed to prevent traffic accidents and to treat geriatric patients more effectively after a traffic accident.

Key words: Accidents, Traffic; Health services for the Aged; Inpatient; Prognosis

Araştırma

TRAFİK KAZASI SONRASI ACİL SERVİSE BAŞVURAN GERİATRİK HASTALARIN DEĞERLENDİRİLMESİ

Öz

Giriş: Bu çalışmada hastaneye son bir yıl içinde trafik kazası sonrası başvuran altmış beş yaş üstü hastaların retrospektif olarak değerlendirilmesi amaçlanmıştır.

Materyal ve Metod: Çalışmaya Konya Eğitim ve Araştırma Hastanesi acil servisine 01 Kasım 2014–30 Ekim 2015 tarihleri arasında trafik kazası sonrası başvuran 204 yaşlı hasta dahil edildi. Bu hastaların sosyodemografik özellikleri, kaza karakteristikleri ve tedavi süreçleri incelendi. Elde edilen veriler istatistiksel testlerle analiz edildi.

Bulgular: Acil servise başvuran yaşlı hastaların %64.7'si (n=132) erkek ve %35.3'ü (n=72) kadındı. Trafik kazaları en sık ilkbahar ve yaz mevsiminde meydana gelmiştir ($p<0.001$). Kış aylarında en sık sabah 06.00-11.59 saatleri arasında, diğer mevsimlerde öğleden sonra 12.00-17.59 saatleri arasında meydana gelmiştir ($p<0.001$). Servisimize başvuran hastaların %4.4'ü (n=9) hayatını kaybetmiş, %6.9'u (n=14) yoğun bakıma alınmıştır. Hastaların %56.4 (n=115)'i acil servisten şifa ile taburcu edilirken, %43.6'sı (n=89) 17 farklı kliniklere sevk edilmiştir. Hastaların %93.1'inde (n=190) vücudun bir veya birden fazla bölgesinde yaralanma mevcuttu. Mortalitesi en yüksek olan hastalar kafa travması olanlardı ($p<0.001$).

Sonuç: Trafik kazalarını önleme ve kaza sonrası yaşlı hastalara müdahale konusunda yeni stratejilere ihtiyaç olduğunu düşünmekteyiz.

Anahtar kelimeler: Kazalar, trafik, geriatrik sağlık hizmetleri, yatan hasta, prognoz



INTRODUCTION

Elderly is defined as being old or showing signs of aging in the dictionary (1). According to the World Health Organization (WHO), the elderly population is defined as people aged 65 and older. According to WHO datas, the proportion of people in the geriatric age group increases steadily over the years. The reasons for this are the improvement in health services and the decrease in the fertility rate (2). Like other countries in the world, the elderly population has increased in Turkey in recent years. While 8.2% of the population in Turkey is elderly, this figure is expected to reach 10.7% by 2023 (3). This rise corresponds to an increase in the participation rate of the elderly population to active life and as a result of this it has also been reported in the literature that the elderly population's emergency department applications have increased over the years. Impairment in some abilities along with aging cause cognitive, sensory, and psychomotor abilities to deteriorate. Moreover, in addition to the above reasons, comorbid diseases like osteoporosis cause the elderly to be more susceptible to trauma. Concurrent disorders may also increase the risk of complications. Although injury severity is typically less in older than younger people, the outcomes are worse in the elderly (3).

A traffic accident is an event involving a vehicle in motion, which can result in death, injury or damage (4,5). As the chronic diseases, physical disabilities, and cognitive disorders are more common in elderly people than in young people, the proportion of elderly people in traffic accidents has increased (6). According to the WHO Global Status Report on Road Safety, which was based on data collected from 178 countries, traffic accidents were the 9th cause of death in 2004; however, they are predicted to rise to 5th place by year 2030 (5). In Turkey, deaths due to traffic accidents are the 2nd cause in the 5–29 age group, the 3rd cause in the 30–44 age group, and the 10th cause of death in the 60 years old and over age group (7,8).

It is important to define the causes of geriatric trauma to prevent injury and decrease morbidity, mortality, and associated costs (9). Geographic variation in trauma patterns may occur, there is limited information available about geriatric trauma in Turkey. Describing these factors may help to guide the development of precautions to limit traumas in the elderly. The aim of this study was to examine the socio-demographic data, accident characteristics, mortalities and morbidities of people aged 65 and older who were admitted to Konya Training and Research Hospital, one of the biggest hospitals in the Central Anatolia Region, due to a traffic accident and to increase awareness about interventions to prevent traffic accidents besides elderly casualties.

MATERIALS AND METHODS

The study was planned as a retrospective descriptive study. It involved people aged 65 years and older who were admitted to the Emergency Department of Konya Training and Research Hospital due to a traffic accident between 1st November 2014 and 30th October 2015 and for whom judicial reports were also prepared. Those who were under 65 years old or had missing data were excluded from the study.

The study was approved by the Ethics Committee of Necmettin Erbakan University Meram Medical Faculty (Approval No: 2016/04). All records of the elderly patients who were admitted to the emergency department of Konya Training and Research Hospital due to a traffic accident in the past year and who met the criteria were obtained from the hospital's automation system and were transferred to a form for each patient. The injury status of each patient was classified as eight anatomical region,: the face, head (except the face), neck, chest, upper extremity, abdomen or pelvis, vertebrae, and lower extremity. The place, time, and season of the accidents and the age, sex, driver status, injury status, morbidity, mortality and prognosis of the patients were recorded.

The SPSS 22.0 software package program (IBM Corp. Armonk, USA) was used for statistical analysis. Descriptive statistics, Kolmogorov–Smirnov and Shapiro–Wilk tests were used to assess the obtained data. The Mann Whitney-U test was used to compare two samples. The chi-square test was used for comparing categorical data. The results

were evaluated at a 95% confidence level and significance was set at $p < 0.05$.

RESULTS

A total of 3441 patients were admitted to the emergency department of Konya Training and Research Hospital due to a traffic accident during the last 1-year period. Of these, 6.40% (n = 220) were 65 years or older in age. Sixteen of 220 patients aged 65 and older were excluded due to missing information. Thus, the study was completed with 204 patients. The mean age of the patients included was 73.31 ± 0.46 years. Of these, 64.7% (n = 132) were male and 35.3% (n = 72) were female. The mean age of women was 72.54 ± 0.72 years and the mean age of the men was 73.73 ± 0.58 years. Of all the patients, 61.3% (n = 125) were between 65.0 and 74.9 years old (young-old) and 38.7% (n = 79) were 75 years or older (old-old). Of the elderly patients who were admitted to the emergency department by traffic accident, 66.2% (n = 135) were the drivers (Table 1).

Table 1. Sociodemographic characteristics of patients and characteristics of traffic accidents

	%	n
Age		
65–74.9 years	61.3	125
75 years and over	38.7	79
Sex		
Female	35.3	72
Male	64.7	132
Driver	66.2	135
Not driver	33.8	69
Accident location		
City center	82.3	168
Outside the city	17.7	36
Mortality	4.4	9
Intensive care unit hospitalization	6.9	14

When the accident occurring time were examined, it was found that 3.9% (n = 8) occurred between 00.00 and 05.59 hours, 28.4% (n = 58) occurred between 06.00 and 11.59 hours, 40.7% (n = 83) occurred between 12.00 and 17.59, and 27.0% (n = 55) occurred between 18.00 and 23.59 hours (Figure 1). Seasonally, 13.7% (n = 28) of the accidents occurred in winter, 31.4% (n = 64) occurred in spring, 29.90% (n = 61) occurred in summer, and 25.0% (n = 51) occurred in autumn. There was a significant difference between the seasons ($p < 0.001$) (Figure 2). However, there was no significant relationship between the seasons and mortality ($p = 0.422$). When time and season are evaluated together, accidents occurred most frequently between 06.00 and 11.59 hours during winter months, but between 12.00 and 17.59 hours in other seasons. There was a statistically significant difference between the seasons and time ($p < 0.001$).

While 5.9% (n = 12) of the patients had no injuries at any part of the body, 93.1% (n = 190) had an injury at one or more parts of the body. Analysis of trauma sites revealed that 35.3% (n = 73) of the patients had a chest injury, 34.8% (n = 71) had a lower extremity injury, 31.4% (n = 64) had a facial injury, 30.9% (n = 63) had a head injury (excluding the face), 25.5% (n = 52) had an upper extremity injury, 6.9% (n = 14) had an abdominal or pelvic injury, 5.9% (n = 12) had a neck injury, and 5.9% (n = 12) had a spinal injury (Table 2).



Table 2. Classification of patients according by trauma site (n = 204)*

Body area	n	%
No lesion	14	6.9
Face	64	31.4
Head	63	30.9
Neck	12	5.9
Upper extremity	75	35.3
Chest	52	25.5
Abdomen or pelvis	14	6.9
Vertebrae	12	5.9
Lower extremity	71	34.8

* Some patients had multiple sites of trauma.

Of the patients aged 65 years and older, 4.4% (n = 9) were dead when they were accepted to the emergency department.

Six point nine percent (n = 14) were hospitalized in the intensive care unit. There was no significant relationship between age and the intensive care unit hospitalization rates (p = 0.167). In total, 43.6% (n = 89) of the patients were referred to 17 different clinics. Of them, 16.7% (n = 34) were referred to the orthopedics, 8.3% (n = 17) were referred to the neurochirurgie, 5.4% (n = 11) were referred to the thoracic surgery department, and 2.5% (n = 5) were referred to the chest diseases department. In total, 56.4% (n = 115) of the patients were discharged from the emergency department by recovery (Table 3).

There wasn't any relationship between age and mortality (p = 0.346). The mortality rate was 12.7% (n = 8) in the patients with head trauma (p < 0.001). Among accidents, 82.4% (n = 168) occurred in the city center and 17.6% (n = 36) occurred outside the city.

The neck trauma rate was higher (13.9%) in traffic accidents which occurred out of the city than the accidents (4.2%) that occurred at the city center (p = 0.040).

Table 3. Classification of patients according to referral status (n = 204)

	%	n
No referral	56.4	115
Orthopedics	16.6	34
Brain surgery	8.2	17
Chest surgery	5.3	11
Pulmonology	2.5	5
Plastic surgery	1.5	3
Cardiology	1.0	2
Reanimation	1.0	2
Nephrology	1.0	2
Ophthalmology	1.0	2
Ear, nose, and throat	1.0	2
Urology	1.0	2
General surgery	1.0	2
Internal medicine	0.5	1
Infectious diseases	0.5	1
Hematology	0.5	1
PMR	0.5	1
Neurology	0.5	1
Total	100	204

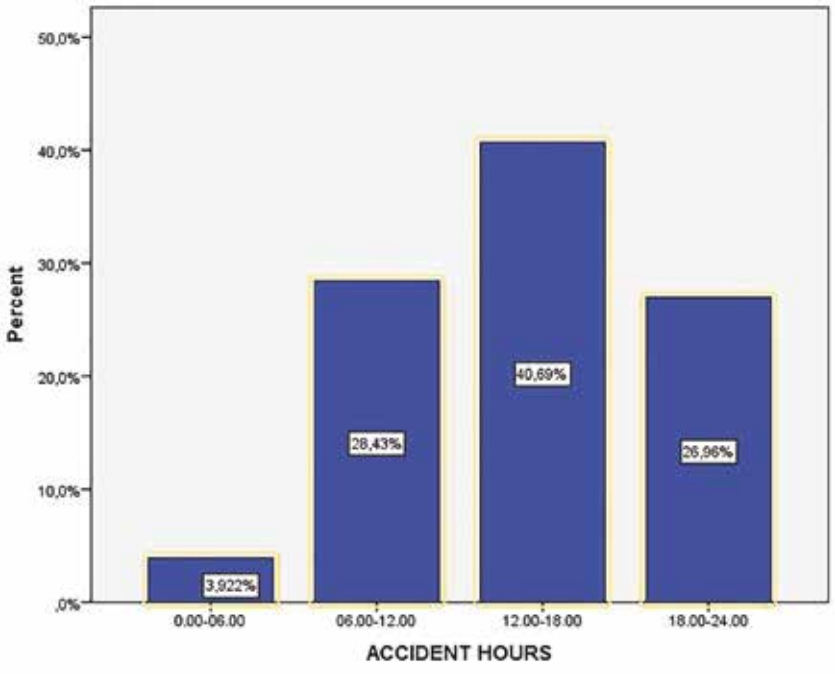


Figure 1. Distribution of traffic accidents by time of day

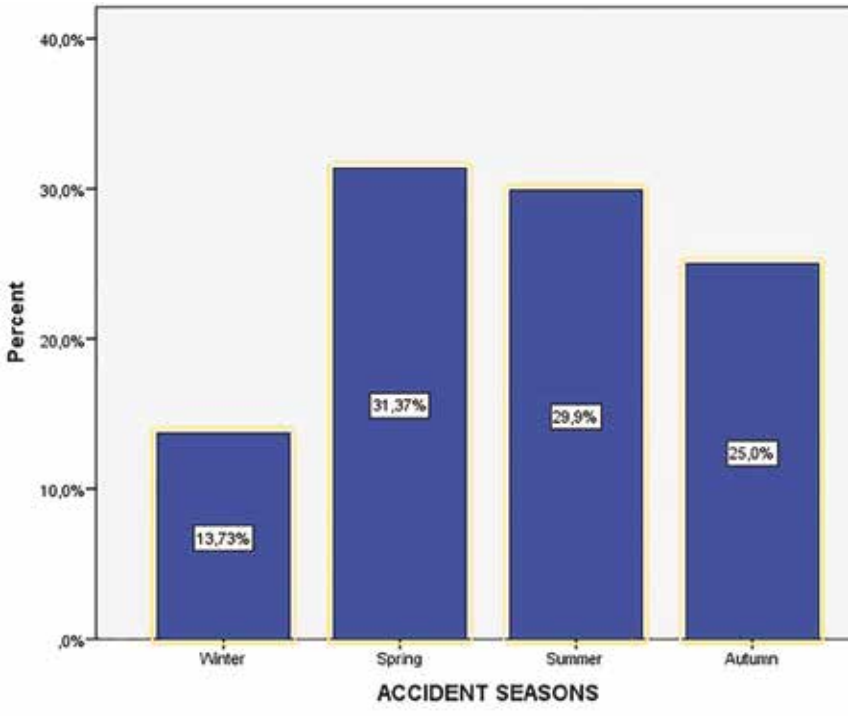


Figure 2. Distribution of traffic accidents by season



DISCUSSION

In this study, the rate of geriatric patients who were admitted to the emergency department due to a traffic accident was 6.40% of all traffic accident diagnosed patients for last 1-year period. This rate varies between 3.9% to 25.2% in different studies (2, 9-16). As the elderly people proportion is increasing all over the world, the rate of elderly people injured in traffic accidents is correspondingly on the rise.

The increase in mortality due to traffic accidents is undoubtedly a major health problem in this group. It is stated that the most important factors affecting mortality due to a traffic accident in the geriatric period are comorbid diseases and reduced physiological reserve (17). In a study that compared the results of traffic accidents in young and elderly people, the mortality rate was significantly higher (15.5%) in elderly casualties than in young casualties (8.8%) (12). In similar studies conducted in the literature, this rate has been found to be 8.8% (18), 10.1% (9), 16.9% (1), and 27.8% in elderly (15). In our study, the mortality rate in the elderly patients who were admitted to the emergency department due to a traffic accident was 4.4%, slightly less than the other studies.

Other factors affecting mortality are whether the casualty was a pedestrian or a driver, and vehicle characteristics if the casualty was a driver. In a study conducted in Turkey, it was reported that 44.1% of elderly casualties were pedestrians (2). In a similar study conducted in Iran, 40.5% of elderly casualties were pedestrians, 22.1% were car occupants, 19.1% were motorcyclists, and 7.7% were bicyclists. The mortality rates were highest in the pedestrians and motorcycle/bicycle users among these (10). In a study conducted in Turkey, it was determined that mortality rates did not change as a result in vehicle and out of vehicle traffic accidents (18). Although elderly pedestrians represent 13% of the population in Australia, they comprise 36% of pedestrian deaths and 15% of serious injuries (12,16). However, it was reported in the United States that deaths due to traffic accidents occur as a result of motor vehicle collisions instead of pedestrians (12). In a study conducted in Saudi Arabia, the mortality rate in pedestrians was found to be statistically significantly higher among elderly people, while the mortality rate in other vehicle traffic accidents did not differ between young and elderly people (13). In our study, interestingly, 66.2% of the elderly patients were drivers, which is a very high rate compared to other available studies.

In the literature, intensive care unit hospitalization rates ranged from 1.6% to 11.9% (12,15,19). In our study, the intensive care unit hospitalization rate was 6.9% in the casualties, compatible with the literature.

In our study, when we looked at the trauma sites in the body, 35.3% of the patients had a chest injury, 34.8% had a lower extremity injury, 31.4% had a facial injury, 30.9% had a head injury (except the face), 25.5% had an upper extremity injury, 6.9% (n = 14) had an abdominal or pelvic injury, 5.9% had a neck injury, and 5.9% had a spine injury. In another study, it was found that 23.4% had a chest injury, 22.9% had a head and neck injury, 21.6% had an extremity or pelvic injury, 8.1% had an abdominal or pelvic injury, and 5.4% had a facial injury (12). In a study performed in Iran, it was reported that trauma occurred most frequently in the head and neck region (24.9%), lower extremities (20.1%), and upper extremities (18.1%). In a study performed in Bolu, it was reported that trauma occurred most frequently in the head region, facial area, and upper extremities (10,20).

Mortality and morbidity rates also vary with injury site. In our study, while the mortality rate was 12.7% in those with head trauma, it was 0.7% in those without head trauma. Similarly, in two different studies conducted in Bursa, the mortality rate was significantly higher in those with head trauma (18.2%) than in those with other traumas (21,22). This is due to the fact that the probability of brain stem and brain damage is increased after head trauma. Unlike these reports, in a study conducted in Singapore it was found that morbidity and mortality rates were higher in those with chest trauma than in those with other traumas. However, in this study, the motorcycle accident rate was low in elderly casualties and thus it was not included in the statistical calculations (12).

In our study, of the traffic accidents, 82.4% (n = 168) occurred in the city center and 17.6% (n = 36) occurred outside the city. While the incidence of neck trauma was 13.9% in traffic accidents that occurred outside the city, it was 4.2% in traffic accidents that occurred in the city center. It may be an influencing factor that mild cases were treated without the need of a referral in district hospitals and severe cases were referred to our hospital. In a study performed in Germany, it was found that injuries in intercity roads are more frequent (23). This may be due to the fact that the speed limit is higher outside the city.

In a similar study conducted in Sivas, traffic accidents occurred most frequently in the summer (44.7%), autumn (26.9%), spring (14.2%) and winter (14.2%) (24). In another study conducted in Sivas, it was emphasized that traffic accidents increased significantly in frequency during the summer months and that more care should be taken in the summer (24). In our study, traffic accidents occurred most frequently in the spring, followed by summer, then autumn, and then winter. No significant relationship between the seasons and mortality was found in our study. However, it was determined in similar studies carried out in Iran and Diyarbakir that the rate of fatal traffic accidents was higher during the summer months (25,26).

In the present study, it was determined that traffic accidents occurred most frequently between 12.00 and 17.59 (40.7%) hours, followed by between 06.00 and 11.59 (28.4%), and between 18.00 and 23.59 (27%) hours. In a study performed in Iran, it was reported that there has been a steady increase in fatal accidents between 15.59 and 00.00. While deaths were more frequent between 20.00 and 23.59 and between 00.00 and 03.59 during the spring and summer months, they were more frequent between 12.00 and 15.59 during the autumn and winter months (25).

Although this study has strengths such as being conducted in one of the largest and most frequently referred to hospitals in the Central Anatolia Region, a limitation is the lack of information due to incomplete filling of patient information forms and judicial reports. The fact that we do not pay attention to records, which is a general problem in our country, limits the ability to reach more detailed conclusions. One of the implications of this study is how important it is for patient records to be taken properly.

In conclusion, the rate of elderly people injured in traffic accidents is increasing along with the increasing geriatric populations all over the world. Mortality and morbidity rates due to traffic accidents are higher in elderly people than in young people. In addition to diminished hearing and sight in elderly people, slowed motion and reactions increase the risk of traffic accidents.

The results of our study support the reassessment of driver adequacy, especially in groups over 65 years old. It is necessary to increase road safety measures for elderly people and to develop early and effective intervention strategies after a traffic accident. We think that new strategies are needed to prevent traffic accidents and to treat elderly patients after a traffic accident.

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Research

FUNCTIONAL STATUS AND SYMPTOMS OF ELDERLY INDIVIDUALS WITH HAEMATOLOGICAL CANCER RECEIVING CHEMOTHERAPY

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Abstract

Introduction: This study aimed to examine the functional status and symptoms of elderly individuals with haematological cancer receiving chemotherapy.

Materials and Method: This descriptive study was conducted with 69 individuals with haematological cancer aged 65 years and over, who were receiving at least two cycles of chemotherapy in an Oncology Hospital in a Turkish university between October 2013 and April 2015. Ethics committee approval was obtained. The power of the study was 0.90 and the effect size was 1.08. Data were collected using a patient information form, the Edmonton Symptom Assessment Scale (ESAS), the Functional Living Index–Cancer (FLIC); $p < 0.05$ were accepted as statistically significant.

Results: The highest ESAS mean score was observed for fatigue (5.82 ± 3.61). Evaluation of FLIC and subscale mean scores showed that participants had a good functional status and quality of life. Significantly more symptoms were experienced in participants who were female, in the group aged 75 years and over, had diagnosis duration of 7 months and longer ($p< 0.05$). There were positive correlations between nausea and Functional Living Index total scores.

Conclusion: The results of this study suggest that fatigue is the most common symptom. When assessed with FLIC, overall patients' functional status and quality of life are good. It is recommended that counseling by evaluating symptoms of elderly patients with haematological cancer, and the effect these symptoms have on their functional status.

Key Words: Neoplasms, Drug Therapy, Symptom Assessment, Geriatric Nursing.

Araştırma

KEMOTERAPİ ALAN HEMATOLOJİK KANSERLİ YAŞLI BİREYLERİN YAŞADIĞI SEMPTOMLAR VE FONKSİYONEL DURUMLARI

Öz

Giriş: Bu çalışmanın amacı kemoterapi alan hematolojik kanserli yaşlı bireylerin yaşadığı semptomları ve fonksiyonel durumlarını incelemektir.

Gereç ve Yöntem: Tanımlayıcı nitelikteki çalışma Ekim 2013- Nisan.2015 tarihleri arasında Türkiye' de bir üniversitenin Onkoloji Hastanesi'nde, en az iki kür kemoterapi alan, hematolojik kanserli 65 yaş ve üstü 69 bireyle yürütüldü. Etik kurul onayı alındı. Çalışma 0.90 gücünde ve 1.08 etkidedir. Veriler Hasta Bilgi Formu, Edmonton Symptom Assessment Scale (ESAS), Functional Living Index– Cancer (FLIC) kullanılarak toplandı; istatistiksel anlamlılık düzeyi için $p< 0.05$ değeri kabul edildi.

Bulgular: En yüksek ESAS puan ortalaması yorgunlukta bulundu (5,82 ± 3,61). FLIC ve alt gruplarından aldıkları puan ortalamaları değerlendirildiğinde; katılımcıların fonksiyonel durum ve yaşam kalitesinin iyi düzeyde olduğu belirlendi. Kadınlar, 75 yaş ve üzeri grupta olanlar, tanı süresi 7 ay ve üzerinde olanların semptom deneyimini anlamlı derecede daha fazla yaşadığı tespit edildi ($p<0.05$). Bulantı ile FLIC toplam puanları arasında pozitif yönde korelasyon bulundu.

Sonuç: Çalışma sonuçlarına göre en çok yaşanan semptomun yorgunluk olduğu söylenebilir. FLIC ile değerlendirildiğinde çalışmaya katılan bireylerin fonksiyonel durumları ve yaşam kaliteleri iyi düzeydedir. Hematolojik kanserli yaşlı bireylerin yaşadığı semptomları ve bu semptomların fonksiyonel durumlarını etkileme düzeyini değerlendirerek danışmanlık yapılması önerilmektedir.

Anahtar Kelimeler: Kanser, Kemoterapi, Semptom Değerlendirmesi, Geriatri Hemşireliği

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INTRODUCTION

The Ministry of Health 2013 Cancer Statistics Report (1) indicates that the cancer incidence in Turkey is higher than that worldwide and the incidence rates for women and men are lower than those in European Union countries and America. In addition, incidence rates for most cancer types are rising with increasing age (2,3).Age is a key factor in cancer. Most new cancer cases and cancer-related deaths are observed at advanced ages (4).

Drugs used in chemotherapy, a key cancer treatment method, cause side effects such as pain, fatigue, nausea, vomiting, mood changes, loss of appetite, shortness of breath, changes in skin and nails canker sores and numbness in hands (3,5,6,7). In addition to physical symptoms, other problems such as personality disorders, along with emotional, mental and behavioural changes, can be observed in patients with cancer (7). Functional, physical and psychological problems increase with increasing age. Although young patients with cancer reach maximum levels of physical and psychological function after primary treatment, elderly patients experience complications that make recovery difficult. (3).

The symptoms experienced by elderly patients with cancer may adversely affect their functional status and quality of life. For elderly adults, the functional status and quality of life are important to maintain the energy needed to perform daily activities independently, performing daily roles and maintaining health and well-being (2,8,9). Therefore, preventing chemotherapy-related complications, identifying symptoms early and symptom control are of vital importance in nursing care (10).

Evaluation of the functional status enables measurement of patients' self-care ability and level they can fulfil social roles in daily living, and provides solid ground for treatment and follow-up. With functional status assessment changes can be made in medication and those who need physiological support can be referred early. In addition, functional evaluation helps individuals to cope with physical, psychological and social problems, be more productive in society and maintain a good quality of life (8).

This study aimed to examine the functional status and symptoms of elderly patients with haematological cancer receiving chemotherapy. The findings are intended to guide healthcare professionals providing care to elderly patients with haematological cancer and contribute to their practices.

MATERIALS AND METHOD

This descriptive study was conducted to examine functional status and symptoms of elderly patients with haematological cancer. Participants were 69 individuals aged 65 years and over with haematological cancer who were receiving chemotherapy treatment at an outpatient unit in a Turkish university Oncology Hospital between October 2013 and April 2015. The power of the study was 0.90 and the effect size was 1.08. The patients underwent at least two cycles of chemotherapy and the patients were still receiving chemotherapy. The duration between chemotherapy cycles and evaluation ranged from 14 to 28 days. The patients were aware of their cancer diagnosis, were able to verbally communicate, and volunteered to participate in the study.

Ethical committee approval to conduct the study was received from the Erciyes University Clinical Trials Ethics Committee. Institutional permission was obtained from the unit in which the study would be conducted and written permission was received from all participants using an informed consent form.

Data were collected using a patient information form, the Edmonton Symptom Assessment Scale (ESAS), and the Functional Living Index–Cancer (FLIC). The patient information form was prepared by the present researchers based on related literature

(7,11,12). The ESAS was developed by Bruera et al. (13) to evaluate nine frequent symptoms in patients with cancer, including pain, fatigue, nausea, sadness, anxiety, insomnia, loss of appetite, feeling good, shortness of breath and other problems. A Turkish validity and reliability study of the scale was conducted by Yeşilbalkan et al (5). Cronbach's alpha was found to be 0.77 after treatment. The severity of each symptom is rated on a scale from 0–10. Higher scores indicate increased severity of the symptoms.

The FLIC was developed by Schipper et al. (14) in 1984 to evaluate the functional status and quality of life in patients with cancer. The Turkish validity and reliability study of the scale was conducted by Bektaş and Akdemir (12), with a Cronbach's alpha value of 0.79. This 7-point Likert scale includes 22 questions on five subscales: physical functions (nine items), psychological functions (six items), general well-being (three items), social functions (two items) and gastrointestinal symptoms (two items). The highest possible score is 154 and the lowest score is 22. High scores indicate that the quality of life is good when the scale scores are interpreted.

SPSS 22 was used for statistical analysis and $p < 0.05$ was accepted as statistically significant. The tests used were the Shapiro-Wilk test, the Mann Whitney U test, the Kruskal Wallis analysis of variance test, and the Spearman's correlation analysis.

RESULTS

In total (n=69), 40 (58.0%) participants were men. Participants' average age was 71.76 ± 5.05 years, the average diagnosis duration was 9.14 ± 11.59 months and the average number of chemotherapy cycles was 3.51 ± 1.85 (Table 1).

Table 1. Descriptive Characteristics of Elderly Patients with Haematological Cancer Receiving Chemotherapy

Descriptive Characteristics	n= 69	%	Descriptive Characteristics	n= 69	%
Gender			**Marital status**		
Female	29	42.0	Married	57	82.6
Male	40	58.0	Single	12	17.4
Educational Status			**Presence of other diseases**		
Literate	27	39.1	Existence	50	72.5
Primary school	28	40.6	Non-existence	19	27.5
High school	10	14.5	**Health Insurance**		
College	4	5.8	State retirement fund	16	23.2
Income Status			Social insurance institution	38	55.1
Income lower than expenses	22	31.9	Social security organization for artisans and the self-employed	13	18.8
Income and expenses are balanced	41	59.4	Health card for uninsured people in Turkey	2	2.9
Income higher than expenses	6	8.7	**Number of Cycles** (Mean ± SD)	3.51±1.85	
Age (Mean±SD)	71.76±5.05		**Diagnosis period (months)** (Mean ± SD)	9.14±11.59	

Table 2. Distribution of FLIC Scores Based on Descriptive Characteristics of Elderly Patients With Haematological Cancer

FLIC		Physical functions		Psychological functions		General well-being		Social functions		Gastrointestinal symptoms (nausea)		FLIC total	
		Mean ± SD/Median (Min-Max)											
Gender [a]	Female	39.5±6.02	39.0(25–2)	28.96±3.87	30.0(18–36)	13.34±3.87	14.0(5–21)	8.31±5.26	8.0 (2–14)	5.79±4.83	2.0(2–14)	96.06±8.90	97.0(76–116)
	Male	34.70±7.20	35.0(21–47)	30.05±4.73	30.0(22–38)	14.25±2.32	15.0(9–21)	9.17±4.15	1.0(2–15)	3.35±3.13	2.0(2–14)	91.52±10.08	91.0(75–113
p		0.004		0.53		0.21		0.65		0.057		0.06	
Age, years [a]	65–74	36.08±7.35	36.0(21–52)	29.87±5.36	31.0(18–38)	13.97±2.69	15.0(5–21)	9.69±4.50	10.0(2–14)	4.36±4.26	2.0(2–14)	94.0±9.58	94.0(76–116)
	75+	38.50±6.37	38.0(25–51)	28.90±5.13	28.0(21–36)	13.60±3.93	13.0(9–21)	6.65±4.34	8.0(2–14)	4.40±3.73	2.0(2–13)	92.05±10.43	92.0(75–107)
p		0.19		0.44		0.17		0.01		0.46		0.60	
Diagnosis duration [a]	0–6 months	35.48±7.41	36.0(21–51)	29.60±5.42	31.0(18–36)	14.18±3.17	15.0(5–21)	9.95±4.29	10.0(2–14)	3.25±3.0	2.0(2–14)	92.48±9.84	93.0(75–116)
	7+ months	38.23±4.95	38.0(28–47)	30.92±5.57	33.0(21–38)	13.69±3.42	14.0(9–21)	5.38±4.29	2.0(2–14)	7.30±5.36	6.0(2–14)	95.53±7.30	97.0(77–104)
p		0.05		0.85		0.20		0.08		0.01		0.31	
Educational level [b]	Literate	39.44±6.86	39.0(24–52)	29.22±6.06	30.0(18–36)	14.55±3.57	15.0(9–21)	8.03±5.07	8.0(2–14)	6.22±5.07	2.0(2–14)	97.48±9.67	97.0(76–116)
	Primary school	36.75±6.67	37.0(25–48)	29.78±4.95	29.0(22–38)	13.42±2.53	14.0(9–19)	8.50±4.80	8.5(2–14)	3.07±2.24	2.0(2–10)	91.53±10.10	92.5(75–104)
	High school	32.40±5.89	33.0(21–41)	30.40±5.14	31.0(22–36)	13.80±2.09	14.0(9–17)	10.20±2.61	10.0(6–14)	4.00±4.32	2.0(2–14)	90.80±7.11	89.0(82–104)
	College	30.00±6.97	29.5(22–39)	28.75±2.75	28.0(26–32)	12.50±5.0	15.0(5–15)	12.75±1.50	13.0(11–14)	2.00±0.0	2.0(2–2)	86.00±4.08	84.5(83–92)
p		0.01		0.93		0.55		0.24		0.08		0.04	
Income status[b]	Income lower than expenses	36.68±6.05	38.5(27–52)	30.00±5.63	31.0(21–36)	13.72±3.25	15.0(9–21)	8.22±4.64	8.0(2.14)	7.04±4.99	7.0(2–14)	97.68±10.04	98.5(75–113)
	Income and expenses are balanced	36.51±7.38	36.0(21–51)	29.07±5.29	28.0(18–38)	13.75±3.01	14.0(5–21)	9.21±4.63	10.0(2–14)	3.29±3.06	2.082–14)	91.85±8.44	92.0(75–107)
	Income higher than expenses	31.66±7.25	29.0(24–43)	31.66±3.61	32.5(27–36)	15.16±3.12	15.0(12–21)	8.16±5.15	9.5(2–14)	2.00±0.00	2.0(2–2)	88.66±13.58	83.0(80–116)
p		0.10		– 0.51		0.70		0.58		0.002		0.01	
Marital status [a]	Married	36.49±6.94	37.0(21–51)	30.28±4.99	31.0(21–38)	13.94±3.20	15.0(5–21)	8.98±4.70	10.0(2–14)	4.25±3.94	2.0(2–14)	93.94±10.2	94.0(75–116)
	Single	38.16±8.13	38.0(25–52)	26.33±5ç58	26.5(18–36)	13.50±2.46	14.5(9–17)	8.00±4.41	8.5(2–14)	5.00±4.86	2.0(2–14)	91.00±8.62	91.5(76–91)
p		0.51		0.02		0.68		0.47		0.85		0.30	

[a] Mann Whitney U test was performed, [b] Kruskal Wallis variance of analysis was performed

The highest ESAS mean score was for fatigue (5.82 ± 3.61), followed by sadness (3.98 ± 3.67), constipation (3.98 ± 3.88), hair loss (3.94 ± 4.13), weight loss (3.76 ± 3.90), feeling good (3.66 ± 3.32), loss of appetite (3.28 ± 3.90), insomnia (3.26 ± 3.44), anxiety (3.08 ± 3.63), numbness in hands (3.07 ± 3.43), pain (3.02 ± 3.58), fever (2.81 ± 3.51), shortness of breath (2.68 ± 3.60), cankers (2.34 ± 3.71), nausea (1.91 ± 3.11), changes of skin and nails (1.33 ± 2.86), sweating (0.28 ± 1.68), and dizziness (0.04 ± 0.36).

The total mean FLIC score was 93.43 ± 9.80, with the mean subscale scores being: 36.78 ± 7.12 for physical functions, 29.52 ± 5.27 for psychological functions, 13.86 ± 3.08 for general well-being, 8.81 ± 4.63 for social functions, and 4.37 ± 4.09 for gastrointestinal symptoms (nausea).

Pain, fatigue, sadness, anxiety, loss of appetite, cankers, hair loss, fever, and constipation symptoms were higher in women than in men ($p < 0.05$). The weight loss of those in the group aged 75 years and over was higher than in the group aged 65–74 years ($p < 0.05$). Symptoms of feeling good, sadness, fever, and insomnia were more common in patients whose diagnosis duration was 7 months or longer ($p < 0.05$), changes of nails and skin were more common in those who received eight or more cycles of chemotherapy compared with those who received fewer chemotherapy cycles ($p < 0.05$), and participants who had additional diseases suffered from pain and fatigue symptoms significantly more than those without other diseases ($p < 0.05$).

Physical functions of the women were significantly higher than men. Social functions of those aged 65–74 years were significantly higher than 75 and older. Social functions of those having diagnosis period of 0–6 months were significantly higher than 7 months or longer. Gastrointestinal symptoms of those having diagnosis time of 7 months or longer were significantly higher than 0-6 months. Physical functions and overall quality of life of those who were literate were significantly higher than primary school, high school, college. GIS symptoms and overall quality of life of those with income lower than expenses were significantly higher than income and expenses are balanced, income higher than expenses. Psychological functions of married ones were significantly higher than single ($p < 0.05$) (Table 2). There was no significant difference between chemotherapy protocols and the mean FLIC total score (p=0.431), chemotherapy cycles and the duration of evaluation (p: 0.374).

Weak positive correlations were found between FLIC total score and nausea (r_s: 0.32).

DISCUSSION

As the rate of elderly adults increases in the rapidly growing population, the incidence rate of cancer also increases and more than half of the new cancer cases and cancer-related deaths are observed in elderly adults (2,3,4). However, studies on cancer epidemiology in elderly patients are scarce and data are mostly presented as subgroup analyses (15,16).

In this study, the most common symptom in elderly patients with haematological cancer was fatigue. This is consistent with previous studies (3,17). Fatigue has been reported to be the most distressing and most commonly experienced cancer symptom by elderly patients (9). Fatigue is an important symptom as it affects the energy required for elderly adults to perform their daily activities independently and has negative effects on the functional status and quality of life (2,9). The study (11) by Hindistan et al. involving patients with haematological cancer (most aged under 60 years) found that the most common symptom was fatigue, which is similar to the present study involving patients aged 65 years and over. In addition, hair and weight loss symptoms were similarly ranked in the present and the previous studies. In the present study, the most important symptoms after fatigue were sadness and constipation. Deceleration of metabolism and less physical activity due to age may be why constipation was considered a priority symptom.

Another study conducted among general patients with cancer (mostly individuals with gastrointestinal system, respiratory system and gynaecologic cancers)



symptoms of fatigue, nausea, loss of appetite, feeling good, changes in skin and nails, cankers and numbness in hands were reported to increase after treatment. In the same study, mean scores for fatigue, nausea, feeling good and cankers after treatment were higher in patients younger than 60 years, and mean scores for fatigue, sadness, anxiety, loss of appetite, feeling good, cankers and numbness in the hands after treatment were higher in those older than 60 years compared with the mean scores obtained before treatment (7). In the present study, sadness was another common symptom, and, although nausea was less common, the score for GIS symptoms was lower.

Evaluation of FLIC total and subscale mean scores in the present study showed that participants had good functional status and quality of life except for GIS symptoms. In a study by Aydın Bektaş and Akdemir (8), the sample group comprising patients with breast, lung and colon or rectum cancer (mostly aged 56–65 years), and the total and subscale mean scores obtained on the FLIC (except for GIS symptoms) were similar to those obtained in the present study. The score for GIS symptoms was lower in the present study.

In another study involving individuals with breast, prostate and lung cancers and malignant melanoma (average age of 46 years), FLIC mean scores were 92.3 ± 7.2 for the total scale, 38.0 ± 7.1 for physical functions, 13.3 ± 3.2 for general well-being, 11.0 ± 2.0 for social functions, and 5.5 ± 2.9 for gastrointestinal symptoms (18).

In the present study, more symptoms were experienced by those who were female, aged 75 years and above, had a diagnosis duration of 7 months or longer, received eight or more cycles of chemotherapy, and had other diseases. This may be explained by their advanced age, long treatment period, and additional diseases. The results of another study (mostly including patients with breast and haematological cancer aged 60 years and over) revealed that physical symptoms increased as the number of cycles increased (6).

In the present study, physical functions of women were better despite experiencing more symptoms. This may be explained by women having more roles in the family and maintaining more active life.

In the study by Aydın et al. (8), in which the sample comprised patients with breast, lung and colon or rectum cancer mostly aged 56–65 years, the functional status of women with a breast cancer diagnosis was low. This was inconsistent with the present study.

In the present study, physical functions of literate participants were better that those who were primary school, high school, college. This may be explained by the fact that most literate participants were women, and women had better physical functions than men. We also found that psychological functions of married participants were better that those who were single. The happiness levels of married individuals has been related to problem solving ability; when individuals have effective problem solving abilities, their psychological adaption levels increased and they experienced less trait and state anxiety, stress, depression and hopelessness (19). Another study also found that physical, mental, social and environmental life quality of individuals living with their spouses were higher than those who were single (6).

In the present study, the social functions of those aged 65–74 years and whose diagnosis duration was 6 months or shorter were higher than other age/diagnosis duration groups. Individuals may transfer their roles to other family members as a result of their disease.

Considering that most participants lived with their spouses, family members assisted their care, and had diagnosis duration of 6 months or less, the social support provided by their families may explain their better social functions. In another study, the diagnosis period was found not to affect the functional status (8). In the present study, those whose diagnosis duration was 7 months or more and whose income was lower than their expenses had better GIS symptoms, and overall quality of life was better in those who were literate and whose income was lower than their expenses. This situation may be

because patients who had an illness for longer get to know and adapt to their illness, and can learn to deal with the symptoms better. In addition, having lower income and educational level and being older may decrease expectations of life and affect life satisfaction. A previous study stated that lower educational and economic status had adverse effects on the quality of life (20). However, another study found that the educational status did not affect the quality of life, but those who had a higher level of income had a better quality of life (6).

CONCLUSION

According to the results of this study, gender, presence of conditions in addition to cancer, diagnosis duration, and the number of treatment cycles received affected the patients' symptoms and functional life, and thus their quality of life. The most common symptom experienced was fatigue, possibly because patients were in the middle of the chemotherapy process and were receiving aggressive treatment. When assessed with FLIC, overall participants' functional status and quality of life were good. Therefore, it is recommended that counseling by evaluating symptoms of elderly patients with haematological cancer, and the effect these symptoms have on their functional status.

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Research

INTENSIVE CARE AND ONCOLOGY NURSES' PERCEPTIONS AND EXPERIENCES WITH 'FUTILE MEDICAL CARE' AND 'PRINCIPLES OF GOOD DEATH'

Abstract

Introduction: This study aimed to determine nurses' perceptions and experiences with 'futile medical care' and their opinions about 'principles of good death'.

Materials and Method: This descriptive and cross-sectional study was conducted in 11 state hospitals and 3 university hospitals in Ankara, Turkey. It included 856 nurses working in intensive care and oncology units. A questionnaire, which included demographics and futile medical care practices and the 'Attitudes toward Principles about Dying with Dignity Scale' were used.

Results: Participants were on average 30.49 ± 6.12 years old 92.3% were women, 61.7% were married and 62.7% had a bachelor's degree. Nurses defined medical care as futile when it was 'not affecting quality of life' (35.4%), 'not curing the disease' (46.8%) and 'prolonging the suffering of the patient' (42.9%). They stated that futile care was continued because of hospital policy (32.9%), doctor's decision (54.9%) or patient's or relative's decision (29.3%). Three of every four nurses stated that good death principles were not applied at their hospital. We found that attitudes toward death improved as nurses' education level increased ($p = .001$), and women had higher scale scores than men ($p < .001$).

Conclusion: Nurses were generally not satisfied with end-of-life care. Extending life, while ignoring the quality thereof, remains a major ethical dilemma for health professionals.

Key Words: Medical Futility; Attitude to Death; Terminal Care; Nurses

Araştırma

YOĞUN BAKIM VE ONKOLOJİ HEMŞİRELERİNİN "YARARSIZ TIBBİ BAKIM" VE "İYİ ÖLÜM PRENSİPLERİ" İLE İLGİLİ ALGILARI VE DENEYİMLERİ

Öz

Giriş: Bu çalışmanın amacı hemşirelerin "yararsız tıbbi bakım" ve "iyi ölüm ilkeleri" konusundaki algı ve deneyimlerini belirlemektir.

Gereç ve Yöntem: Bu tanımlayıcı ve kesitsel tipteki çalışma, Ankara'da 11 devlet ve 3 üniversite hastanesinde gerçekleştirildi. Çalışma, yoğun bakım ve onkoloji birimlerinde çalışan 856 hemşireyle yapıldı. Demografik özellikleri ve yararsız tıbbi bakım uygulamalarını içeren bir anket ile "Saygın Ölüm İlkelerine İlişkin Tutumlar Ölçeği" kullanıldı.

Bulgular: Katılımcılar ortalama 30.49±6.12 yaşında, %92,3'ü kadın, %61,7'si evli, %62,7'sinin eğitimi lisans düzeyinde idi. Hemşireler, "yaşam kalitesini etkilemediği" (%35,4), "hastalığı tedavi etmediği" (%46,8) ve "hastanın acısını uzattığı" (%42,9) için bakımı yararsız bulduklarını, ancak hastane politikası (%32,9), doktor kararı (%54,9) veya hasta yakınlarının kararı (%29,3) nedeniyle yararsız tıbbi bakıma devam ettiklerini belirttiler. Dört hemşireden üçü hastanelerinde iyi ölüm ilkelerinin uygulanmadığını bildirdi. Hemşirelerin eğitim düzeyi arttıkça ölüme ilişkin tutumların iyileştiği ($p = .001$) ve kadınların erkeklerden daha yüksek ölçek puanına sahip oldukları saptandı ($p <.001$).

Sonuç: Hemşireler genellikle yaşamın sonundaki bakımdan memnun değildi. Ömrü uzatırken yaşam kalitesini göz ardı etmek sağlık profesyonelleri için etik bir ikilem olmaya devam etmektedir.

Anahtar Sözcükler: Tıbbi Yararsızlık; Ölüme İlişkin Tutum; Terminal Bakım; Hemşireler

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INTRODUCTION

With the ageing population around the world, an increasing number of people are getting accustomed to living with serious chronic illnesses towards the ends of their lives. Consequently, this phenomenon demands the creation of modalities to improve not only health, by preventing disease and disability, but also the quality of remaining life, enabling people to live well and, when the time comes, die well (1). The primary aim of caring for terminally ill patients is to provide high-quality health care during their last period of life and to make the process of death as good/comfortable as possible. However, the substantial impact of medicine on health/life makes it easy to forget that death is also a natural part of life. This results in life expectancy becoming the standard in evaluating the success of health care, and causes attempts to extend life through futile care, regardless of the outcome (2). 'Futile medical care' refers to the provision of all possible medical care or treatment to a patient, even when there is no reasonable sign of a cure or benefit (3-5). The rate of futile care in intensive care units (ICUs) is estimated to be approximately 40%–60% (6).

The term was first defined during cardiopulmonary resuscitation in the 1980s and entered the medical literature in the 1990s within the concept of bio-ethical problems. The American Medical Association stated that the meaning of the term 'futile' depends on the values and goals of a particular patient in specific clinical circumstances. Moreover, they used the term 'medically ineffective interventions' instead of 'medical futility', in the new version of the 'Code of Medical Ethics' (5,7). Although futile care has been discussed in medicine over the years, dilemmas and differences in opinion on the starting, ending, or continuing life support attempts are still commonly experienced in practice. Difficulties in determining who will participate in decision making, the idiosyncratic character of each case and the standards of application make futile care problematic (4,8). The diverse criteria for defining this phenomenon and care providers' different opinions on this issue reflect the subjectivity of personal judgements, which are rooted in one's emotions, personal beliefs and culture (9).

Another significant term, 'good death', enables caregivers to consider the needs of the people being prepared for their impending deaths. The Institute of Medicine defines good death as one that is 'free from avoidable distress and suffering for patient, family, and caregivers, in general accord with the patient's and family's wishes, and reasonably consistent with clinical, cultural, and ethical standards'. Perhaps, one of the vital components of this concept constitutes dying with dignity, and it is opined that the stakeholders' perspectives might categorise this concept into other themes of good death (10).

Nurses who provide terminal health care can also provide a good death and prevent futile medical care (8). In a recent study, 16 articles (published from 1994 to 2015) that focused on nurses' perception of futile care were reviewed (9). It concluded that because nurses play a key role in patient care and end-of-life decision making, and can significantly influence the attitudes of patients and their families, understanding their experiences about futile care is the first step toward designing effective care programmes in ICUs. Despite the growing interest about futile care and the considerable amount of research on nurses' perceptions thereof, research on Turkish nurses' perceptions towards futile care is lacking. Considering the subjectivity of this phenomenon, it is important to understand Turkish nurses' opinions and experiences on this issue, which may reflect cultural differences and practices. The aim of the present study was to determine nurses' perceptions and experiences with 'futile medical care' and opinions about 'principles of good death' in Turkey. The research questions were as follows:

What are the reasons nurses think that the medical care is futile?

What are the reasons nurses continue the care despite considering it to be futile?

What do nurses think about 'principles of good death'?

MATERIALS AND METHOD

Design and Settings

This descriptive and cross-sectional study comprised nurses working in the intensive care and oncology units of 11 state hospitals and three university hospitals in Ankara between June 2012 and February 2013. Sampling was not done and the entire sample universe was included. Nurses who worked in oncology units or ICUs for at least one year were included in the study. Of the 1419 nurses, 856 participated in the study (60.3% response rate) (Table 1).

Table 1. Distribution of Nurses According the Hospitals

Hospitals	Total n	Unfilled	Reject	Unavailable	n (%)
Government Hospitals					
1	102	2	27	21	52 (50.9)
2	212	11	29	54	118 (55.6)
3	51	1	18	15	17 (33.3)
4	98	3	15	42	38 (38.7)
5	108	10	7	6	85 (78.7)
6	181	9	9	61	102 (56.3)
7	41	1	2	5	33 (80.4)
8	82	1	12	10	59 (71.9)
9	57	3	7	5	42 (73.6)
10	50	3	3	9	35 (70.0)
11	50	1	14	13	22 (44.0)
Government University Hospitals					
A	121	1	9	32	79 (65.2)
B	152	5	28	40	79 (51.9)
C	114	4	5	10	95 (83.3)
Total	1419	55	185	323	856 (60.3)

QUESTIONNAIRE

The questionnaire comprised three parts. The first part included socio-demographic questions, while the second part included questions that determined the participants' futile care practices (whether they had practised or were practising futile care, the reasons why they think it is futile and the reasons why they continued the care despite considering it to be futile). A group of patients receiving futile care was neither specified nor defined in this study. The last part of the questionnaire comprised questions about their opinions on good death. We used the 'Attitudes



towards Principles about Dying with Dignity Scale', which consists of 12 items based on the principles of good death as mentioned by 'The Debate of the Age Health and Care Study Group'. This scale was used and validated by Duyan on social work students (11). The item–total score correlation varied between 0.480 and 0.743, while the internal consistency coefficient of the items was found to be 0.892. Participants rated the importance of each principle using a five-point Likert scale: strongly disagree = 1, disagree = 2, neither agree nor disagree = 3, agree = 4 and strongly agree = 5. Each item on the scale was designed to be a positive statement.

The total score from the scale can range from 12 to 60, with higher scores denoting higher adoption of good death principles and lower scores denoting otherwise. Cronbach's alpha value of the scale was found to be 0.92. The portion regarding good death included two close-ended questions that determined whether nurses had previously thought about good death and whether their hospital considered good death principles.

Data Analysis

Data were coded and analysed using the Statistical Package for the Social Sciences version 16.0 for Windows. When two groups with non-homogeneous data were compared, the means test and the Mann–Whitney U test were applied to determine the significance of their differences. Moreover, one-way ANOVA for comparing multiple groups, Tukey's HSD test for determining differences between groups and Kruskal–Wallis analysis of variance test were applied when the data were not homogeneous.

Ethical Considerations

This study was conducted in accordance with the principles of the Declaration of Helsinki. The study protocol was approved by the Republic of Turkey Ministry of Health Turkey Public Hospitals Authority (28.05.2012-12237). Ethics approval was obtained from the Ethics Committee of Ankara University (27.09.2012-588). Written permissions were obtained from the 14 hospitals included in the study, and written informed consents were obtained from participants after explaining the aim of the study.

Table 2. The Reasons Why Nurses Think the Care Is Futile and Why They Continue the Care Despite Considering It to Be Futile (N = 856)

	n	%
Reasons to think the care is futile		
Care did not improve the life quality	303	35.4
Intensive care was given to terminal cancer patients	454	53.0
Care just prolonged life span without any other benefit	273	31.9
Care did not have possibility of curing the disease	401	46.8
Care given to patients with brain death	255	29.8
Care extended the period of pain, ache or discomfort of the patient	367	42.9
Care caused more harm than good	41	4.8
Reasons for continuing the futile care		
Hospital policy	282	32.9
Decision of the doctor	470	54.9
Decision of the custodian	251	29.3

RESULTS

On average, nurses participating in the study had an age of 30.49 ± 6.12 and had been working for 8.97 ± 6.84 years. Among the participants, 92.3% were women, 61.7% were married, 46.6% had children, 62.7% had a bachelor's degree, 70.4% were from state hospitals and 68.5% worked in ICUs.

The reasons why nurses think the care as futile is summarised in Table 2. Nurses stated that they continued the care despite considering it to be futile because of hospital policy (32.9%), doctor's decision (54.9%), and patient's or relative's decision (29.3%) (Table 2).

Table 3. Nurses' Opinions About "Principles of Good Death"

Principle Number	Principle	Mean	Standart Deviation
3	To be afforded dignity and privacy	4.21	1.06
7	To have access to any spiritual or emotional support required	4.16	1.01
9	To have control over who is present and who shares the end	4.09	1.05
8	To have access to hospice care in any location, not only in hospital	4.08	1.05
4	To have control over pain relief and other symptom control	4.06	1.04
10	To be able to issue advance directives which ensure wishes are respected	4.01	1.04
11	To have time to say goodbye, and control over other aspects of timing	3.91	1.12
6	To have access to information and expertise of whatever kind is necessary	3.85	1.09
12	To be able to leave when it is time to go, and not to have life prolonged pointlessly	3.61	1.30
2	To be able to retain control of what happens	3.57	1.08
5	To have choice and control over where death occurs (at home or elsewhere)	3.56	1.26
1	To know when death is coming, and to understand what can be expected	3.19	1.22

Nurses' opinions about 'principles of good death' are given in Table 3. Scores for the 'Attitudes toward Principles about Dying with Dignity Scale' were found to be higher in female than in male nurses ($p < .001$).

Nurses having undergraduate and graduate degrees had higher scores than those graduating from vocational schools ($p = .001$). Marital and parental statuses, as well as the clinic they worked in, were found to have no significant effect on the scores ($p > .05$) (Table 4).

A total of 36.4% (n = 312) stated that they had previously thought about good death, while 25.2% (n = 216) stated that the principles of good death were applied in their hospital. It was also determined that nurses who had previously thought about good death (48.52 ± 9.60) had higher good death scores than those who did not (45.37 ± 9.15) ($t = 4.29$, $p < .001$).



Table 4. Comparison of Nurses' Demographic Characteristics and Their Attitudes Toward Principles About Dying with Dignity Scale Scores (N = 856)

Variables		n	Scale Scores M ± SD	Test value	p
Gender	Female	790	46.66 ± 9.27	t = 3.94	p <.001
	Male	66	41.80 ± 13.22		
Marital status	Married	528	46.26 ± 9.76	t = 0.09	.926
	Single	328	46.33 ± 9.63		
Children	Have	399	45.97 ± 10.11	t = 0.90	.367
	Does not have	457	46.57 ± 9.34		
Clinics	Intensive care	586	46.55 ± 9.44	F = 0.80	.448
	Oncology intensive care	139	45.97 ± 10.72		
	Oncology unit	131	45.43 ± 9.78		
Graduation*	Health Vocational School	218	44.63 ± 10.19	F = 6.91	.001
	SHMYO (formal and open education)	87	44.67 ± 9.93		
	Undergraduate and graduate	551	47.20 ± 9.36		

*12 MSc and 2 PhD graduates were included in the undergraduate category for statistical analyses.

DISCUSSION

The findings of this study revealed that nurses defined the care as futile because of the imbalance between provided care and patient prognosis is, in fact, coherent with literature (12, 13). Interestingly, one-third nurses characterised the care as futile because 'care was given to patients with brain death'. The use of this phrase reflects the inadequate knowledge/education of ICU teams about ICU processes. Legally, a patient is officially declared dead at the time when he/she is diagnosed with brain death and not at the time of cardiac arrest. Hence, patients diagnosed with brain death should be declared dead, and their relatives should be informed of their condition. However, a brain-dead person (now termed as a potential donor and not a patient) is cared for until their relatives are informed and permission for organ donation is sought. If the possibility of organ donation is not feasible, medical support should be promptly discontinued. In such a scenario, nurses/doctors should be well-informed about the subject to facilitate decision-making on the futility of therapy.

Reportedly, about 90% (9 of 10) of nurses confirmed that despite considering the care to be futile, they continued caring because of hospital policies and doctors' decisions. Notably, this finding is coherent with previous studies (6, 12, 14). Hence, while finalising end-of-life issues, it is suggested that medical staff, patients and relatives should anticipate not only the medical conditions but also the environmental factors and legal concerns. In contrast, there is no law in Turkey that explicitly regulates the decisions made in end-of-life situations. This puts medical staff, especially physicians who are in charge of decision-making into a challenging situation (15). Another important reason, especially in situations wherein ethically problematic consequences have a high probability of occurrence, is the difficulty for both health care personnel and relatives to effectively communicate as a team and reach common conclusions. The perceptions of

physicians and nurses were compared in a study in Portugal. In this study, the major causes of ineffective and futile decisions were as follows: 'non-acceptance of treatment failure', 'insufficient training on ethical issues', 'difficulty in accepting death', 'incorrect evaluation of clinical conditions' and 'difficulties in communication'. A statistically significant difference was found between the opinions of physicians and those of nurses about the involvement of the medical team members in the decision making process (16). Nurses have also been generally found to be less satisfied with end-of-life decision making than physicians and are often the first team members to feel that life support should be withdrawn, which can lead to conflict with physicians (14).

Three of every four nurses stated that good death principles were not applied in their hospital. In the study of Özdemir, 42% of intensive care nurses stated that care provided for terminally ill patients was inadequate, and the ICU did not provide a suitable environment for a peaceful death (17). The majority of deaths in many developed countries take place in hospitals against people's wishes. It is projected that if recent trends continue, the number of home deaths could be reduced by 42%, and fewer than 1 in 10 will die at home in 2030 (18). As population demographics change and new technologies, pharmaceuticals and interventions prolong lives, more elderly patients will have to be treated in ICUs (19-21). Ozşaker et al. determined that elderly patients in ICUs had a partially negative experience. Most of the negative experiences were about feeling unsafe, and the duration of stay and type of ICU affected their experiences (20). All these factors led health professionals and institutions to develop strategies towards good death. Nalbant et al. investigated the features of patients hospitalised in the ICU of the Internal Medicine Department. They found that nearly half of the patients were >65 years old, and the rate of oncology-related patient mortality was high (59.7%). They concluded that this situation reduces the morale and motivation of persons who work at those units and recommended that both elderly and terminally ill patients be hospitalised in an intermediate care unit (22). Another suggestion is that efforts to limit futile care should focus on public and professional education on the role and use of ICUs and available alternatives, such as palliative care (13).

In conclusion, nearly half of the participating nurses defined the care as futile considering the imbalance between the provided care and patient prognosis. On the other hand, 88% of nurses stated that they continued the care despite considering it to be futile because of hospital policies and doctors' decisions. Futile care, by nature, brings about many ethical dilemmas, such as conflicts of opinion on the starting, ending, or continuing life support attempts; extending life while ignoring the quality; determining who will participate in the decision-making; standards of application; and the idiosyncratic character of each case. Perhaps, the establishment of hospitals/clinics ethics committees for decision-making in end-of-life issues would help in uplifting the stress on medical staff. The presence of organisational factors, such as professional autonomy, fixed workload and high systematic teamwork in ICUs, could also lead to decreased perception of futile care (13). Therefore, practising futile care should be decided by the consensus of the health care team. At this point, the only principle that should not be broken is that consent from the patient or his/her relative must be mandatory. However, withdrawing/withholding therapy and Do Not Resuscitate (DNR) orders are not legally acceptable in Turkey. Therefore, consent from relatives/patients offers little hope in the ICUs. Nevertheless, in common practices, if a doctor/medical team considers a therapy to be futile, it can be withheld. Perhaps, legalisation of the concept could be another milestone for limiting futile care for terminally ill patients.

Three-fourth nurses stated that good death principles were not applied in the hospitals they worked in. Nurses with previous knowledge about good death held a more positive attitude towards good death principles than those who without the knowledge, and as more nurses became educated about the concept, the rate of adopting good death principles also increased. Presumably, for



a dignified death, the most reliable and appropriate way to support a patient is through the clarification of good death principles by health care personnel (23). Therefore, institutions should revise their policies to prioritise patient's rights and include the concepts of 'futile medical care' and 'good death' in their training programmes. Improved interventions and evidence will lead to a dignified death concurrent with human rights, increase the quality of care in clinics and improve the morale and motivation of health professionals who have to deal with death.

This study highlights that futile care and the inability to provide good death remain an ethical dilemma for health care professionals. The application of the principles of 'beneficence, nonmaleficence, autonomy and justice' that establish medical ethics in ICUs seems to be demanding.

Although these basic principles contradict each other at times, if a problem is expressed regarding concrete elements, it can be considered as knowledge management, hope management and responsibility. In this context, here are the proposed solutions:

• Information during the treatment process should be shared with stakeholders (e.g., patient, relatives and health care team), the options should be discussed and health care professionals should act according to the consensus of the stakeholders.

• Unrealistic hopes/expectations should be avoided,

• Medical care units should be prepared with a standardised approach to terminally ill patients,

• Detailed algorithms that enable medical and social criteria should be prepared and implemented,

• Unit-based efforts should be continued and integrated into an upper platform like expertise associations,

• Common standards should be announced as a manifesto and suggested to policy-makers.

Limitations of the Study

The results cannot be generalised for all Turkish nurses. This study did not consider the psychological status of the participants (e.g., depression and burnout.) that may affect the results. Admittedly, future research is required to determine the opinions of other team members and to clarify conflicts among nurses, physicians, patients and their relatives.

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Research

ANALYSIS OF THE ATTITUDES AND APPROACHES OF THE PHYSIOTHERAPY AND REHABILITATION STUDENTS TOWARDS THE ELDERLY

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Abstract

Introduction: Turkey is the second most rapidly aging country in the world which requires reconsideration of planning and healthcare services related to the health state of the older people. For qualified healthcare services, positive attitudes and behaviours of health professionals (physicians, nurses, physiotherapists etc.) towards older people beginning from the undergraduate period carry utmost importance. The aim of this study was to determine the attitudes and behaviour of physiotherapy students training in different regions of Turkey towards older people.

Materials and Method: Attitudes and behaviour of 1270 students towards older people were evaluated using the Turkish version of the UCLA-GA scale.

Results: Mean UCLA-GA score was 48.18 ± 5.67. Female students demonstrated a more positive attitude and behaviour towards older people than male students. Positive attitude and behaviours towards older people were stronger in students who were living with an older individual, in those who wanted to live with his/her older relative/intimate, who visited nursing homes, who wanted to work in the field of geriatrics after they graduate, and in those who attended courses or any meeting organised during their training period.

Conclusion: The attitudes and behaviour of physiotherapy students towards older people can change dependent on various factors including gender of the students, whether they want to work in the field of geriatric rehabilitation during their postgraduate period, have attended training, course or meetings during their undergraduate education, visited nursing homes, or want to live with an old individual.

Key Words: Aging; Aged; Attitude; Student

Araştırma

FİZYOTERAPİ VE REHABİLİTASYON ÖĞRENCİLERİNİN YAŞLILARA YÖNELİK YAKLAŞIMLARI VE TUTUMLARININ ANALİZİ

Öz

Giriş: Türkiye, yaşlı insanların sağlık durumu ile ilgili planlama ve sağlık hizmetleri yeniden gözden geçirilmesini gerektiren dünyanın ikinci en hızlı yaşlanan ülkesidir. Kaliteli sağlık hizmetleri için, sağlık çalışanlarının (doktor, hemşire, fizyoterapist vb.) yaşlı insanlara yönelik mezuniyet öncesi dönemden başlayan pozitif tutum ve davranışları büyük önem taşımaktadır. Bu çalışmanın amacı Türkiye'nin farklı bölgelerinde eğitim gören fizyoterapi öğrencilerinin yaşlılara yönelik tutum ve davranışlarının belirlenmesidir.

Gereç ve Yöntem: 1270 öğrencinin yaşlılara yönelik tutum ve davranışları UCLA-GA skalasının Türkçe versiyonu kullanılarak değerlendirildi.

Bulgular: Ortalama UCLA-GA skoru 48.18±5.67 idi. Kadın öğrencilerin, erkek öğrencilere göre yaşlılara yönelik daha fazla pozitif tutum ve davranış içinde oldukları gösterildi. Yaşlılara yönelik pozitif tutum ve davranışlar, yaşlı bir birey ile yaşayan, yaşlı bir akraba/yakını ile yaşamak isteyen, huzurevini ziyaret eden, mezuniyet sonrası geriatrik alanda çalışmak isteyen ve eğitim dönemi boyunca düzenlenen herhangi bir toplantı veya kurslara katılan öğrencilerde daha güçlüdür.

Sonuç: Fizyoterapi öğrencilerinin yaşlılara yönelik tutum ve davranışları, mezuniyet sonrası dönemleri boyunca geriatrik rehabilitasyon alanında çalışmayı isteyip istememesi, lisans eğitimleri boyunca eğitim, kurs veya toplantılara katılıp katılmamaları, huzurevlerini ziyaret edip etmedikleri veya yaşlı birey ile yaşamayı isteyip istememeleri, öğrencilerin cinsiyeti gibi çeşitli faktörlere bağlı olarak değişebilir.

Anahtar Sözcükler: Yaşlanma; Yaşlı; Tutum; Fizyoterapi Öğrencisi

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INTRODUCTION

In the whole world, people are living longer, birth rates are decreasing and the number of old people is gradually increasing (1). Aging of the Turkish population is one of the predominant and the most important demographic issues of the 21th century. According to official reports of the Statistic Institute of Turkey (2015) (2) the ratio of the population aged ≥ 65 years to the total population of Turkey has changed considerably (10.2% in 2023 with 20.8 and 27.7% expected in the years 2050 and 2075, respectively) (1,2). When seven different geographic regions of Turkey were evaluated, people aged ≥ 65 years were found to form a larger part of the population (12.01%) in the Black Sea Region (2).

Globally, rapid increase in the relative percentage of older people requires reconsideration of planning directed at betterment of health state of elderly both in Turkey and every country. The achievement of successful planning and its implementation at a national level requires the perception of the elderly by healthcare professionals and even by the community as a whole and their expectations from older people to be determined (2). Indeed, misbeliefs and wrong attitudes towards ageing decrease the effectiveness and quality of healthcare services related to the elderly (3-4). As is the case in the rest of the world, for the older population to lead a comparatively independent, qualified and participating life, geriatric physiotherapy and rehabilitation services should be developed (5). This changing and increasing elderly population profile also leads to increasing requirements for physiotherapists who will work in this field and provide healthcare services.

Within the last 3 years the number of physiotherapy and rehabilitation schools that provide undergraduate education has increased by nearly 40% and now amounts to 56 schools throughout the country (6). When we consider the similar increases in the number of schools providing undergraduate education and in the elderly population, geriatric physiotherapy will more frequently and with increasing importance become the preferred field of work for graduate students across the country. Since negative/positive attitude and behaviours of physiotherapy students towards older people can effect the quality of healthcare services, perceptions, and attitudes of the students carry importance (7). In some studies, investigating the attitudes and behaviour of physiotherapy students towards the elderly, the authors determined that compared with students of other health sciences, physiotherapy students displayed more favourable attitudes (8,9). As clinical instructors are thought to play important roles in physiotherapy training in particular, positive attitudes towards the elderly should be promoted and encouraged in these students (10). Various studies have demonstrated that students tend to display more positive attitudes under the favourable influence of their training (10,11).

In Turkey, studies evaluating the attitudes and behaviour of students being educated in the faculties of health science have focused more frequently on students of nursing and medical faculties (1). However, the opinions and points of view of physiotherapy and rehabilitation students across our country have not been identified in any study yet. This study was planned to determine the attitudes and behaviour of physiotherapy students being educated in seven different regions of Turkey, whose population is the fastest ageing one in the world after that of South Korea.

MATERIALS AND METHOD

Design and Sample

This study, which had a cross-sectional design, was performed in a sample consisting of 1270 students in the physiotherapy and rehabilitation departments (first to fourth grades) of schools situated in seven different regions (Aegean, Marmara, Central Anatolia, Mediterranean, Eastern Anatolia, Southeastern Anatolia Regions) of Turkey in the school year 2014–2015.

Ethical Considerations

Written permission was obtained from the administrations of all schools where questionnaire surveys were held. Signed informed consent was obtained from all students. The ethics committee of university approved the study, which was conducted according to the Declaration of Helsinki.



Data Collection Method and Instruments

Student Information Form

Familial characteristics of the physiotherapy students are evaluated. The questionnaire contained eight questions relating to students' long-term residence, their current way of living, the presence of an elderly relative in the same home, their desire to work in the field of geriatric rehabilitation during their postgraduate period, his/her attendance of any course, seminar or meeting, and whether he/she visited a nursing home or lived with an old person.

The University of California Los Angeles Geriatrics Attitude (UCLA-GA) Scale

UCLA-GA scale (12) was used to determine their attitudes and behaviour towards older people; it was validated and reliability studies for the Turkish population were done by Sahin et al. (13). The items of the scale were assessed on a 5-point Likert type scale with the options "strongly disagree", "somewhat disagree", "somewhat neutral", "agree", "strongly agree". Participants gave 5 points if they strongly agreed with the sentences of positive attitude toward the elderly, 4 points if they agreed, 3 points if they were somewhat neutral, 2 points if they somewhat disagreed and 1 point if they strongly disagreed. Sentences of negative attitude were scored with 1 point if they strongly agreed, 2 points if they agreed, 3 points if they were somewhat neutral, 4 points if they somewhat disagreed and 5 points if they strongly disagreed in the reverse order of the above-mentioned. The titles and minimum/maximum scores of the four subscales were as follows: social values (min: 2, max: 10), medical care (min: 4, max: 20), compassion (min: 4, max: 20), resource distribution (min: 4, max: 20). The total attitude score was comprised of a composition of these four scales. The minimum score was 14, while the maximum score was 70; the higher the score, the more positive their attitude was (13).

Data Analysis

The SPSS 22.0 (SPSS Inc. Chicago, IL, USA) programme was used for a statistical analysis of the data. Demographic data obtained from seven different regions of Turkey and measured parameters were evaluated using descriptive analyses and expressed as mean ± standard deviation, median, frequency, percentage, minimum and maximum. UCLA-GA scores of all cases and categorical independent variables were compared using Student's t-test. $p < 0.05$ was considered statistically significant.

RESULTS

Data were acquired from 1270 physiotherapy students aged 17–29 years, with a mean age of 20.93 ± 1.70 years. 29.4% of the students were in 3rd grade and 57% of them were female. Descriptive characteristics of the physiotherapy students are given in Table 1.

Familial characteristics of the physiotherapy students revealed that 95.5% of them were living in cities and 84.6% of them were members of core families. 38.4% of the students were living in hostels away from their families. 86.6% of the students were not living with an older person, while 63.4% of them indicated that they wanted to live with an older relative or intimate. 84.2% of the physiotherapy students did not attend any course, seminar or meeting during their training period, while 55.7% of them indicated their desire to work in the field of geriatrics. 52.6% of the students stated that they had not visited a nursing home before or during their training period (Table 2).

The mean UCLA-GA score of the schools in all regions was 48.18 ± 5.67 (min: 26, max: 68) Mean subscale scores were as follows: social values: 6.37 ± 1.54, medical care: 11.28 ± 2.58, compassion: 15.88 ± 2.70, resource distribution: 14.64 ± 2.35. The maximum UCLA-GA score was obtained by the students educated in the Central Anatolia Region (Table 3).

When the relationship between UCLA-GA score and gender of the students was analysed female students were determined to have a more positive attitude and behaviour towards older people ($t = -1.983$, $p < 0.05$). Positive attitudes and behaviour towards older people were stronger in students who were living with an older individual ($t = 2.864$, $p < 0.05$), who wanted to live with his/her older relative/intimate ($t = 11.430$, $p < 0.05$), who visited nursing homes ($t = 2.467$, $p < 0.05$), who wanted to work in the field of geriatrics after they graduated ($t = 7.588$, $p < 0.05$), and in those who attended courses or any meeting organized during their training period ($t = 2.004$, $p < 0.05$) (Table 4).

Table 1. Descriptive Characteristics of the Physiotherapy Students (n=1270).

Descriptive Characteristics	
	X ± Sd
Age (year)	20.93±1.70
Height (cm)	170.35±8.58
Body weight (kg)	65.05±12.64
Body Mass Index (kg/cm^2)	22.25±3.03
	n (%)
Gender	
Male	544 (%43.0)
Female	726 (%57.0)
School of Physiotherapy region	
Aegean Region	234 (%18.4)
Central Anatolia Region	240 (%19.0)
Mediterranean Region	188 (%14.9)
Black Sea Region	90 (%7.1)
Eastern Anatolia Region	156 (%12.3)
Southeastern Anatolia Region	193 (%15.1)
Marmara Region	169 (%13.3)
Year at school	
1st year	362 (%28.5)
2nd year	315 (%24.8)
3rd year	374 (%29.4)
4th year	219 (%17.2)



Table 2. Family Characteristics of the Physiotherapy Students (n=1270).

Family Characteristics	n (%)
Living place	
City	1213 (95.5)
Town	19 (1.5)
Village	38 (3.0)
Family type	
Core family	1074 (84.6)
Large family	171 (13.4)
Divorced family	25 (2.0)
Present state of living	
With his/her family	245 (19.4)
With his//her friends	433 (34.1)
With her relatives	18 (1.4)
In a hostel, away from family	488 (38.4)
Lonely	86 (6.7)
Are you living with an older person?	
Yes	170 (13.4)
No	1100 (86.6)
Do you want to live with your older relative/intimate?	
Yes	806 (63.4)
No	464 (36.6)
Do you want to study in the field of geriatrics after you graduate?	
Yes	708 (55.7)
No	562 (44.3)
During your training in the field of geriatric rehabilitation, have you ever attended any course, seminar or meeting?	
Yes	210 (15.8)
No	1070 (84.2)
Have you ever visited a nursing home?	
Yes	602 (47.4)
No	668 (52.6)

Table 3. Mean Scores Obtained from The UCLA-GA Scale and Its Subscales by Physiotherapy Students Studying in Different Regions in Turkey.

UCLA-GA scores	Aegean Region X ± Sd	Central Anatolia Region X ± Sd	Mediterranean Region X ± Sd	Black Sea Region X ± Sd	Eastern Anatolia Region X ± Sd	Southeast Anatolia Region X ± Sd	Marmara Region X ± Sd	Total region X ± Sd
Social values	6.34±1.49	6.48±1.43	6.54±1.52	6.48±1.67	6.33±1.55	6.38±1.70	6.01±1.45	6.37±1.54
Medical care	10.99±2.41	11.17±2.32	11.17±2.62	11.13±2.95	11.48±2.70	11.66±2.94	11.41±2.28	11.28±2.58
Compassion	15.97±2.29	16.56±2.26	16.09±2.58	15.50±2.64	15.76±3.09	15.47±3.38	15.35±2.52	15.88±2.70
Resource distribution	14.40±2.38	15.23±1.95	14.85±2.55	14.78±2.41	14.83±2.18	14.09±2.64	14.27±2.13	14.64±2.35
Total score	47.71±5.44	49.45±4.87	48.67±5.77	47.91±6.33	48.41±5.25	47.61±6.90	47.05±5.01	48.18±5.67

DISCUSSION

Beliefs and attitudes towards older people and old age change from culture to culture. Some communities describe old age with negative characteristics such as useless and feeble; however, some communities respect old people, and benefit from their knowledge and experience. Besides, in these communities older people have a higher social status (14). Showing respect to the elderly is an important merit of the Turkish culture. Living together with older people, sharing the same home, status of the elderly in the family, knowledge and experience of the elderly have a great impact on the development of this culture. However, rapid and multifaceted changes in the familial structure of our country lead to dynamic individuals and young adults being favoured in business life. Thus, the elderly are pushed to the background and some of our cultural values change (15).

The changing and increasing elderly population profile also increases the requirement for physiotherapists in particular (5). When we consider parallel increases in the number of schools providing undergraduate education in the field of physiotherapy and rehabilitation and in the number of elderly in the population, geriatric physiotherapy is expected to provide more working opportunities for physiotherapy students (6,11). In our study, positive attitudes towards old people of physiotherapy students training in different regions of Turkey have been determined. The highest positive attitude score was observed in students trained in the Central Anatolia Region (Table 3). This outcome suggests that compared to other regions of Turkey, families living in the Central Anatolia Region have a large familial structure (family type in which parents of the head of the family or his spouse live together with the rest of the family) which includes a comparatively larger number of old family members.

Prejudice and negative opinions of physiotherapy students towards the elderly also adversely affect their desire to treat old people (8,9). When the desire of students to specialise in the field of geriatric physiotherapy and their long-term practice in this



field are considered, their attitudes and behaviour towards the elderly gain the utmost importance. In our study, the factors affecting the UCLA-GA scores most were students' desire to study in the field of geriatric rehabilitation during their postgraduate period, their attendance of a training session, course or meeting in the field of geriatric rehabilitation during their undergraduate education and their more affirmative attitude towards the elderly. This outcome is important because it demonstrates the necessity of concentrating heavily on training programmes and encouraging the students to attend seminars and courses in order to make them change their negative attitudes and behaviour towards the elderly. In the literature some negative and positive factors determining students' desire to work with elderly people have been cited. Among them, "expectation and perception of the family" affect the students' decisions on this issue adversely, while age of the student, his/her relationship with an old person (both in their work and in their social environment), nor his/her attendance of geriatric training sessions and courses had any effect on the student's attitude and behaviour towards the elderly (7,8).

It has been reported that in some studies, the male and female students doing their degree in various fields of health (medicine, nursing, pharmacy, health technician) had no different (16-18) attitude and behavior, which depends on gender while other studies showed difference (19-22).

Table 4. UCLA-GA Score and Its Relation with Family Characteristics (n=1270).

Family characteristics	n	X ± Sd	t	p
Sex				
Male	544	47.84±5.92	-1.983	0.04
Female	726	48.47±5.45		
Are you living with an elder person?				
Yes	170	49.35±6.19	2.864	0.004
No	1100	48.02±5.56		
Do you want to study in the field of geriatrics after you graduate?				
Yes	708	49.25±5.42	7.588	0.000
No	562	46.87±5.68		
Have you ever visited a nursing home				
Yes	602	48.61±5.76	2.467	0.014
No	668	47.83±5.55		
During your training in the field of geriatric rehabilitation, have you ever attended any course, seminar or meeting?				
Yes	210	48.91±5.75	2.004	0.040
No	1060	48.06±5.64		
Do you want to live with your older relative/intimate?				
Yes	806	49.51±5.25	11.430	0.000
No	464	45.92±5.64		

Soyuer et al. studied the relationship between the attitudes of 363 health technics students doing degree in 10 different programs of the Vocational School of Health Services towards ageism with several demographical variables. They revealed in their study that whereas the positive attitude scores of the male students regarding ageism were higher than those of the female ones, there existed no significant difference (16). Ucun et al. investigated the relationship between the subscale and total scores of the attitude towards ageism scale and gender, obtained by 485 university students attending various departments. They reported that male and female students had similar attitude towards the elderly, and that gender did not have a positive or negative effect on ageism (17). Ozcan et al. educated 142 third-year medicine faculty students on multidisciplinary approach towards the elderly. They reported that the students showed an increase in their mean scores of attitude towards the elderly scale, but a difference between the male and female students in terms of attitude scale score averages before and after the education did not exist (18).

Hweidi et al. found in their study in which they examined the attitude and behaviors of 250 nursing students towards the elderly via Kogan's Old People Scale that male nursing students had a more positive approach than female ones (19).

Wang et al. assessed 275 medicine and nursing students with Kogan's Attitudes Toward Older People Scale. They detected that female and younger nursing students showed a more positive attitude towards the elderly than male and older medicine students (20). Fitzgerald et al. evaluated the attitude of 171 medicine students towards the elderly with UCLA-GA Scale. They revealed that female medicine students had a more positive approach than male medicine students (21). Mandıracıoglu et al. evaluated 277 second-year pharmacy students with the UCLA-GA Scale and reported that female pharmacy students had more positive attitude than male ones (22). As for our study, in which we assessed the attitude of more students than the literature toward the elderly, it was detected that female students had more positive attitude than male students, similarly to several studies.

In Turkish culture men try to earn a living, while women assume the task of home care and also play a great role as a member of the family. Besides, women more frequently maintain and reinforce relationships with relatives and therefore women are more closely linked to their families (23). These roles in the family might have a more favourable impact on the attitudes and behaviour of female physiotherapy students towards the elderly. Therefore, inequalities in these traditional roles, which are internalised for female and male patients, should be relieved. Thus, during undergraduate education, the connection of male physiotherapy students with older people should be developed and they should be encouraged to serve their internship in the field of geriatrics. Besides, clinical instructors are important as role models in the physiotherapy education of male students during their internship. The attitudes and behaviour of these instructors towards older people can affect the opinions of the students (10). Instructors should therefore be encouraged to display more favourable attitudes and behaviour towards the elderly, and the relevant roles and responsibilities of healthcare professionals might even be registered in written protocols.

Nowadays, rapid changes in the socioeconomic structure of our country also induce changes in its cultural structure with important alterations in the functions and life style of the family. During this process, the position, significance and authority of the elder individual in the family have decreased (24). This phenomenon has relegated older people to nursing homes and the number of elderly living in nursing homes has increased. Apart from their undergraduate education, the number of visits by female and male students to nursing homes and elderly care centres should be increased and they should be encouraged on this issue in order to reinforce their relationships with older people. In our study we determined that visiting nursing homes by students was effective for developing their positive attitudes and behaviour towards the elderly. Since visits to care centres for the elderly improve their attitudes and behaviour, we think that raising



students' awareness by periodic visits starting from the first year of their undergraduate education will be effective in creating more favourable perceptions.

Gurses et al. have made a curriculum analysis in the physiotherapy and rehabilitation undergraduate programs of various universities in Turkey. The curriculum includes a compulsory professional ethics course. The courses of ethics are put together under the titles that are medicinal ethics, rehabilitation and ethical principles, psychosocial rehabilitation and ethics, rehabilitation and ethics, ethics in physiotherapy and similar various courses (6). An overview of the content of the professional ethics course will show that it includes subjects like multidisciplinary teamwork in physiotherapy and rehabilitation, ethics in medical sciences, ethical principles regarding healthcare professionals and patient relations, and patient rights (25). Nevertheless, it has been found out that the content of this course does not deal with issues like elderly rights, and how the attitude and behaviors towards the elderly should be. Besides, a course titled human rights is also included in the curriculum (6,25). Accordingly, we believe that physiotherapy and rehabilitation undergraduate students need to be informed about elderly rights and the attitude and behavior of healthcare professionals towards elderly patients more extensively within the curriculum of the professional ethics course, and educational programs should be developed within this scope.

In conclusion, attitudes and behaviour of physiotherapy students towards the elderly can vary according to many factors such as the gender of the elder individuals, living with an old family member, the desire to work in the field of geriatric rehabilitation after graduation, the desire to live with an old individual, the attendance of training sessions, courses and meetings in the field of geriatric rehabilitation during undergraduate education, and the number of visits to nursing homes and elderly care centres. Therefore, in order to be able to change prejudices, correcting the negative attitudes and behaviour of the physiotherapy students towards older people in the educational programmes should be emphasised in Turkey, which is the second fastest ageing country in the world. While integrating information related to old age and the ageing process, the participation of the students in seminars and courses should be supported. As role models, clinical instructors should be encouraged to display a more affirmative attitude towards old people and the relevant roles and responsibilities of healthcare professionals should be recorded in written protocols. Further conclusions are that the attendance of physiotherapy students to under- and postgraduate physiotherapy courses should be supported, specialisation in the field of elderly health should be encouraged, and the awareness of the students of the elderly should be raised by visiting nursing homes and elderly care centres.

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Research

INTERVIEWS ABOUT LIFE WITH INDIVIDUALS AGED 100 YEARS OR OLDER

Abstract

Introduction: The human population is ageing. A centenarian is an individual who has reached the age of at least 100 years. Longevity has been associated with long-lived families and their related genetic material but genes are not the entire story. The study aimed to briefly explore the life stories and perceptions of key variables contributing to their longevity of eight centenarians.

Materials and Method: While the present study involves qualitative characteristics, we have attempted to support these aspects with quantitative data. In four towns of Samsun city, northern Turkey, interviews were conducted with eight centenarian participants. These individuals were identified from a population consisting of 200,000 people residing within the countryside or in mountainous regions. The visits were conducted in their homes, between the dates of October 2016 and December 2016.

Results: We found the ratio of centenarian as 0.4/10,000 people for target towns of Samsun. The mean age of the participants was 101.8 years, and all of them are women. Yogurt consumption was found to be quite frequent among our participants. A number of our participants also thought that religious rituals, such as worship and prayer, were effective for living a long-life and they advised such practices to younger generations. the most common problems consisted of hypertension and musculoskeletal system diseases.

Conclusion: Individuals who reach the age of 100 years or more generally feel youthful and healthy. The common secret our participants provided for reaching advanced age is a natural diet, avoiding bad habits and living in a peaceful environment.

Key Words: Aged, Interview, Life

Araştırma

100 YAŞ VE ÜZERİNDEKİ BİREYLERLE YAŞAM HAKKINDA RÖPORTAJLAR

Öz

Giriş: İnsan nüfusu yaşlanmaktadır. Asırlık, en az 100 yılı geride bırakmış yaşayan kişidir. Uzun ömürlülük genelde genetik materyal ile ilişkilendirilir ancak genler hikayenin tamamı değildir. Bu çalışma, asırlık sekiz katılımcının yaşam hikayelerini ve uzun ömürlerine katkıda bulunan kilit değişkenlerin algılarını kısaca keşfetmeyi amaçlamıştır.

Gereç ve Yöntem: Çalışmamız niteliksel karakterde olmasına rağmen, niceliksel verilerle desteklenmiştir. Türkiye'nin kuzey kesiminde bulunan Samsun'un dört ilçesinde, yüz yılı geride bırakan sekiz katılımcı ile görüşmeler yapılmıştır. Bu kişiler, toplamda 200.000 kişiden oluşan bir popülasyondan saptanmıştı, kırsalda ve dağlık bölgelerde ikamet ediyorlardı. Röportajlar Ekim 2016- Aralık 2016 tarihleri arasında kişilerin kendi evlerinde gerçekleştirilmiştir.

Bulgular: Samsun'daki hedef ilçelerimizde asırlık katılımcıların total nüfusa oranını 0.4 / 10.000 kişi olarak bulduk. Katılımcıların yaş ortalaması 101.8 yıldı ve hepsi kadınlardı. Katılımcılarımız arasında yoğurt tüketimi oldukça sık görüldü. Katılımcılarımızın birçoğu, ibadet ve dua gibi dini ritüellerin uzun ömürlü olmak için etkili olduğunu düşünüyorlardı ve bu tür uygulamaları genç nesillere tavsiye ettiler. En sık karşılaşılan sağlık sorunları ise hipertansiyon ve kas-iskelet sistemi hastalıklarından oluşmaktadır.

Sonuç: 100 yaş ve üzerindeki bireyler genellikle genç ve sağlıklı hissetmektedir. Katılımcılarımızın ileri yaşlara ulaşmadaki ortak sır, kötü alışkanlıklardan kaçınma, huzurlu bir çevrede yaşama ve doğal bir diyettir.

Anahtar Sözcükler: Yaşlı, Röportaj, Yaşam

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INTRODUCTION

Population aging is occurring worldwide with much of the growth numerically taking place in the developing world. Europe started experiencing population aging earlier but while growth was gradual in Europe it is happening very fast in the developing world. Eg it took France 125 years to go from 7-14% aged 65+; in China this happens in about 12 years. Currently, the number of elderly people is 605 million worldwide, and the WHO estimates that this population will reach 2 billion by 2050 (1). The population of elderly individuals is increasing, which might be correlated with decreasing mortality rate among 'oldest olds' (2).

Western countries use age 65 as the threshold to old age. However, recognizing that people at the beginning of this period are different in various ways from those who are older, it is common to speak of the young-old (age 65-74), middle-old (75-84) and the oldest-old (85+) (3,4). According to the results of a general census conducted in Turkey, the ratio of individuals aged 65 years and over consisted of 7.1%, 7% and 7.3% of the total population in 2007, 2009 and 2011, respectively. Moreover, it is expected that this number will reach to 9% by 2025 (5). Turkey is now in the trend of aging. Special support services for the oldest-olds are continuing increasingly.

A centenarian is an individual who has reached the age of at least 100 years. In the literature, women are dominant among centenarians. Indeed, the ratio of older women to older men is generally 1.5:1 throughout the world; however, it is 3:1 when considering people aged 90 years or older (6). Currently, the most rapidly increasing age population is 85 years and over. In the US, it is estimated that one fifth of the population will consist of individuals aged 65 years and older by 2020. In addition, the highest populations of elderly individuals reside in developing countries, with Asia accounting for over half, and China comprising one-fourth of the world's elderly (6).

Longevity has been associated with long-lived families and their related genetic material (7). Although a portion of a centenarian's success can be attributed to their genetic background, genes are not the entire story. Nutrition, life-style, social support all contribute to achieving this centenary period (8). In this regard, this study was designed to question non-genetic factors.

This is a brief study of centenarians from a rural area of a developing country and similar studies are not common in the literature. We aimed to investigate the life stories, and therefore, the aging of centenarian participants. We believe that they have valuable experiences to share.

MATERIALS AND METHOD

While the present study used qualitative methodology, we have attempted to support these aspects with quantitative data. Moreover, the study used an ethnographic approach. Ethical approval was obtained from the ethical committee of clinical researches of Ondokuz Mayis University on 6 June 2016.

Being a centenarian was the only inclusion criterion of the study. We asked them if they were willing to be interviewed by young people about what they considered to be the important contributors to their long life? All of them accepted interview. They did not get any compensation for participating. In four towns of Samsun city, northern Turkey, interviews were conducted with eight centenarian participants after obtaining both the participants' and their relatives' permission. We used the data of the Public Health Directorate. That data source gave us names and addresses of cententarians who were detected from a population consisting of 200,000 people residing within the countryside or in mountainous regions.. The visits were conducted in their homes by the research team, between the dates of October 2016 and December 2016.

A total of 19 questions generated from a literature review were directed to the participants. The interviews were conducted in Turkish and subsequently translated into English. The analysis



done on the Turkish transcript. Each interview lasted an average of thirty minutes. The centenarians were asked a range of demographic questions (i.e. age, gender, educational background, marital status, number of children, number of grandchildren and occupation), their history of disease, drug use, major problems, the duration and frequency of smoking/ alcohol consumption, their favourite food and drinks, hobbies, advice, their favourite and saddest day of their life, whether they prefer old age or youth, the thing that they want to do but just cannot and the secret of their long lives. The answers to the questions have been presented in separate paragraphs for each participant.

RESULTS

Participant No. 1

Ms. E.B. is a 100-year old woman who is illiterate and a widow with three children, nine grandchildren and a total of 10 great-grandchildren . Throughout her life, Ms. E.B, worked on farms. She has hypertension and difficulty seeing and hearing. She is currently taking calcium supplements and pain killers daily. Her major problem is difficulty seeing and hearing. She has never smoked or consumed alcohol. Her favourite foods and beverages consist of red meat, yogurt, tea and milk, respectively. Her favourite activities consist of enjoying the scenery and praying. When we asked her advice about life, she replied, 'We were always consuming natural foods when we were young. Eat natural foods'. Her favourite day was the day she got married. Her saddest day was the day her son died. When we asked whether she preferred old age or youth, she gave an emphatic answer: 'Youth, of course!'. The thing that she wants to do but just cannot is 'Travelling in Turkey'. She also complained about financial difficulties. She revealed that the secret of her long-life is her home-made organic milk, yogurt and cheese.

Participant No. 2

Ms. F.K. is a 100-year old woman who is illiterate and a widow. She has 5 children, 19 grandchildren, 30 great-grandchildren, and 3 great-great-grandchildren . She stated that she had no diseases and was only missing teeth. She takes daily vitamin supplements. Her major problem is a lack of appetite. She has never smoked or consumed alcohol. Her favourite foods are bulgur pilaf and yogurt, and her favourite drink is ayran (a local drink consisting of water and yogurt). The majority of her daily activities involve visiting with the neighbours. She advised us, 'Live as you feel happy'. Her favourite day of her entire life was the day she gave birth to her son. Among her children, only her last child was male. Her saddest day was the death of her first grandchild. When we asked whether she preferred old age or youth, she gave the answer of 'youth'. The thing that she wants to do but just cannot is 'Travel a lot'. The secret of her long-life is the consumption of yogurt, ayran and green vegetables.

Participant No. 3

Ms. Z.C. is a 100-year old woman who is illiterate and a widow. She has 6 children and 19 grandchildren. Her income was farming. She has hypertension and takes daily anti-hypertensive medication. Her major problem is knee pain. She has never smoked or consumed alcohol. Her favourite food is corn soup and her favourite drink is water. She likes travelling and she still travels whenever possible. She advised us, 'Pray to god'. Her favourite day was the day one of her grandchildren got married. Her saddest day was the death of one of her grandchildren. When we asked whether she preferred old age or youth, she gave the answer of 'youth'. The thing that she wants to do but just cannot is 'Pilgrimage/ hadj' (a kind of religious ritual for Islam in Mekke, Suudi Arabia). The secret of her long-life is 'Working hard and a natural diet'.

Participant No. 4

Ms. D.D is a 100-year old woman who is illiterate and a widow. She has 6 children and 25 grandchildren. Her income was earned by farming. She has no diseases; however, she cannot move her legs effectively . She does not take any regular medication. Her major problems are tremors in her hands and

being diapered because of urine incontinence. She has never smoked or consumed alcohol. She does not have any favourite foods or drinks but rather consumes all foods with same pleasure. She used to knit sweaters and socks during her free time until the previous year, but she is unable to knit anymore. She advised us, 'Do not consume fatty foods and frequently drink ayran'. Her favourite day was when one of her grandchildren got married. Her saddest day was the death of her husband. When we asked whether she preferred old age or youth, she gave the answer of 'youth'. She said that there was nothing that she could not do. The secret of her long-life is, 'Not eating fried food and consuming butter, yogurt and ayran'.

Participant No. 5

Ms. S.K is a 102-year old woman who is illiterate and a widow. She has 5 children and 15 grandchildren. Her income was earned by farming. She has hypertension, chronic joint pain and decreased vision. She is taking an anti-hypertensive and non-steroid anti-inflammatory drug therapies. Her major problem is decreased vision and knee pain. She has never smoked or consumed alcohol. Her favourite food is soup and her favourite drink is linden tea. She has no special hobbies in her daily life. She mostly enjoys looking at scenery. She advised us, 'Do not eat fried foods, do work, do produce and do pray'. Her favourite day was when she gave birth to her first child. Her saddest day was the death of her first child. When we asked whether she preferred old age or youth, she gave the answer of 'youth'. The thing that she wants to do but just cannot is, 'Pilgrimage/ hadj'. The secret of her long-life is, 'A natural diet and praying a lot'.

Participant No. 6

Ms. F.Y is a 102-year old woman who is illiterate and a widow. She has 7 children and 18 grandchildren. She was a house-wife and did not have another job. She has Alzheimer's disease and is confined to a bed. Therefore, we gathered information especially from her child during our visit. She does not take any daily medication and she consumes only two or three pain killers per week. Her major problems are being an invalid and not moving freely. She has never smoked or consumed alcohol. Her favourite food is meatballs and her favourite drink is tea. She mostly prays. She advised us, 'Be tidy and rigorous'. Her favourite day was when she met with her children and grandchildren. Her saddest day was when she became completely bedridden. When we asked whether she preferred old age or youth, she gave the answer of 'youth'. She did not say anything about the thing that she wanted but that she could not do. The secret of her long-life is, 'to be planned and programmed' .

Participant No. 7

Ms. A.A is a 105-year old woman who is illiterate and a widow. She has 10 children, 24 grandchildren and over 100 great- and great-great-grandchildren. Her income was earned by farming. She has arthritis and she does not take any medication. Her major problem is leg pain. She has never smoked or consumed alcohol. Her favourite food is red meat and her favourite drink is ayran. She mostly helps others with farming. She advised us, 'Have a natural diet and live in plateaus'. Her favourite day was when her husband returned from the military. Her saddest day was when she lost her husband. When we asked whether she preferred old age or youth, she gave the answer of 'youth' and she said, 'I wish i was young and working again '. The thing that she wants to do but just cannot is, 'Pilgrimage/ hadj with her husband'. The secret of her long-life is, 'Having breakfast, drinking corn soup and consuming dairy products'.

Participant No. 8

Ms. D.K is a 106-year old woman who is illiterate and a widow. She has 6 children, 35 grand-children and over 50 great- and great-great-grandchildren combined. She does not have any known chronic diseases and does not take any medication. Her major problem is decreased vision and limitations of her movement. She has never smoked or consumed alcohol. Her favourite food is red beet jam and her favourite drink is tea. She likes taking care of animals during the day. She advised us, 'Don't fight, make peace'. Her favourite day was when her grandchild



had a grandchild. Her saddest period was when she lost three of her children within a month. When we asked whether she preferred old age or youth, she gave the answer of 'youth' and she said, 'I wish I'm young and working again'. She does not have anything that she wants to do but just cannot. The secret of her long-life is, 'Butter, eggs and homemade yogurt'.

DISCUSSION

Centenarians are the best example of accomplished aging, most likely due to their genotypes and to unique neuro-immuno-endocrine mechanisms. In most developed countries, while the ratio of centenarians is 1/10,000 individuals, it is 3.5/10,000 in Japan (2). In our study, we found this ratio to be 0.4/10,000 for target towns of Samsun, since Turkey has a young population and the life-expectancy is lower compared to other developed countries. In addition, the life expectancy in the developed world is increasing, as accurate records indicate and continues to rise linearly.

Regarding their general health status, there are certain differences keeping centenarian individuals healthier than those who die at a younger age. In fact, various studies have shown that the majority of centenarians are in surprisingly good health. In addition, while biological (e.g. systemic pathologies) and social (e.g. loss of companionship) factors have a tendency to increase throughout older adulthood, the prevalence of negative mental health symptoms (e.g. depression and loneliness) are comparable or lower compared to that during early adulthood (18-25 year olds) (9).

The proportion of women aged 100 years and over is much higher than men in the literature. The average age of participants in a study conducted by Pinti et al, in Italy, was 100.8 years, of whom 88% were women (10), another study conducted by Bagnara et al, in Italy, reported that the mean age of nine centenarian participants was 100.5 years (11), and Sansoni et al, in Italy, found the mean age of participants to be 100.7 years, of whom 88% were women (12). The reason for this discrepancy is not clear and variations associated with differential mortality rates in women and men, as well as those related to social, genetic and anthropological factors, may play a role. In the present study, the mean age of the participants was 101.8 years, which is one of the highest age averages in an academic study. All the participants are women and therefore, support the trends in the literature.

The reason for the illiteracy among the participants in this study was residing in rural and mountainous regions, as well as being unable to attend school due to financial constraints. Franceschi and Bonafe have described the lower population of men >100 to more extensive "chronic inflammation preculiar to aging" compared to women (13). Jopp et al. suggested that mental health conditions of oldest old participants were better than young olds or olds in spite of the decreasing level of physical functionality and social support, as well as their age-dependent adaptation abilities are interesting (14). In our study, there was only one participant with a neurological disorder (Alzheimer's disease) and all of the participants were still trying to maintain a social life as well as active life styles except her. It has been established that olive oil, vitamins C and E, berries, dark chocolate, beans, fish, vegetables, nuts, whole grains, garlic, red wine and avocado have anti-aging effects (15). The consumption of fat-reduced milk and dairy products, reducing the amount of salt in meals, not using salt during meals, not drinking beverages, such as tea and coffee excessively and not smoking cigarettes have been suggested to contribute to longevity (16). In a study conducted in Poland, it was found that the life-long consumption of yogurt, skim curd, fish, lean meat products, plant oils and sweets were higher in people aged 100 years and over than individuals under the age of 100 (17). It is important to note that yogurt consumption was found to be quite frequent among our participants. It is known that the probiotic effect of yogurt facilitates healthy ageing as it includes proteins, minerals and vitamins (18). The mental adaptation of elderly people against senility is a significant determinant for healthy ageing. In a study

evaluating the gender differences among centenarian people in Greece, the mean age of the participants was 101.6 years and the ratio of women was 62.7%. According to this study, women were found to be more adaptable than men (19). By considering the positive effects of elderly people who live together with close relatives, providing familial and social support, improving relationships with elderly people and developing home-care projects might extend life. In a qualitative study conducted in Hong-Kong involving six participants, the mean age was 103.5 years with a ratio of 50% women. According to the study findings, a positive relationship with other people, events and happiness, hope for the future and a positive life attitude were the most important constituents of life (20). In addition to these, a positive correlation was found between religion or religiosity and improved health status (21). In a study conducted on 12 patients by Pascucci and Loving, the mean age of the participants was 101.6 years and the ratio of women was 75.0%. They identified that a dependence on god is a strong component of long life (22). Similarly, a number of our participants also thought that religious rituals, such as worship and prayer, were effective for living a long-life and they advised such practices to younger generations.

Unfortunately, problems involving multi-morbidity, systemic function inadequacy, disability and a decreasing quality of life are common in individuals of advanced age. The most common health problems affecting elderly people include hearing loss, musculoskeletal problems, arthritis, hypertension, cataracts and unsafe environments (23). In our cases, the most common problems consisted of hypertension and musculoskeletal system diseases. Moreover, there were also age-related vision and hearing problems. It is noteworthy that there were no psychiatric problems like depression or psychosis identified among our participants. Approximately 13% of older men and 12% of older women in the UK still smoke cigarettes, and smoking remains the largest cause of premature death (24). In adults, alcohol consumption above the 'safe' or 'sensible' limits is 20% and 10% in men and women over the age of 65, respectively (25). None of the participants in this study had a history of smoking or alcohol consumption.

In the present study, our sample does not include urban or educated women Turkey. Results are generalizable only to the population from which we sampled and for which we site centenarian rates or more generally, the rural population of northern Turkey. Moreover, the absence of examinations, such as biochemical tests, electrocardiography and chest X-ray of the participants is the other limitation. Our study would have benefited from such clinical data; however, the geographic conditions and technical opportunities did not permit such data collection.

In conclusion, individuals who reach the age of 100 years or more generally feel youthful and healthy. The common secret our participants provided for reaching advanced age is a natural diet, avoiding bad habits and living in a peaceful environment. Moreover, members of this limited age group might require additional social and medical support at any time in the future.

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Research

DEMODEX (ACARI: DEMODICIDAE) INFESTATION IN THE ELDERLY AND ITS RELATIONSHIP WITH THE SKIN PARAMETERS SUCH AS MOISTURE, PH, AND TEMPERATURE: A CROSS-SECTIONAL STUDY

Abstract

Introduction: The elderly population is growing both worldwide and in Turkey. Thus, the importance of studies on elderly individuals is increasing. The present study was conducted to evaluate Demodex infestation and its relationship with the skin parameters such as moisture, pH, and temperature in elderly individuals living in nursing homes.

Materials and Method: The study included 91 elderly individuals who were residents of Erzincan 100th Anniversary Atatürk Nursing Home. Skin moisture, pH, and temperature were measured, and skin samples were collected from the cheek, nasolabial area, and chin using the standard superficial skin biopsy method, and the specimens were examined by light microscopy.

Results: Overall, Demodex mites (mean 31.1/cm2) were detected in 85.7% elderly individuals; 84.6% had D. folliculorum (mean 29.3/cm2) and 45.1% had D. brevis (mean 4.3/cm2) infestation. The infestations were mostly found in the cheek (mean 21.2/cm2), followed by the nasolabial area (mean 9.4/cm2) and the chin (mean 7.4/cm2). The difference between facial areas and Demodex infestation was statistically significant ($p<0.001$). Demodex infestation was higher in those with a dry skin, with a skin pH of 5.6-7.0 and with an elevated skin temperature. The relationship between the density of Demodex and skin moisture was statistically significant ($p=0.035$), whereas the relationship with skin pH and temperature was not statistically significant.

Conclusion: Elderly individuals which having dry skin, elevated skin temperature, and high skin pH have been more infested with Demodex mites. It may be helpful to consider this finding in clinical assessment of skin lesions and dermatoses in geriatric patients.

Key Words: Aged; Mites; Nursing home; Prevalence; Skin

Araştırma

YAŞLILARDA DEMODEX (ACARİ: DEMODİCİDAE) ENFESTASYONU VE CİLDİN NEM, PH VE ISI PARAMETRELERİ İLE İLİŞKİSİ: KESİTSEL BİR ÇALIŞMA

Öz

Giriş: Tüm dünyada olduğu gibi ülkemizde de her geçen yıl yaşlı nüfusu artmaktadır. Bu nedenle yaşlı bireylerle ilgili yapılacak olan çalışmalar büyük öneme sahiptir. Bu çalışma huzurevinde kalan yaşlılarda Demodex enfestasyonunu belirlemek ve cildin nem, pH ve ısı parametreleriyle olan ilişkisini ortaya koymak amacıyla yapıldı.

Gereç ve Yöntem: Çalışmaya Erzincan 100. Yıl Atatürk Huzurevinde kalan 91 yaşlı dahil edildi. Yaşlıların cilt nemi, cilt pH'sı ve cilt ısısı ölçülerek yanak, nazolabiyal ve çene bölgelerinden Standart Yüzeyel Deri Biyopsi (SYDB) yöntemi ile örnekler alındı ve ışık mikroskobunda incelendi.

Bulgular: Yaşlılardan %84.6'sında D. folliculorum (mean 29.3/cm2), %45.1'inde D. brevis (mean 4.3/cm2) olmak üzere %85.7'sinde Demodex mites (mean 31.1/cm2) tespit edildi. Enfestasyonun en fazla yanakta olduğu (ortalama 21.2/cm2), bunu sırasıyla nazolabial (ortalama 9.4/cm2) ve çene (ortalama 7.4/cm2) bölgesinin izlediği görüldü. Yüz bölgeleri ile Demodex enfestasyonu arasındaki fark istatistiki bakımdan anlamlı bulundu ($p<0.001$). Demodex enfestasyonunun cildi kuru olanlarda, cilt pH'sı 5.6-7.0 olanlarda ve cilt ısısı yüksek olanlarda daha fazla olduğu tespit edildi. Demodex enfestasyonu ile cilt nemi arasındaki fark istatistiki olarak anlamlıyken ($p=0.035$), cilt pH ve ısısı ile arasındaki fark anlamlı değildi.

Sonuç: Yaşlılardan cildi kuru, cilt ısısı yüksek ve cilt pH'sı yüksek olanların Demodex akarlarla daha fazla enfeste olduğu görüldü. Bu durumun geriatrik hastalardaki cilt lezyonları ve dermatozların klinik değerlendirmesinde göz önünde bulundurulması faydalı olabilir.

Anahtar Sözcükler: Akar; Cilt; Huzurevi; Prevalans; Yaşlılar

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INTRODUCTION

Two species of *Demodex* mites (Acari: Demodicidae) belonging to the phylum Arthropoda living on humans have been identified. Of these species, *D. folliculorum* has a longer body and is found in hair follicles, whereas *D. brevis* has a shorter body and lives in sebaceous glands. The mite has pin-like mouthparts and various enzymes for digesting follicular epithelial cells. The mite has an average life cycle of 15 days. The adult form is 0.3-0.4 mm long and has four pairs of legs (1, 2).

In human hosts, the cheek, nose, chin, eyelashes, and nasolabial area are the most common sites of infestation, and the parasite is rarely seen in other parts of the body such as genital organs, breasts, scalp, neck, external ear canal (1, 3-5). *Demodex* mites sometimes remain as commensals in hair follicles of healthy individuals without creating any pathogenic effect, while they could become opportunistic pathogens in cases of compromised skin hygiene and immunosuppression. In addition, the parasite is considered to play a role in the pathogenesis of acne, rosacea, perioral dermatitis, seborrheic dermatitis, and blepharitis (1, 3-8).

The elderly population is growing worldwide as well as in Turkey. As of 2016, individuals aged >65 years account for 8.3% of the general population. This rate is projected to increase to approximately 30% by 2050 (9). Thus, dermatologists and physicians in other disciplines are more likely to encounter geriatric patients in the future. Thus, the importance of studies on elderly individuals is increasing. There are many studies in the literature evaluating the elderly from the perspective of dermatological care (10-14). On the other hand, numerous studies have been conducted to determine the prevalence of *Demodex* infestation in various patient populations and age groups (3-8). However, no particular study has been conducted in relation to *Demodex* infestation in elderly individuals living in nursing homes or comprised of individuals aged >65 years only. The present study was conducted to evaluate *Demodex* infestation and its relationship with the skin parameters such as moisture, pH, and temperature in elderly individuals living in nursing homes.

MATERIALS AND METHOD

Study Sample

The study was conducted in Erzincan 100th Anniversary Atatürk Nursing Home on April 2016. After providing explanations to 103 elderly individuals aged 65-95 years living in the nursing home, 91 volunteers (41 females, 50 males) who were able to communicate and who did not have an apparent facial dermatosis were included in the study. Necessary permissions were obtained from the Erzincan Provincial Directorate of Family and Social Policies and Erzincan University Ethics Committee (Decision no: 2015-01/6). All participants signed an informed consent form prepared in accordance with Helsinki Declaration.

Collection of Samples

The samples were collected and examined by the same researcher (corresponding author). The samples were collected from the cheek, nasolabial area, and chin using Standard Superficial Skin Biopsy method. Sample collection site was cleaned with alcohol and dried. A 1-cm^2 area was marked on a clean glass slide. A drop was cyanoacrylate was deposited on the other side of the glass slide, which was then pressed slightly onto the collection site and removed gently after 1 min.

Examination of Samples

Hoyer's solution was mounted on the samples and covered with a coverslip. The slides were examined by light microscopy (Leica DM500, Switzerland) at 4×, 10×, and 40× magnifications. Mite species were identified in light of the literature data (2). The mean density of *Demodex* mites per cm^2 of skin was calculated by dividing the total number of *Demodex* mites to the number of infested participants.

Measurement of Skin Moisture, pH, and Temperature

Skin moisture (RH%) was measured using a digital moisture meter (DMM, Turkey), and skin pH and temperature were measured using a skin pH meter (Hanna HI 1414, Romania). Measurements were made at the cheek area which are known to be one of the areas where *Demodex* mites are most prevalent

(4-6, 8, 15). Thus, mites isolated from the cheek area were taken into consideration while evaluating the relationship between skin moisture, pH, and temperature and *Demodex* infestation. Skin moisture measurement was according to the criteria set out in the instructions manual of the manufacturer. RH values of < 30% were defined as "low" moisture content, those of 30% - 50% were defined as "moderate" moisture content, and those of >50% were defined as "high" moisture content. In addition, demographic features of the participants and other data were retrieved from the nursing home records.

Data Analysis

The data were analyzed using SPSS 20.0 (Statistical Package for Social Sciences; Chicago, IL, USA) software package. The Kolmogorov–Smirnov test was used to check for normal distribution of variables. Non-parametric Mann-Whitney U-test and Kruskal-Wallis test were used to compare non-normally distributed variables between the groups. The chi-square test was used to compare categorical data. A p value of <0.05 was considered statistically significant.

RESULTS

The mean age was 80.2 ± 9.0 years among females (n = 41) and 76.2 ± 7.9 years among males (n = 50). Overall, *Demodex* mites (mean 31.1/cm^2) were detected in 85.7% elderly individuals; 84.6% individuals had *D. folliculorum* (mean 29.3/cm^2) and 45.1% had *D. brevis* (mean 4.3/cm^2) infestation (Fig. 1).

The infestations were mostly found in the cheek (mean 21.2/cm^2), followed by the nasolabial area (mean 9.4/cm^2) and the chin (mean 7.4/cm^2). The difference between *Demodex* infestation and facial areas was statistically significant (p < 0.001; Fig. 2).

The value of skin moisture, pH, and skin temperature of the elderly individuals are presented in Figure 3. In the study, *Demodex* mites were detected in 88.5% individuals with low skin moisture content (mean 26.0/cm^2) and 74.4% individuals with moderate skin moisture content (mean 13.5/cm^2). There were no elderly individuals with high skin moisture content. On the other hand, *Demodex* mites were detected in 83.3% individuals with skin a pH of 4.0-5.5 (mean 14.6/cm^2) and in 82.1% individuals with a skin pH of 5.6-7.0 (mean 23.5/cm^2). It was found that 78.3% individuals had skin temperature of 18.0°C-23.0°C (mean 17.3/cm^2), and 86.7% individuals had skin temperature of 23.1°C-28.0°C (mean 24.7/cm^2). There was a significant difference in the density of *Demodex* mites according to skin moisture levels (p = 0.035). However, there was no significant relationship between skin pH, skin temperature, and the density of *Demodex* mites (Table 1).

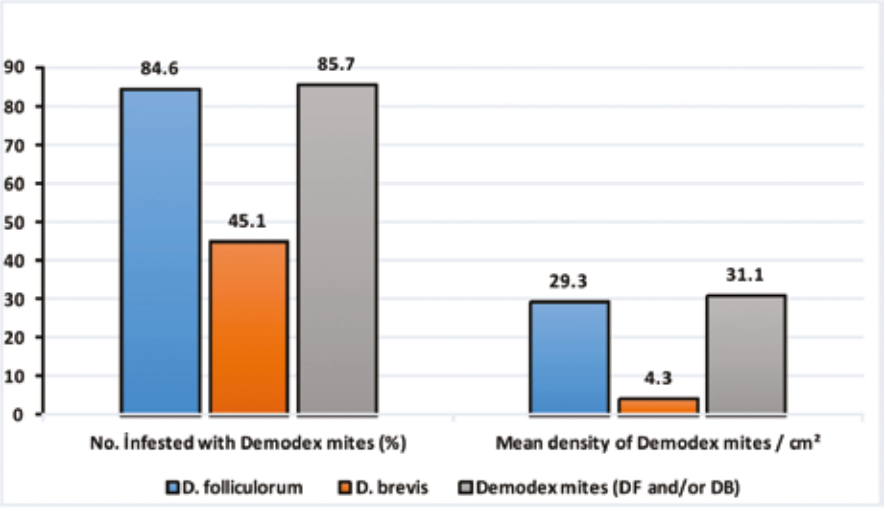


Figure 1. The infestation of *Demodex* mites in elderly

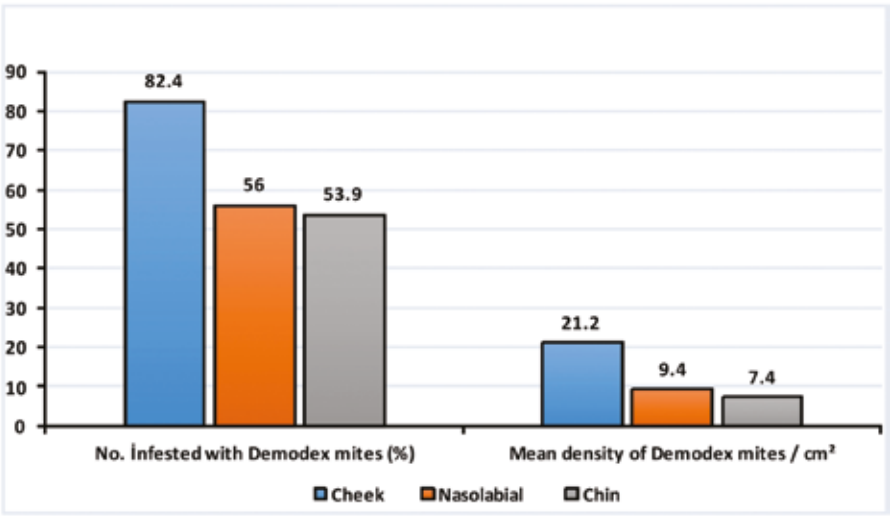


Figure 2. The distribution of *Demodex* mites in facial region

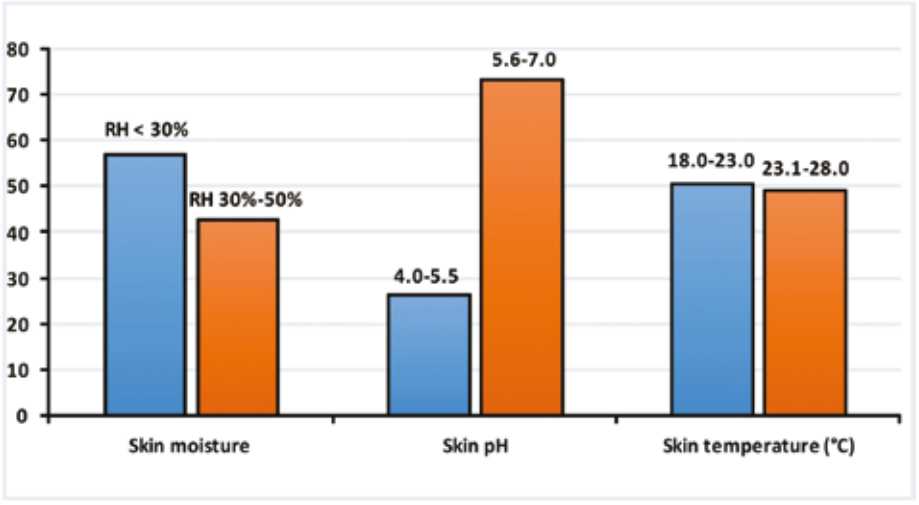


Figure 3. The value of skin moisture, skin pH and skin temperature in elderly

When assessed according to the demographic features, *Demodex* mites was detected in 87.8% females (mean 40.2/cm^2) and 84% males (mean 23.4/cm^2); in addition, *Demodex* was detected in 96.7% individuals aged 65-74 years (mean 24.4/cm^2), 78.1% individuals aged 75-84 years (mean 34.7/cm^2), and 80.8% individuals aged 85-95 years (mean density 37.2/cm^2). With regard to literacy status, *Demodex* mites was detected in 83.8% literate individuals (mean 23.3/cm^2) and 87.0% illiterate individuals (mean 36.3/cm^2). The relationship between gender and density of *Demodex* mites was statistically significant ($p = 0.031$), whereas age and literacy status were not significantly related to the density of *Demodex* mites (Table 1).

Table 1. The relationship between *Demodex* infestation and skin moisture, skin pH, skin temperature, demographic characteristics and other parameter

		No. infested with *Demodex* mites	Mean density of *Demodex* mites /cm²	P
Age (year)	**65 - 74**	32 / 33 (96.7%)	24.4	0.599*
	75 - 84	25 / 32 (78.1%)	34.7	
	85 - 95	21 / 26 (80.8%)	37.2	
Gender	**Female**	36 / 41(87.8%)	40.2	0.031**
	Male	42 / 50 (84.0%)	23.4	
Literacy status	**Literate**	31 / 37 (83.8%)	23.3	0.057**
	Illiterate	47 / 54 (87.0%)	36.3	
Rehabilitation services	**Receiving**	41 / 47 (87.2%)	33.8	0.990**
	Not receiving	37 / 44 (84.1%)	28.2	
Admitted to way the nursing home	**Paid**	35 / 41 (85.4%)	24.6	0.817**
	Unpaid	43 / 50 (86.0%)	36.5	
Living time in nursing homes (year)	**1-2**	27 / 30 (90.0%)	27.2	0.833*
	3-4	23 / 27 (85.2%)	25.7	
	5+	28 / 34 (82.4%)	39.4	
Daily medications	**Yes**	49 / 56 (87.5%)	37.8	0.018**
	No	29 / 35 (82.9%)	19.9	
Skin moisture	**RH < 30%**	46 / 52 (88.5%)	26.0	0.035**
	RH 30% - 50%	29 / 39 (74.4%)	13.5	
Skin pH	**4.0 - 5.5**	20 / 24 (83.3%)	14.6	0.403**
	5.6 - 7.0	55 / 67 (82.1%)	23.5	
Skin temperature	**18.0°C - 23.0°C**	36 / 46 (78.3%)	17.3	0.090**
	23.1°C - 28.0°C	39 / 45 (86.7%)	24.7	

* Kruskal Wallis test; ** Mann Whitney U test

Demodex mites was detected in 87.2% individuals receiving rehabilitation services (mean 33.8/cm²) and in 84.1% individuals who did not receive rehabilitation services (mean 28.2/cm²). In addition, *Demodex* was detected in 85.4% individuals who were admitted to the nursing home as a paid service (mean 24.6/cm²) and in 86.0% individuals who were admitted to the nursing home as an unpaid service (mean



36.5/cm^2). *Demodex* was detected in 90% individuals who were residents of the nursing home for 1-2 years (mean 27.2/cm^2), 85.2% individuals who have lived in the nursing home for 3-4 years (mean 25.7/cm^2), and 82.4% individuals who have lived in the nursing home for >5 years (mean 39.4/cm^2). Finally, *Demodex* was detected in 87.5% individuals who were on daily medications (mean 37.8/cm^2) and 82.9% individuals who did not receive daily medications (mean 19.9/cm^2). The differences between the groups were not statistically significant, except for daily medication use ($p = 0.018$) (Table 1).

DISCUSSION

Although *Demodex* mites can be found in healthy young persons and particularly elderly without creating any pathogenic effect, they could causing clinical symptoms such as acne, rosacea, perioral dermatitis, seborrheic dermatitis and blepharitis if the immune system of the host is suppressed or do not pay attention to hygienic practices. On the other hand, the elderly population is growing both worldwide and in Turkey. Thus, clinicians are more likely to encounter geriatric patients with dermatological ailments. Thus, the importance of studies on elderly individuals is increasing. There are many studies in the literature about *Demodex* mites prevalence. However, until today no particular study has been conducted to *Demodex* infestation in elderly individuals living in nursing homes. The present study was conducted to evaluate *Demodex* infestation and its relationship with the skin biophysical parameters in elderly individuals living in nursing homes.

In the present study overall, *Demodex* mites (mean 31.1/cm^2) were detected in 85.7% 91 elderly individuals; 84.6% had *D. folliculorum* (mean 29.3/cm^2) and 45.1% had *D. brevis* (mean 4.3/cm^2). Other studies have reported a prevalence rate of *Demodex* mites ranging from 19.7% to 74% and a density ranging from 0.84/cm^2 to 4.4/cm^2 in healthy individuals aged >65 years (6, 8, 15-19). Besides, *Demodex* infestation is very common among the healthy young population either. In our previous study on healthy persons, we reported that the density of *Demodex* mites was 50.1% in university students and 69.3% in the university staff (20). The prevalence rate and density found for *Demodex* mites in the present study are higher than those reported in other studies. This may be caused by methodological differences in the study (i.e., use of cellophane strips, squeezing the skin or the Superficial Skin Biopsy technique), and from living conditions in nursing home, and also from different hygienic behaviors of participants. Consistent with the literature (4, 15, 21, 22), however, *D. folliculorum* was more prevalent than *D. brevis*. This may be caused by the fact that *D. brevis* lives in deeper structures of the skin surface (sebaceous glands attached to the hair follicles), whereas *D. folliculorum* lives in the outer surfaces of the hair follicles (closer to the skin surface) and are more easily isolated.

Various studies have reported that *Demodex* mites could be found other body parts such as genital organs, breasts, scalp, neck, external ear canal in addition to the facial region, but infestation mostly occurs in the facial region and cheeks in which high amount of sebum could cause this (4-6, 8, 15). In the present study, the infestations were mostly found in the cheek (mean 21.2/cm^2) followed by the nasolabial area (mean 9.4/cm^2) and the chin (mean 7.4/cm^2).

Stratum corneum (SC), the outermost layer of the epidermis, is a natural barrier preventing water loss through the skin. However, in elderly individuals, there is an increased loss of water and dry skin (xerosis) because of impaired skin repair and thinning of SC, and the barrier function of the skin is disrupted (5, 14, 23). In the present study, 57.2% elderly individuals had dry skin (RH <30%) and 42.8% had moderate skin moisture content (RH 30%-50%); no individuals had high skin moisture content (RH >50%). In addition, the mean number of *Demodex* mites was 2-fold higher in individuals with dry skin than in those with moderate level of skin moisture content. In our previous study, we reported that the density of *Demodex* mites was higher in healthy

people with a lower skin moisture, however the differences was not significant (20).

Raghallaigh et al. reported that patients with papulopustular rosacea had high skin pH and these patients often suffered from dry skin and sensitivity (24). Another study reported more alkaline skin pH in healthy individuals with *Demodex* infestation than in those without *Demodex* infestation (18). Similarly, Demirdag et al. reported that the skin pH on the cheek of patients with demodicosis was more alkaline, and increased skin pH was suggested to negatively influence water permeability of SC and its barrier functions (5). The other study by Zeytun et al reported that the density of mites was higher in healthy people with a skin pH of 5.1-6.5, however the difference was also not significant (20). Similar to the findings of the present study, 73.6% elderly individuals had a skin pH of 5.6-7.0 and 26.4% had a skin pH of 4.5-5.5; in addition, and the density of *Demodex* mites was 1.6-fold higher in the elderly individuals with a high skin pH than in individuals with a low skin pH.

The number of elderly individuals with a skin temperature of 18.0°C-23.0°C was comparable to the number of individuals with a body temperature of 23.1°C-28.0°C. However, the density of *Demodex* was 1.5-fold higher in individuals with a skin temperature of 23.1°C-28.0°C than in those with a body temperature of 18.0°C-23.0°C. Similarly, in our previous study, we reported that the density of *Demodex* mites was higher in healthy people in those with a skin temperature 24-28°C (20). Various studies have reported dry skin with increasing transepidermal water loss, which in turn results in the impairment of the barrier function of the skin (25, 26). In addition, impaired barrier function of the skin may cause increased proliferation of *Demodex* mites.

One of the most important risk factors for *Demodex* mites infestation is hygienic behaviors of participants. Forton et al. reported that the majority of patients with demodicosis (62%) did not use soap to wash their faces (7). Washing with soap and water probably helps fight mite proliferation by mechanical (face cloth) and chemical (soap) actions, those showing the importance of hygiene. The other study by Zeytun et al reported that *Demodex* mites were very prevalent in healthy individuals who washed their face only once a day, did not use personal face towel (20).

Various studies have reported higher prevalence and density of *Demodex* in individuals aged ≥65 years with poor hygiene practices and self-care, individuals with low educational level and economic status, patients on daily medications, and in immunosuppressed patients (3, 4, 7, 15). The present study also found higher density of *Demodex* in illiterate individuals, receiving rehabilitation services, individuals living unpaid in nursing homes, individuals living in nursing homes for >5 years, and those who use medications daily. This finding can be explained by the fact that most individuals living in the nursing homes require support for their personal care, they pay insufficient attention to personal hygiene practices, and that they have weakened immune system than in young individuals.

In conclusion, elderly individuals which having dry skin, elevated skin temperature, and an high skin pH have been more infested with *Demodex*. However, this topic is necessary investigate with further studies that was used as the control group of elderly individuals who not residing in nursing home. The findings of this study by made basic science researchers may be consider in clinical assessment of skin lesions and dermatoses in geriatric patients. In addition, this study is important in terms of may be guiding for multidisciplinary works conduct of healthcare professionals together with researchers from the basic sciences.

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CASE REPORT

GIANT CELL REPARATIVE GRANULOMA ASSOCIATED WITH MANDIBULAR FRACTURE IN AN ELDERLY EDENTULOUS PATIENT: CASE REPORT

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- Banu ÖZVERİ KOYUNCU
- Gözde TÜRK
- Tayfun GÜNBAY

Abstract

Giant cell reparative granuloma (GCRG) is a benign reactive intraosseous tumour in the head and neck region, characterized by the presence of multi-nucleated giant cells. It often arises in the first 3 decades of life, with a peak in the second and third decades. However initial presentation of GCRG in elderly patients is rare. The majority of patients are asymptomatic and, in some patients, the lesions are incidentally discovered during radiologic examinations. Presentation with pathologic fractures is rare. The treatment of GCRG is usually surgical, but treatment procedures vary depending on the case. The case reported here describes an elderly edentulous female with a pathologic fracture in the anterior mandibular region. Attention has been focused on the dental findings by computed tomography and surgical treatment of GCRG.

Key Words: Granuloma, Giant Cell; Aged; Fractures, Spontaneous

OLGU SUNUMU

İLERİ YAŞTAKİ TOTAL DİŞSİZ HASTADA MANDİBULADA PATOLOJİK KIRIĞIN EŞLİK ETTİĞİ DEV HÜCRELİ REPARATİF GRANULOM- OLGU SUNUMU

Öz

Dev hücreli reparatif granulom (DHRG) baş-boyun bölgesinde bulunan kemiklerde yerleşim gösteren, çok çekirdekli dev hücrelerin varlığı ile karakterize, bening karakterli bir kemik lezyonudur. Sıklıkla yaşamın ilk 3 dekatında tespit edilmektedir; görülme oranı 2. ve 3.dekatta artış göstermektedir. Bununla birlikte ileri yaştaki hastalarda DHRG'nın ilk defa tespit edilmesi sıra dışı bir durum olarak kabul edilmektedir. Hastaların büyük çoğunluğu asemptomatik olmakla birlikte, birçok hastada lezyon rutin radyografik kontrolde tespit edilmekte, nadiren lezyona patolojik kırık eşlik etmektedir. Tedavisi genellikle cerrahidir ancak tedavi seçenekleri vakaya göre değişkenlik göstermektedir. Bu olgu sunumunda ileri yaşta bulunan dişsiz bir hastada mandibular anterior bölgede patolojik kırığın eşlik ettiği DHRG'nin tomografik bulguları ile tedavisi tanımlanmıştır.

Anahtar Sözcükler: Granüloma; Dev Hücreli; Yaşlı; Kırıklar; Spontan

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INTRODUCTION

Giant cell reparative granuloma (GCRG) is a rare solitary bone tumour with unclear etiology and is located in the head and neck region. Although GCRG is a benign, non-odontogenic tumour, it can be locally destructive (1,2).

GCRG accounts for 1%–7% of all benign lesions of the jaw. It is more common in women than in men, and its occurrence is highest in the 2nd and 3rd decades of life. Head and neck involvement of the mandible and maxilla, especially the anterior region of the jaw, is frequently observed (1,3). Etiopathogenesis of these lesions remains unknown, and it is characterized as a trauma or infection-related reactive bone lesion (4).

GCRG is usually a slow-growing lesion, while fast-growing lesions are rare (5,6,7). Despite its innocent histological appearance, GCRG has an aggressive behaviour that clinically mimics a malignant lesion (1). Depending on the location of the lesion, clinical symptoms such as localized swelling, pain, bleeding, nasal obstruction, epistaxis and displacement of teeth may be observed (6,7). A diagnosis is made based on the findings of clinical examinations, radiologic investigations, laboratory tests and histopathological examinations (3).

This report describes the diagnosis and treatment of a rare case of GCRG in an elderly edentulous female with a large lesion and pathologic fracture in the anterior mandibular region. In this report, attention has been focused on the dental findings by computed tomography and surgical treatment for GCRG.

CASE

A 78-year-old edentulous female was diagnosed in our department with a 1-month history of expanding swelling in the anterior region of the mandible and problem with wearing existing removable complete dentures. The patient was edentulous and had been using a complete dentures for more than 20 years. There was no history of trauma in the recent past. She had no systemic complaints, and routine laboratory tests were normal.

Clinical evaluation revealed a mandibular asymmetry of the right mandibular body without any associated cervical lymphadenopathy. Panoramic radiography showed a well-defined radiolucent lesion with insufficient distance between the lesion and the inferior border of the anterior region of the mandible (Figure 1). A cone-beam computed tomography (CBCT) was performed to evaluate the lesion; the lesion was located centrally in the anterior right mandible, with a proximal–distal diameter of 21.0 mm and a buccal–lingual diameter of 13.6 mm (Figure 2). CBCT images showed expansion and perforation of the buccal and lingual cortical plates with a fracture line (Figure 3A,B).



Figure 1: Preoperative radiograph of a well-defined radiolucent lesion which was causing insufficient distance between the lesion and inferior border of the anterior region of mandible.

Based on the clinical and radiological findings, it was presumed that the lesion could be a benign tumour; therefore, surgical treatment was planned and performed under local anaesthesia. The mandible was approached via intra-oral access, and the lesion was completely excised (Figure 4). Because of the presence of the fracture line, an osteosynthesis plate was placed on the buccal cortical bone in the anterior mandibular region. A pre-modelled titanium 2.0-mm miniplate (Synthes GmbH, Switzerland) with 14 holes was adapted to the buccal cortical bone. After the adaptation of the plate, 9 holes were drilled into the bone, and the miniplate was fixed using 10-mm screws. During the adaptation of the plate, attention was paid to the protection of the mental nerve (Figure 5A, B). The surgically removed enucleated material

was sent for histopathologic examination, which confirmed the diagnosis of GCRG (Figure 6). Routine and special analyses of blood samples were performed to rule out hyperparathyroidism.

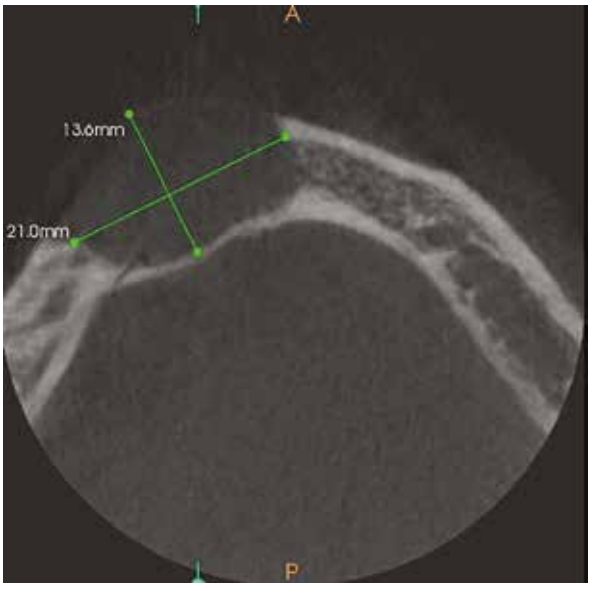
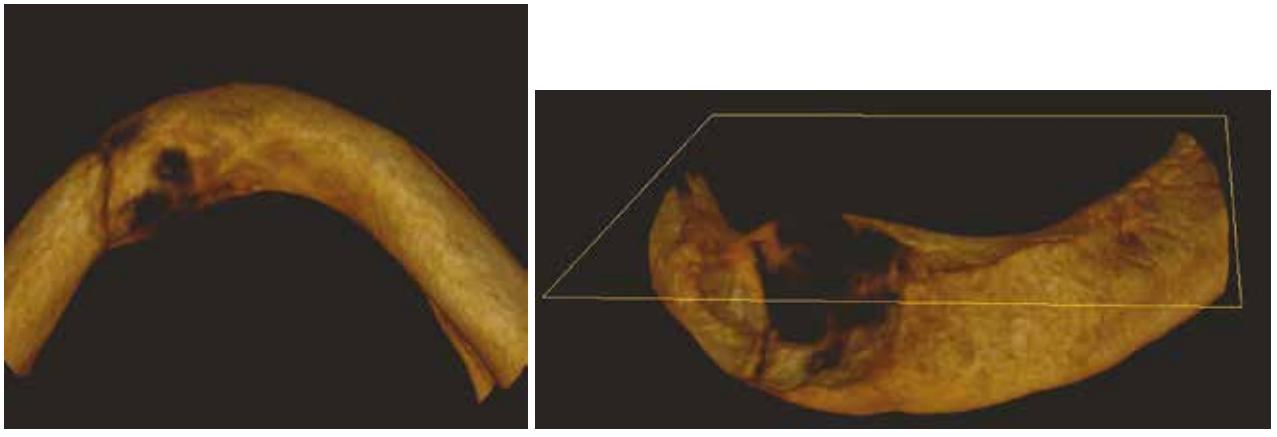


Figure 2: Evaluation of lesion size on cone beam tomography.

The patient was scheduled for frequent routine follow-ups. During the follow-up period, the patient's prosthesis was relined with a soft liner (Viscogel, Dentsply, DeTrey, Germany). Radiologic examination performed after 2 years showed no signs of recurrence, and the patient's complete set of dentures was re-fabricated (Figure 7,8).



- a - **- b -**

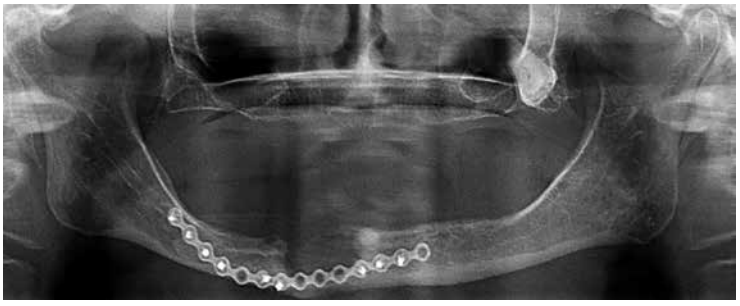
Figure 3 A, B: CBCT images showed expansion and perforation of the buccal and lingual cortical plates with a fracture line.



Figure 4: The lesion was completely excised under local anesthesia.



- a -



- b -

Figure 5 A, B: A straight titanium miniplate was pre-modeled and adapted to the buccal cortical bone. During the adaptation of the plate attention was paid to the protection of the mental nerve.

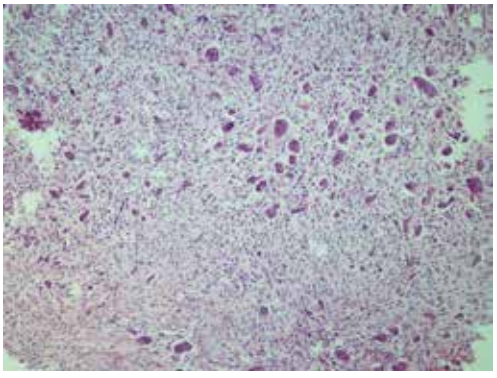


Figure 6: Histopathological view of the lesion.

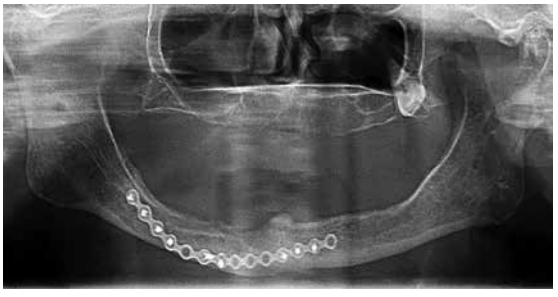


Figure 7: Radiologic examination performed after 2 years showed no signs of recurrence.



Figure 8: The patient's complete set of dentures was re-fabricated.

DISCUSSION

The term GCRG, an uncommon benign tumour in the head and neck region, was reported by Jaffe in 1953 to describe a reactive intraosseous lesion of the jaw following trauma. Its etiology was described as a trauma-induced bone haemorrhage; however, many patients with GCRG have no history of trauma (4). Local irritation factors such as poor dental restoration, unstable dental prosthesis, dental extraction, plaque and calculus accumulation and food retention appear to play a significant role in the development of GCRG and have been established as causes in some cases (8). Although the biological behaviour of GCRG is still poorly understood, some reports suggest that growth and recurrence of this lesion increases during pregnancy and in the postpartum period, suggesting that hormonal factors play a role in the development of GCRG (3,9). GCRG typically occurs in young adults and is twice as common in females compared with that in males (8). Although GCRG has been observed in patients of all ages, 74% of patients are under the age of 30 years at initial presentation (3). Initial presentation of GCRG is uncommon in patients aged 50 years and above (10). In such cases, in addition to clinical and radiological examination, parathyroid hormone levels and normal serum levels of calcium, phosphorus and alkaline phosphatase must be examined for diagnostic purposes (1,11).

This report presents an unusual case of an elderly, postmenopausal female. In differential diagnosis, this patient was also evaluated for brown tumours, which are particularly common in postmenopausal women secondary to primary hyperparathyroidism, because of the similarity of histological features.

Although GCRG lesions can be expansive and invasive, generally a majority of patients is asymptomatic. Patients are generally admitted to the clinic with painless swelling on the face or in the oral cavity. GCRG does not involve perineural sheets; therefore, paraesthesia is not frequently observed in these patients. Other symptoms of GCRG are facial asymmetry, nasal obstruction, displacement or loss of teeth and pathologic fractures (12).

In this case, as compatible with the literature, paraesthesia was not observed. During the intra-oral approach, it was discovered that the patient's mental nerve was superficially located because of the atrophy of the mandible; however, the lesion did not affect it. During the adaptation of the titanium plate, attention was paid to the protection of the mental nerve.

Treatment of GCRG is usually surgery, and the surgical procedures range from simple curettage to bloc resection (2). It has been reported that approximately 80% of the cases are treated with surgical excision or curettage, and the recurrence rate after surgery range from 10% to 15% (9). Ficarra et al. reported a 72% recurrence rate in patients with aggressive lesions and 3% recurrence rate in patients with non-aggressive lesions (6), whereas Whitaker–Waldron reported a 46.1% recurrence rate in patients with aggressive lesions. Aggressive lesions have a higher recurrence rate because of the incomplete removal of the lesion; to reduce the recurrence rate, curettage and resections must be

meticulous, and re-examination of the lesion for any remaining mass is required after haemostasis (13).

Because of the disadvantages such as the risk of recurrence after surgery, loss of tooth according to the case and loss of tooth germs, alternative methods to surgical treatment such as the use of daily systemic calcitonin and intra-lesional corticosteroid injections have been proposed. In the literature, weekly intra-lesional corticosteroid injections have been reported to have successful results (14,15). Surgical treatment is recommended for painful lesions that grow rapidly, whereas non-surgical treatment is preferred for small, slow-growing lesions (9). Radiotherapy, another treatment method, may cause malignant transformation in the long-term because of the potential resistance of GCRG to radioactive rays and is therefore not a preferred treatment (16).

In this case, the patient had a history of long-term use of a complete set of dentures; therefore, an unstable dental prosthesis may have acted as an irritating factor and played a role in GCRG development. Additionally, because of the pathologic fracture in the mandible, total curettage of the lesion was chosen instead of a long-term calcitonin or steroid treatment. The lesion did not recur within the 2-years follow-up period, and the complete set of dentures was re-fabricated to avoid soft tissue trauma and possible development of a new GCRG lesion.

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Frequency Of Cardiovascular Diseases And Drug Use In Turkish Elderly Population Followed Up At Cardiology Clinics: The Elderturk Study
Mehdi ZOGHİ, Nil ÖZYÜNCÜ, Ender ÖZAL, Hüseyin Altuğ ÇAKMAK, Çağrı YAYLA, Atilla İÇLİ, Ali Gökhan ÖZYILDIZ, Can Ramazan ÖNCEL, Mehmet Kadri AKBOĞA, Nuri KÖSE, Murathan KÜÇÜK, Lale TOKGÖZOĞLU

Evalution of Geriatric Infections in Past Six Years
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