

The Effects of Age Related Health Problems on Driving: A Cross-Sectional Study from Antalya Yaşa Bağlı Sağlık Sorunlarının Sürücülük Üzerine Etkileri: Antalya'dan Kesitsel Bir Araştırma

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Summary

Objective: The number of older drivers is increasing worldwide. In accidents, the elderly are more vulnerable than the younger drivers, resulting in a higher incidence of injury and death. Common physiologic and pathologic changes in older ages can interfere with driving competencies. Very few researches have been done in Turkey on older drivers. This study aims to discuss the effects of health problems on driving characteristics of elderly people and safer driving methods in the elderly.

Material and Method: This descriptive cross-sectional study was conducted with face-to-face interviews on 423 people aged 50 years and older who applied to Antalya Training and Research Hospital Family Medicine Polyclinic. The questionnaire was designed to determine the socio-demographic characteristics and driving practices of the participants.

Results: The percentage of respondents actively driving was 31.1%. The number of drivers was decreasing with advanced age. Thirty three drivers (7.8%) had stopped driving for a range of reasons mainly related to health problems due to old age. Night sight and neck rotation difficulties were mostly mentioned while driving. Older drivers usually self-limit or stop driving in case of any limitations.

Conclusion: Old age is related with more chronic diseases which can affect driving abilities. Physical limitations might put the older driver on risk for accidents. Physicians should consider the driving status when evaluating elderly patients' health.

Key words: Aged, driving, health problems.

Özet

Amaç: Yaşlı sürücülerin sayısı dünya çapında artmaktadır. Kazalarda, yaşlılar genç sürücülerden daha hassastır, bu da yaralanma ve ölüm sıklığının artmasına neden olur. Yaşlılıkta sık görülen fizyolojik ve patolojik değişiklikler sürüş yetkinliklerini etkileyebilir. Türkiye'de yaşlı sürücüler hakkında çok az sayıda araştırma yapılmıştır. Bu çalışma, yaşlıların sağlık sorunlarının sürücülük özelliklerine etkisini ve yaşlılarda daha güvenli sürüş yöntemlerini tartışmayı amaçlamaktadır.

Gereç ve Yöntem: Bu tanımlayıcı kesitsel çalışma, 50 yaş ve üzeri Antalya Eğitim ve Araştırma Hastanesi Aile Hekimliği Polikliniği'ne başvuran, 423 kişi ile yüz yüze görüşülerek yapıldı. Uygulanan anket katılımcıların sosyodemografik özellikleri ve sürücülük uygulamalarını belirlemeye yönelik olarak hazırlanmıştı.

Bulgular: Aktif olarak sürücülük yapan katılımcıların oranı %31,1 idi. İleri yaşla birlikte sürücü sayısı düşüyordu. Otuzüç sürücü (%7,8), yaşlılıktan kaynaklanan sağlık sorunları ile ilgili bir dizi nedenden dolayı araç kullanmayı bırakmıştı. Araba kullanırken en sık karşılaşılan zorluklar gece görme sorunları ve boyun rotasyonunda kısıtlılık olarak belirtilmiştir. Yaşlı sürücülerin herhangi bir sorunla karşılaşma durumunda genellikle sürücülükten vazgeçtikleri saptanmıştır.

Sonuç: Yaşlılık, sürüş becerilerini etkileyebilecek daha kronik hastalıklarla ilişkilidir. Fiziksel kısıtlamalar yaşlı sürücülerini daha fazla kaza riskine sokabilir. Hekimler yaşlı hastaların sağlığını değerlendirirken sürücülük durumunu değerlendirmelidir.

Anahtar kelimeler: yaşlı, sürücülük, sağlık sorunları.

Introduction

Demographic aging is a worldwide phenomenon without any exception. In Turkey, 65 years and older population was found to be 8.5% of the total population in 2017. It is expected to increase to 16.3% in 2040 (1). This increase creates challenges in relation to an expected increase in the number of older drivers in comparison to the total number of licensed drivers. A research study conducted in the United States showed an increase of 19% for male drivers and 23% for female drivers aged 65 years and older for the period 1993–2003 (2). The number of driving license holder and the percentage of drivers 65 years and older is increasing similarly in Turkey (3).

In The Road Safety Annual Report 2018 of The International Transport Forum; it is stated that the number of people aged 65 years or older has almost doubled between 1994 and 2015. Their ratio is expected to reach 16% of the world population by 2050 (1994: 6%). According to the same report; more fragile and vulnerable than younger age groups, senior citizens have nonetheless become more mobile than in the past and thus more exposed to traffic risks (4). The driver age-group from 18 to 25 years causes the most traffic accidents. The number of driver related accidents declines up until the age of 70 years when the risk for accidents starts to increase again. Mortality due to traffic accidents is increasing. Despite older people is known as safe drivers (use of seat belts, limiting speed, etc.) they are nevertheless prone for their risk of death following a motor accident. The death rate for the 85 years and older driver population compared to that for the 25-69 year age-group drivers is found to be more than nine-fold even when corrected for driving distance (5). Health problems (i.e. osteoporosis, chronic illnesses, disability, and multiple organ failure, etc.), longer reaction time and visual impairment are increasing the vulnerability of older drivers in traffic accidents. Traffic accidents are the leading cause of accident-related death among the 65–74 year age-group drivers and represent the second highest cause of death after falls especially among drivers in the 75- to 84 year age group (6).

There is no consensus about the effectiveness of obligatory health checks and license renewal procedures based on age. Report of the Organisation for Economic Co-operation and Development (OECD) reveals that routine obligatory health checks are not always an effective means for the prevention of traffic accidents among older drivers (4). In 2016, a new driver license renewal process has been introduced for Turkey, where driving licenses need to be renewed every 5-10 years and requiring a full medical examination (7).

Driving is a complex act in which many stimuli need to be processed at the same time. The prevalence of chronic diseases in older age can negatively influence this processing ability. In combination with the presence of polypharmacy related side effects an increased possibility for an unsafe driving experience may occur. The common diseases causing untoward risks for older drivers include osteoarthritis, complicated diabetes, cancer, cardiovascular diseases (in case of syncope), neurologic diseases (stroke, dementia, multiple sclerosis, Parkinson's disease), visual problems (cataracts, glaucoma), psychiatric disorders (depression, mania, and psychosis), respiratory problems, sleeping apnea, and hearing problems (6). Good vision is the most important component required for safe driving (5). Physiologic changes and common eye diseases of old age must be taken into consideration when issuing and/or renewing driving licenses. It is to be noted that older drivers even with small visual problems can frequently experience visual difficulties (8).

Driving often requires the need to make fast decisions. This means that cognitive functions must not be compromised to the extent that driving is made hazardous. While it is common for cognitive functions to display some decline with advanced age, it does not necessarily interfere with mental health and the daily lives of the majority of older people. On the other hand, early dementia-related problems can signal the need to carefully monitor. Older driver behavior as progressive decline in cognitive function will warrant complete cessation of driving (9). Overall muscle strength, neck movements, and joint flexibility are important for enabling the older person to both enter and exit the car, to use the

seat belt, to control the steering wheel, and to maneuver the mirrors (10). The reaction time for older drivers is generally longer than for younger drivers often forcing the older drivers to compensate by restricting their driving speed (11).

Self-regulation of driving is common among people with limited physical health. It is also common practice for older drivers to limit their driving to daylight hours as visual acuity is more difficult when driving at night time. On the other hand, driving cessation has been found to have several negative health outcomes such as depression, sense of loss of independence and limited social activities and social isolation even the probability of death is found to be increased (2,12,13,14,15,16).

Not much is known about the situation of elderly drivers in Turkey. The current number of elderly drivers will increase in the near future due to the aging population. This descriptive study aims to gain some initial perspectives on elderly drivers and health related problems that could be useful for conducting larger studies.

Material and Method

This exploratory research was designed in a cross-sectional and descriptive style.

Ethics committee approval was taken from the local ethics committee with the decision number 2013/29-04. The principles of the Helsinki Declaration were complied and the participants were informed; written and oral consent was obtained.

Data were collected at the Department of Family Medicine in Antalya Training and Research Hospital, Turkey. Recruitment for the study was initiated in December 2013 and was completed in February 2014. Total 423 patients aged 50 years and older, admitting the Family Medicine Outpatient Clinic for any reason, were included in the study. The cut off age has been selected as 50 due to the earlier retirement age in Turkey. Patients were given information about the aim of the research and were asked for their consent. There were no exclusion criteria. Thus; all patients who were

able to communicate and admitted to the clinic out of the working hours. Total 1898 patients aged 50 years and above admitted the clinic during the research dates. Rush hour applications (9.00-10.30 and 13.00-14.30) were not asked for participation due to the work load of the family physician applying the questionnaires. In total 548 patients were asked to participate in research and 125 patients refused to participate for any reason. The participation rate was 77%.

The questionnaire was purposely developed for the aim of this study and comprised of two parts. The first part was based on socio-demographic characteristics of the respondents and the second part focused on driving practices. Descriptive statistics were used to profile the sample. All the analysis was performed using SPSS 16.0 for Windows. Statistical significance was declared at $p < 0.05$.

Results

Total 423 respondents, 249 females (58.9%) and 174 males (41.1%) were included in the study. The mean age was 65.1 (SD:8.4, min 50, max 86) years. Majority (55.3%; n:234) had primary school education.

Among 423 participants; 254 (60%) were not drivers and 33 (7.8%) have indicated that they stopped driving for any reason. The relationship between education level and driving was statistically significant indicating a higher driving percentage with increased education ($p < 0.001$). In total, 32.2% (n: 136) of the respondents were actively driving and only 7.6% (n:19) of females were still driving while the male driver percentage was 67.2% (n:117). The relation between gender and driving was also statistically significant in the favor of the males ($p < 0.001$), (Table 1). Driving practice was also compared with the age of the respondents. The percentage of those still driving among the age group 50-64 years was similar to those 65 years and older (respectively; 33.0% and 31.3%). However, in the group of 65 years and older had higher number of drivers who quit driving (respectively; 24 and 9), and the difference was also statistically significant ($p = 0.012$) (Table 2).

A total of 18 females and 15 males had indicated that they had stopped driving for various reasons that included health problems (n:25; 75.8%), financial restraints (n:3; 9.1%), traffic conditions in Antalya (n:2; 6.0%), and a primary consequence of their advanced age (n:3; 9.1%). It is noted that among 136 drivers, 25 (18.4%) mentioned some difficulties while driving. Night sight problems were among the leading difficulties (n:13; 52.0%) and also neck rotation was mentioned as a problem (n:8; 32.0%) as well as issues associated with getting in and out (n:3; 12.0%) of the car. Two (8.0%) respondents mentioned multiple problems.

Difficulties in turning the steering wheel, braking, and parking (each n:1; 4.0%) were only mentioned by individuals 80 years old and over.

None of the respondents got any driving assessment prior the decision to stop driving and neither got advise from their family physicians about their driving abilities. Among 33 respondents who stopped driving, 12 were warned by their spouses and/or relatives and the rest (21 respondents) came to the decision by self evaluating their health related restrictions.

Table 1. Driving status by gender.

Gender	Driving status				p
	Driver n (%)	Not driver n (%)	Stopped n (%)	Total n (%)	
Female	19 (7.6)	212 (85.1)	18 (7.2)	249 (58.9)	<0,001
Male	117 (67.2)	42 (24.1)	15 (8.6)	174 (41.1)	
Total	136 (32.2)	254 (60.0)	33 (7.8)	423 (100.0)	

Table 2. Driving status by age groups.

Age groups	Driving status			
	Driver n (%)	Stopped n (%)	Not driving n (%)	Total n (%)
50 - 64 years	70 (33.0)	9 (4.2)	133 (62.7)	212 (50.1)
≥ 65 years	66 (31.3)	24 (11.4)	121 (57.3)	211 (49.9)
Total	136 (32.2)	33 (7.8)	254 (60.0)	423 (100.0)
p*	0.012*		* "Not driving" column is excluded for calculation	

Discussion

The elderly need to be able to drive the car in order to be in life and not to get out of the community (17).

This study revealed a low percentage of drivers over 50 and older and a pronounced male presence among older drivers which is also consistent with the official data of driving license holder by age and gender (3). The significant relation between education level and driving license ownership is not surprising as to have at least an elementary education is the prerequisite to hold a driver license.

There is no national statistics about the number of elderly in Turkey who have stopped driving. It was found that 33 of 169 previously driving respondents stopped driving for any reason and 25 experienced physical difficulties during driving. Night sight problems were mentioned as the main complaint which was compensated by limiting driving to daylight. None of our respondents mentioned any use of a car adaptation technology. To limit driving hours or to stop driving for health reasons are common practices among elderly population. This has been seen by few researchers as a good example of the “selective optimization with compensation” theory of Baltes, where the elderly adapt to their physical limitations as a way to successful aging (18). Molnar

found that 25% of the drivers aged 65 years or above adapted new driving practices in relation to their physical or mental performances. About 19.1% limited their driving only to daylight, 13.2% were driving only in well-known areas where they used to live, and 8.8% stopped driving in bad weather conditions (12). Another study conducted among drivers aged 75 years and above found that they limited their driving in bad weather conditions, at night, and at peak-hour traffic (19).

Family physicians (FP) are often responsible for the evaluation of older driver competence and overall ability to hold a driving license in many countries. FP's are not entirely comfortable with evaluating the abilities of older drivers despite having access to guidelines to assist them in the decision-making process. It seems that many FPs are simply unwilling to compromise their relations with older patients, which can occur as a result of a negative evaluation of their driving ability (20). There is neither a guideline to assess driving and driving safety nor legislation available in Turkey to intervene with this situation.

Conclusion

All doctors who see elderly patients should keep in mind that their patient might be a driver and they have to evaluate the risk if there is any. They should interfere, in case they see any risk to protect their patients. Asking patients about driving is not an existing practice but even to ask the driving status could bring the subject of driving at old age forward and could benefit the elderly drivers, their relatives, and the society on the whole.

One can easily foresee that in the near future, driving and aging and the related challenges will be important issues of road transportation and safety in Turkey and in all other countries. The present study can be seen as a preliminary study of older drivers in Turkey. Further studies are needed to evaluate the prevalence of problems of old age while driving, the outcomes of restricting or quitting driving. Country specific guidelines to evaluate driver

safety could be developed according the future study results.

Limitations: The main limitation of the study is that the recruitment of participants from individuals attending a primary care center indicating a higher rate of physical problems might have caused a possible selection bias of participants and cannot be considered as a random sample. Therefore the results of this study should not be generalized.

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