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■ Çiğdem SAMANCI TEKİN[1]
■ Fatih KARA[2]

CORRESPONDANCE
Çiğdem SAMANCI TEKİN
Niğde Ömer Halisdemir University, Zübeyde Hanım Medical School, Public Health Nursing, Niğde, Turkey

Phone: 03882112872
e-mail: scigdem@ohu.edu.tr

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[1] Niğde Ömer Halisdemir University, Zübeyde Hanım Medical School, Public Health Nursing, Niğde, Turkey
[2] Selçuk Üniversity, Faculty of Medicine, Department of Public Health, Konya, Turkey

RESEARCH

INCIDENCE OF HOME ACCIDENTS IN 65 YEARS OF AGE AND OLDER INDIVIDUALS AND RELATED FACTORS

Abstract

Introduction: This study aims to investigate the incidence and related factors of home accidents in old individuals living at home.

Materials and Method: 1185 individuals aged 65 years and above, living in Niğde Province city centre participated in this sectional study. The data were collected through a survey form prepared by the researcher after literature review, Activities of Daily Living Assessment Form and Instrumental Daily Life Activities Form of Lawton and Brody. Chi-Square and logistic regression analysis were used for assessing the data.

Results: Mean age of participants was 71.1±6.1 years, and incidence of home accidents within the past year was 20.3%. The most common accident types were falls (75.8%), cuts and injuries (12.1%) and burns (8.8%). Accidents occurred frequently in winter and in bedrooms or living rooms. In terms of underlying causes for home accidents, primary individual factors were loss of balance and lack of attention, while domestic risk factors were wet floor and tripping. Women and the people who were independent of the majority of basic Activities of Daily Living (ADL) and Instrumental Activities of Daily Living (IADL) suffered more home accidents.

Conclusion: More than a third of the old people, who had home accidents, experienced them twice or more within the past year. This indicates that home accidents have not been given sufficient attention. It is believed that adjusting home conditions of old people to prevent accidents and training them as well as their caregivers about home accidents can decrease such incidences.

Keywords: Aged; Accidents, Home; Risk factors; Turkey

ARAŞTIRMA

65 YAŞ VE ÜSTÜ BİREYLERDE EV KAZALARI GÖRÜLME SIKLIĞI VE İLİŞKİLİ FAKTÖRLER

Öz

Giriş: Bu çalışmanın amacı evde kalan yaşlılarda ev kazaları geçirme sıklığı ve ilişkili faktörleri araştırmaktır.

Gereç ve Yöntem: Bu kesitsel çalışmaya Niğde İl merkezinde yaşayan 65 yaş ve üstü 1185 yaşlı katılmıştır. Araştırma verileri, araştırmacı tarafından literatür bilgileri taranarak hazırlanan anket formu ile Günlük Yaşam Aktivitelerini (GYA) Değerlendirme Formu ve Lawton ve Brody'nin Enstrümental Günlük Yaşam Aktiviteleri (EGYA) formu aracılığıyla toplanmıştır. Verilerin değerlendirilmesinde Ki-kare ve lojistik regresyon analizi kullanılmıştır.

Bulgular: Araştırmaya katılanların yaş ortalaması 71.1±6.1 yıl, son bir yılda ev kazası geçirme sıklığı %20.3'tür. Ev kazası geçirenlerin %37.5'i son bir yılda iki ve daha fazla ev kazası geçirmiştir. En çok görülen kaza türleri düşme (%75.8), kesik-yaralanma (%12.1), yanma (%8.8)'dır. Kazalar sıklıkla kış mevsiminde, oda-salonda meydana gelmiştir. Ev kazası açısından, bireysel faktörlerden denge sağlayamama ve dikkatsizlik, konut risk faktörlerinden zeminin ıslak olması ve ayağın takılması etkenleri, ev kazası geçirme nedenleri arasında ilk sıralardadır. Kadınlar ve temel günlük yaşam ve enstrümental günlük yaşam aktivitelerinin çoğunda bağımsız olanlar daha fazla ev kazası geçirmişlerdir.

Sonuç: Ev kazası geçiren yaşlıların üçte birinden fazlasının son bir yılda iki ve daha fazla ev kazası geçirmiş olması, ev kazalarına gereken önemin verilmediğini göstermektedir. Yaşlıların ev koşullarının kazaları önlemeye yönelik olarak düzenlenmesi, yaşlıların ve onlara bakım verenlerin kazalar konusunda eğitilmesinin ev kazaları sıklığını azaltacağı düşünülmektedir.

Anahtar sözcükler: Yaşlı; Ev kazaları; Risk faktörleri; Türkiye

INTRODUCTION

Ageing is a natural process of human life. However, no matter how natural and ordinary it is, old age and ageing appear as undesirable phenomena (1). Physical, psychological and social insufficiencies, problems with the muscular and skeletal system, loss of sensory and motor functions increase the dependency of old people on others as well as the risk of having accidents (2). Especially 65+ individuals are in high risk in terms of having home accidents (3).

Number of fatal home accidents such as falls has seen a steeper increase than demographic tendencies (4). Injuries, hospitalisation and ER visits due to home accidents have been predominant. Home accidents take the first place in terms of non-fatal injuries in the elderly (51%) (5). It is stated that home accidents are realised later than other types of accidents because they usually occur inside the house, are unnoticed by others and are not always reported to health authorities (6, 7). Although the rate of home accident incidents is lower in 65+ individuals than in younger age groups, the resulting injuries tend to be more serious. Especially the 75+ age group is most seriously affected by these injuries. Because the rate of female individuals is higher in the population, old females experience more home accidents than old males (8). Falls are the main form of home accidents that old people experience (9).

MATERIALS AND METHOD

Design and setting

This sectional study, which aims at determining the home accidents experienced by old individuals and the relevant risk factors, was conducted in the Niğde Province city centre of Turkey with 1185 old individuals between April 2015 and November 2016. A population weighted cluster sampling method was used in the study as recommended by WHO for health studies carried out in large geographical areas (10). An incidence range between 10.1% and 65.3% is mentioned in the literature for home accidents. The calculation of the sample size was based on an incidence level of 56.9% (11). In the sample size calculation, the following values were taken as basis: α=0.05, β =0.20 %10 deviation and cluster effect=2. According to this calculation at least 1174 individuals had to be reached.

The study had a cluster volume of 15, which is larger than 7 recommended by WHO. Accordingly, the number of clusters was calculated as 79 (1174/15=78.3, rounded to 79. 79*15=1185 individuals reached). Neighbourhoods were organised alphabetically. Cumulative populations were calculated in the list created. Residential units out of which the clusters would be taken were determined through population weighted systematic methodology.

Based on the Turkish Statistical Institute 2014 data, the population of Niğde's neighbourhoods and the central population of Niğde were determined (12). The settlements where the clusters will be taken were determined by the population-weighted systematic method. For this, the total population was divided by the number of clusters and the sampling interval was determined (127980/79=1620). The settlement where the first cluster was located was determined by random numbers from the first sample interval. 2.,3.,…,79. Settlements, where the cluster will be located, were determined by adding a sample interval to the cumulative population of the settlement where the first cluster is located.

Data Collection Tools

Survey Form

The survey form aiming at determining the sociodemographic characteristics, health information, home accidents experienced and risk factors in the home environment composed of 4 parts containing 64 questions in total.

Activities of Daily Living Assessment Form

It was developed by Katz et al. in 1963 (13). Katz's Activities of Daily Living (ADL) form assesses an individual's ability to perform activities of daily

living independently. The form, consisting of 6 questions, contains information regarding bathing, dressing, toileting, transferring, continence and feeding activities. The individual is given 3 points if he performs ADL independently, 2 points if he can perform them with assistance and 1 point if he cannot perform them at all.

Instrumental Activities of Daily Living Assessment Form

The Instrumental Activities of Daily Living (IADL) Form, developed by Lawton and Brody in 1969, determines an individual's instrumental activities of daily living (14). The IADL Form consists of 8 questions and covers informatioWn regarding the ability to use telephone, prepare food, do shopping, do housework, do laundry, use means of transportation, use medication and manage own finances (15). The individual is given 3 points if he performs ADL independently, 2 points if he can perform them with assistance and 1 point if he cannot perform them at all.

Data Analysis

Data was summarised as mean±standard deviation and percentage. T test was used for parametric two-group comparison and ANOVA for groups of more than two. Chi-square test was employed for the comparison of categorical data. For the determination of risk factors, parameters where difference in individual comparisons was observed were assessed through regression analysis. The level of significance was taken as 0.05.

Ethical consideration

The permissions to conduct this research were given by Selçuk University Faculty of Medicine Ethical Commission (no.2015/119). For data collection, old individuals were informed and their informed consent was obtained for participation in the study. The researcher performed data collection during face-to-face interviews at the participants' homes, using a survey that was pre-prepared and pre-tested.

RESULTS

49.4% of the participants were female and 50.6% were male. 75.7% of participants were in the 65–74 age group. The mean age was 71.1±6.1 years. 63.5% of the participants were married; in 32.2% of these cases, the spouse was deceased. It was determined that 33.9% of the old individuals were illiterate and 49.9% were primary school graduates. 47.4% of the participants were retired, 47.7% were housewives, 10.5% engaged in farming and 93.0% had social security. 81.0% of the participants had regular income, where 61.5% reported that the income covered their costs. 51.3% lived together with their spouse, 15.4% with their married children and 13.6% on their own. The rate of those who had a home accident within the past year was 20.3%, of which 60.0% were females and 40.0% males (χ^2=13,830, p=0,000).

As for the incidence of home accidents, among those who experienced home accidents within the last year, 62.5% had an accident once, 24.6% twice, 11.7% three times and 1.2% four times. Of all accidents experienced, 75.8% included falls, 12.1% cuts and injuries, 8.8% burns, 3.3% bumps and knocks. Home accidents occurred most frequently at noon time (41.2%) and in winter (36.2).

39.2% of home accidents occurred in the bedroom/living room, 22.9% in the kitchen, 17.5% in the corridor, 14.6% in the bathroom, 3.8% in the toilet and 2.1% on the stairs. Home accidents occurred most commonly while walking (52.9%) and due to loss of balance (22.5%) (Table 1). 30.5% of the old individuals stated that the accident they had experienced did not affect their daily activities, whereas 63.3% reported that their ability to move and perform activities became restricted and 6.2% told that they now act more carefully.

49.2% of the participants who resorted to a health institution following the home accident, 19.6% were hospitalised. 80.9% of the hospitalised individuals suffered from falls and 14.9% from burns. 13.3% had a permanent disability after the home accident.

19.2% of the participants live on the ground floor or in detached houses where the use of stairs is not required. Among the old individuals who live in a house without a lift, 39.6% reported that they experienced difficulties in using the stairway.

51.7% of the dwellings occupied had thresholds within the house. 20.2% did not pay attention to keeping the walking route clear of obstacles. 28.3% tripped on carpets often. 22.9% of the old individuals were often injured because of objects with hard or sharp corners. 28.6% had holding grips in the bathroom, 68.0% took precautions against slipping in the bathroom.31.1% had holding grips in the toilet. 66.8% had night lighting installed. 19.1% could not easily distinguish the on-off status of electronic devices. 90.7% had placed the phone to an easily reachable position, 66.1% knew the emergency phone numbers.

81.4% of the participants suffered from at least one illness. 40.0% had two or more illnesses. 73.8% were on continuous medication. The most common diagnosed diseases the participants suffered from were high blood pressure (54.0%), diabetes mellitus (21.9%), heart diseases (19.9%) and respiratory diseases (asthma, COPD) (16.6%). There was a significant correlation between the presence of an illness and occurrence of home accidents, as well as between the use of walking stick and occurrence of home accidents ($p<0.05$). No significant correlation was found between visual or hearing problems and occurrence of home accidents. ($p>0.05$) (Table 2).

31.1% of the participants stated that they had sleep deficiency. 72.0% of the old individuals consumed less than 8 glasses of water. 16.8% of the old individuals smoked cigarettes and 2.7% consumed alcohol.

Table 1. Activities undertaken during the home accidents and Factor causing the occurrence of home accidents within the last year.

Activitiy causing the home accident	**Occurrence of home accident**		**Factor causing the home accident**	**Occurrence of home accident**	
	N	**(%)**		**N**	**(%)**
Walking	127	(52.9)	Loss of balance	54	(22.5)
Preparing food	46	(19.2)	Lack of attention	53	(22.1)
Bathing	21	(8.8)	Wet floor	43	(17.9)
Toileting	12	(5.0)	Dizziness	40	(16.7)
Reaching up/ getting down	11	(4.6)	Tripping	34	(14.2)
Cleaning the house	12	(5.0)	Moving around in the dark	6	(2.4)
Standing up	7	(2.9)	İmpaired vision	5	(2.1)
Igniting the stove	3	(1.2)	Difficulty in walking	5	(2.1)
Dressing	1	(0.4)			
Total	240	(100.0)	Total	240	(100.0)

Table 2. Relationship between occurrence of home accidents and health condition.

Individuals who experienced home accidents	with N (%)	without N (%)	χ^2	p
an illness	212 (88.3)	18 (11.7)	9.67	0.002
visual impairment	151 (62.9)	89 (37.1)	2.81	0.093
hearing impairment	73 (30.4)	167 (69.6)	0.74	0.390
walking aid	118 (49.1)	122 (50.9)	31.57	0.000

Table 3. Relationship between occurrence of home accident and dependence in daily and instrumental daily life activities.

											χ^2	p
	N	%	N	%	N	%	N	%	N	%		
Bathing	164	68.3	76	31.7	770	81.5	175	18.5	1185	100	19.8	0.000
Dressing	190	79.2	50	20.8	832	88.0	113	12.0	1185	100	12.7	0.000
Toileting	195	81.2	45	18.8	838	88.7	107	11.3	1185	100	9.4	0.002
Movement	110	45.8	130	54.2	565	59.8	380	40.2	1185	100	15.2	0.000
Continence	185	77.1	55	22.9	819	86.7	126	13.3	1185	100	13.5	0.000
Feeding	208	86.7	32	13.3	864	91.4	81	8.6	1185	100	5.0	0.080
Telephoning	128	53.3	112	46.7	609	64.4	336	35.6	1185	100	10.0	0.002
Shopping	132	55.0	108	45.0	597	63.2	348	36.8	1185	100	5.4	0.020
Preparing food	123	51.2	117	48.8	587	62.1	358	37.9	1185	100	9.4	0.002
Doing housework	98	40.8	142	59.2	496	52.5	449	47.5	1185	100	10.3	0.001
Doing laundry	99	41.2	141	58.8	436	46.1	509	53.9	1185	100	1.8	0.174
Using transportation	70	29.2	170	70.8	464	49.1	481	50.9	1185	100	30.7	0.000
Using medication	181	75.4	59	24.6	787	83.3	158	16.7	1185	100	7.9	0.005
Managing own finance	183	76.2	57	23.8	776	82.1	169	17.9	1185	100	4.2	0.039

Table 4. Logistic regression results of daily living activities associated with occurrence of home accidents*.

Variable	Coefficient	Standard error	Wald x^2	p	Odds ratio
Bathing	-.383	.272	1.979	.160	.682
Dressing	-.008	.350	.001	.982	.992
Toileting	.018	.345	.003	.959	1.018
Movement	.118	.204	.334	.563	1.125
Continence	-.266	.240	1.226	.268	.767
Constant	1.371	.072	359.511	.000	

Table 5. Logistic regression results of instrumental daily living activities associated with occurrence of home accidents*.

Variable	Coefficient	Standard Error	Wald x^2	p	Odds ratio
Using telephone	-.298	.181	2.719	.099	.742
Shopping	.436	.219	3.959	.047	1.546
Preparing food	-.080	.219	.133	.715	.923
Doing housework	-.170	.220	.596	.440	.844
Using transportation	-.801	.221	13.160	.000	.449
Using medication	.062	.250	.062	.804	1.064
Managing own finance	067	.247	.073	.812	1.082
Constant	.2.419	.257	88.717	.000	11.235

Activities of daily living scores of the participants

Based on the total scores the participants obtained from the ADL form, 50.5% were independent in all activities, 49.5% were dependent in at least one activity. Across the age groups, dependence increased with age (χ^2=26.058, p=0.000).

Based on the analysis of the relationship between the occurrence of home accidents and the dependence on ADL, the people who were independent in terms of daily life activities such as bathing, dressing, toileting and continence and dependent in terms of movement suffered more home accidents (Table 3).

However, based on logistic regression analysis of the relationship between the occurrence of home accidents and the dependence on ADL, it was determined that the variables of daily living activities had no significant effect on the occurrence of home accidents (Table 4).

Based on the total scores the participants obtained from the IADL form, 21.2% were independent in all activities, 78.8% were dependent in at least one activity.

Based on the analysis of the relationship between the occurrence of home accidents and the dependence on IADL, the people who were independent in terms of instrumental daily life activities such as telephoning, shopping, preparing food and managing own finance and dependent in terms of doing housework and using transportation suffered more home accidents (Table 3).

However, as shown in Table 5, among the IADL, only shopping and using means of transportation variables had a significant effect on the occurrence of home accidents (Table 5).

DISCUSSION

Home is a place where individuals feel safe but it can cause fatal injuries in children and old people (16). Since the aged spend most of their time at home, they are at higher risk of experiencing home accidents (17). Reasons why old individuals experience home accidents include acute and chronic diseases, physiological changes and physical incapability (forgetfulness, tendency to get tired quickly, visual impairment, dizziness etc.) (18). Our study similarly found a correlation between the presence of chronic diseases and occurrence of home accidents and observed that a high percentage of old individuals had at least one chronic disease. Furthermore, the possibility of a home accident resulting in death is higher in old people (19). Therefore, studies aiming to determine the prevalence of home accidents in old individuals and the related risk factors are important in terms of developing preventive measures (20).

In our study, 20.3% of the old individuals stated that they had had a home accident within the past year. Studies in the literature point out an incidence range between 10.1% and 38.6% (21,22,23,24). This variation stems from different age distribution, duration (3 months–6 months–1 year) and place (outpatient clinic etc.) of each study as well as from the fact that, in studies where the prevalence of home accidents in the past year is investigated, the accidents cannot be recalled well or old people just ignore some accidents they experience.

Based on the incidence of home accidents observed in our study, 37.5% of the old individuals who had a home accident within the past year had experienced two or more accidents. It gives rise to the thought that home accidents are underrated and necessary precautions are not taken in the home environment. In our study, it was revealed that home accidents happen most frequently during walking. The fact that falls take the first place among the most common accident types supports this finding. That accidents occurred most frequently in bedroom/living room and during walking may be ascribed to slippery rugs and carpets. It can be concluded that accidents in the kitchen stem from higher number of tools and devices in the kitchen compared to other areas that can lead to accidents as well as from slippery carpets and rugs, and accidents in the bathroom and toilet stem from lack of holding grips as safety against slippery floor.

Apart from the accident itself, further important problems for old people seem to be lack of correct first aid treatment after the accident, low rate of resorting to a health institution, permanent disability because of the home accident, lack of sufficient precautions to prevent new accidents.

More than half of the houses where the old people resided in had door sills. Sills between

rooms and inconveniently placed objects etc. are risk factors that increase incidence of falls (25).

Approximately 10.0% had their telephone at a place not easily reachable, and more than one third of the old individuals did not know the emergency phone numbers. Gür also states in his study that 45.9% of the houses did not keep emergency phone numbers somewhere easily reachable and 17.7% placed the telephone to somewhere difficult to reach (11). This may result from low level of education between the old individuals and presence of relatives in the house who can make the call.

Although no significant correlation was found between home accidents and dependence in terms of ADL, it was observed in our study that old individuals who could perform bathing, dressing, toileting and continence independently had more accidents than those who could not. This could stem from the fact that individuals who can independently perform ADL engage in more activities, have a larger area of activity within the house, and their physical and mental functions degrade with age although they are independent. On the other hand, individuals who could not move independently had more accidents than those who could. As it was observed in our study that old individuals who did not use walking aid such as walking sticks -although they were supposed to- also had more home accidents, it can be concluded that they experience more accidents compared to independent individuals because of lack of walking aid despite the necessity, loss of balance, difficulty in walking, tripping and dizziness.

Similarly, although no significant correlation was determined between home accidents and dependence in IADL, it was observed in our study that old individuals who could use phone, do shopping, prepare food, use their own medication, manage their own finances independently had more accidents compared to those who were dependent in terms of these activities. This could stem from the fact that independent individuals engage in more activities, have a larger area of activity within the house, and their physical and mental functions degrade with age although they are independent. Individuals who were dependent in terms of doing housework and using means of transportation had significantly more accidents than independent individuals. This may be due to the fact that these activities require more physical effort and movement, which dependent individuals cannot fulfil.

To conclude, the fact that old individuals had two or more home accidents within the past year indicates that the importance of home accidents has been underrated. Women and the people who were independent of the majority of basic ADL and IADL suffered more home accidents. The most common type of home accident experienced by old individuals was falls, most frequently while walking, due to loss of balance or dizziness in bedrooms/ living rooms.

It is crucial that current dwellings are adjusted to the needs of old individuals. Risk assessment must be conducted and risks should be minimised. It can be suggested that public institutions such as municipalities, Ministry of Health, Ministry of Family Affairs and Social Policies establish a unit to deal with home accidents.

Despite the high incidence of home accidents there is no sufficient surveillance system for these types of accidents in Turkey. Systematic recording of home accidents is important both to determine the risk factors and to take precautions against these factors.

Conflict of Interest

We had no financial support for this research and no conflicts of interest.

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