

SOCIAL INCLUSION AND INJURIES AMONG ELDERLY**Nika Pavlović¹, Donna Vadlja¹, Maja Miškulin¹, Terezija Berlančić¹, Želimir Orkić¹, Ivan Miškulin¹**¹Faculty of Medicine Osijek, Josipa Huttlera 4, Osijek, Croatia**Summary**

Social inclusion, besides positively contributing to the longevity of an individual, can be a protective factor against various depressive and psychological states with preventative action on injury to older persons as well. The aim of this study was to investigate the association between epidemiological, socioeconomic and sociodemographic features of injuries occurring in the elderly, as well as the association of the social inclusion of the elderly and epidemiological characteristics of the injuries. This cross-sectional study was conducted in the Osijek area from June to August 2017 and involved 215 elderly people who independently completed an anonymous questionnaire that contained questions about sociodemographic, socioeconomic and epidemiological features associated with injuries that they had experienced during the last year as well as about their social inclusion. During one year, 54.9% of the elderly experienced an injury. Participants indicated fall or slip as the most common cause of injury and most commonly outside the home, while the most commonly injured parts of body were knee and ankle. Also, the study has shown how elderly with lower family contact ($p=0.035$) are at increased risk of injury. Given the frequency of injuries among elderly, an important factor in prevention of this public health problem should certainly be the possibility of their social inclusion as well as larger integration into society.

Keywords: elderly, injuries, social inclusion, Croatia**Introduction**

During the aging process, important physiological changes occur in the human body such as slowing down and decreasing the function of the body and adapting the person to aging process and the environment in which a person lives (Despot Lučanin, 2003). Aging, as the last development period of a person's life expectancy, is defined in three ways: chronological age (after 65 years of age), age by status (retirement) or age to functional status (after a certain decline in ability). According to the World Health Organization (WHO) age is divided into the earlier (65-74 years of age), middle (75 to 84 years of age) and deep age (85 and over) (Puntarić et al., 2015). Social inclusion, besides positively contributing to the longevity of an individual (Watanabe et al., 2017), can be a protective factor against various depressive and psychological conditions with preventative action on injury in elderly. Social support, apart from being associated with positive health indicators such as reducing mortality and illness, involves the life of an individual and thus gives it a clear role and purpose (Sanchez-Martinez et al., 2016). Retirement, on the other hand, causes feelings of anxiety and worry about the financial problems and the loss of social contacts acquired during the working period of life, making them more mentally sensitive, more passive and ultimately socially isolated. Socially excluded individuals become lonely and exposed to poor health, mental illness, dementia and premature death

(National Institute for Health and Care Excellence, 2017).

The older population is particularly vulnerable because it is more susceptible to injuries due to reduced motor skills (Hawthorne, 2006) while the reduction of bone density can cause their breakage, thereby increasing the risk of injury (Filipović et al., 2013). In women, reduced bone density due to menopause is more likely to cause bone fractures (Chang & Do, 2015). The most common reason for hospitalization in the age group over 65 years of age is the falls that are therefore a major public health problem (Hawthorne, 2006). According to the WHO data from 2007, 28-35% of people over the age of 65 and 32-42% of people aged over 70 suffered from fall injuries (Filipović et al., 2013) during one year. The study conducted in Australia showed that in 2009, more than 25% of people over 65 years of age suffered from fall injuries (Center for Health Advancement and Center for Epidemiology and Research, 2010) while one United States study claimed how two-thirds of the deaths are due to unintentional injuries caused by falls. Also, about 40% of the population older than 65 years of age suffered from fall injury once a year in their home while one out of 40 people seek a hospital visit due to the fall. Due to fall accident, 5% suffered from the fracture in the age of 65 years, while at the age of 70, that value doubled (Rubenstein, 2006). According to the United Nations Classification, Croatia is in the fourth group of countries with a very old population, and according to the population census from 2011,

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the average age in Croatia is 41.7, which is 2.4 years more than 10 years ago (Filipovic et al., 2013).

The aim of this study was to investigate the association between epidemiological, socioeconomic and sociodemographic features of injuries occurring in the elderly, as well as the association of the social inclusion of the elderly and epidemiological characteristics of the injuries.

Participants and Methods

This cross-sectional study was conducted between August 1st and August 31st, 2017. It included people aged 65 and over in the Osijek area who voluntarily participated in an anonymous questionnaire survey. The questionnaire contained 17 questions and was fulfilled in period of 15 minutes. The questions described the sociodemographic characteristics of the participants, the circumstances of possible injuries, potential risk factors that led to these injuries and questions about the level of social inclusion of the participants. Questions about the level of social inclusion were adapted from the questionnaire survey done by Sanchez-Martinez et al. (Sanchez-Martinez et al., 2016). The range of possible values of social inclusion was from 0 to 7. Values from 0 to 3 meant less social inclusion while the values from 4 to 7 meant a greater level of social inclusion. The study has been approved by the Ethics Committee of the Faculty of Medicine Osijek. Out of 300 divided questionnaires, 220 were returned, which makes up 73% response rate. Out of 220 returned questionnaires 215 questionnaires were statistically analyzed because five were not adequately filled out. The distribution of the frequencies of the investigated variables was processed by descriptive statistical methods and all variables were tested on the normality of distribution by the Komogorov-Smirnov test. The mean values of the continuous variables were expressed by the arithmetic mean and the standard deviation for variables that were distributed normally. Nominal indicators were shown by the frequency distribution by groups and share. To determine the difference between the two independent samples, χ^2 -test was used. Statistically significant differences were expressed at $p < 0.05$. In the data processing, the originally written database programs and Statistic for Windows 2010 (version 10.0, StatSoft Inc., Tulsa, OK) were used.

Results and Discussion

Sociodemographic and socioeconomic characteristics of participants

Out of 215 participants aged 65 and over included in this study, there were 30.7% males and 69.3% females. The average age of all participants was 73 years (range 65 to 98 years). According to the age groups, 54.9% belonged to the age group from 65 to 74 years, while 45.1% were older than 75 years. When observing the education of the participants, 35.8% had an uncompleted or completed elementary school, 46.5% had completed high school while 17.7% of all participants had university degree. According to the marital status, 47.9% participants were divorced, never married or widowed, while 52.1% stated that they are married. By observing their way of living, 42.8% stated how they live alone while 57.2% live with their family, partner or in a nursing home. According to their self-evaluated economic status there were 23.7% participants whose economic status was poorer than the average, 56.8% participants who stated that they economic status is average and 19.5% of those who said that they economic status is better than the average.

Epidemiological characteristics of injuries to the elderly

Among all participants there were 54.9% of those who suffered an injury in the past year while 45.1% were not injured at all. According to the location of the injury, 22.8% of the injuries occurred inside the home, 30.2% out of the home while 47% said they had not suffered an injury in the past year. According to the location of the injury, 22.8% of participants had knee and lower leg injury while 17.5% of the participants reported injuries of more body parts.

Table 1. The frequency of injuries in elderly according to gender

Gender	Falls during the last year		Total	p*
	Yes Number (%)	No Number (%)		
Men	32 (33.0)	34 (28.8)	66 (30.7)	0.509
Women	65 (67.0)	84 (71.2)	149 (69.3)	
Total	97 (100.0)	118 (100.0)	215 (100.0)	

* χ^2 - test

The frequency of injuries in elderly according to gender is shown in Table 1, while the frequency of injuries according to age is shown in Table 2. The study revealed that there was no statistically significant difference in the frequency of injuries according to the educational level of participants ($p=0.691$), according to their marital status ($p=0.687$), according

to their self-estimated economic status ($p=0.575$) and according the way they live ($p=0.212$).

Table 2. The frequency of injuries in elderly according to age group

Age group	Falls during the last year		Total	p*
	Yes Number (%)	No Number (%)		
65-74 years of age	58 (49.2)	60 (61.9)	118 (54.9)	0.063
75+	60 (50.8)	37 (38.1)	97 (45.1)	
Total	118 (100.0)	97 (100.0)	215 (100.0)	

* χ^2 - test

Social inclusion of participants

Among all participants, there were 46.0% of those who said that they were in direct contact or in telephone contact with their close family members from 1 to 2 times per month, while 54.0% have direct contact or contact by telephone with their close family members almost every day. The frequency of injuries in elderly according to the frequency of contact with the close family members is given in Table 3.

Table 3. The frequency of injuries in elderly according to the frequency of contact with close family members

Contact with close family members	Falls during the last year		Total	p*
	Yes Number (%)	Yes Number (%)		
1-2 times per month	62 (52.5)	37 (38.1)	99 (46.0)	0.035
almost every day	56 (47.5)	60 (61.9)	116 (54.0)	
Total	118 (100.0)	97 (100.0)	215 (100.0)	

* χ^2 - test

Contact with close friends from 1 to 2 times per month had 54.9% of the participants while 45.1% were in contact with their close friends almost every day. The frequency of injuries in elderly according to the frequency of contact with close friends is shown in Table 4.

The study revealed that there was no statistically significant difference in the frequency of injuries according to the existence of a person of trust in participants lives ($p=0.658$), according to the existence of a person who helps them in their household ($p=0.676$) and according to the existence of a person who helps them out of the home ($p=0.662$).

Table 4. The frequency of injuries in elderly according to the frequency of contact with close friends

Contact with close friends	Falls during the last year		Total	p*
	Yes Number (%)	Yes Number (%)		
1-2 times per month	66 (55.9)	52 (53.6)	118 (54.9)	0.733
almost every day	52(44.1)	45 (46.4)	97 (45.1)	
Total	118 (100.0)	97 (100.0)	215 (100.0)	

* χ^2 - test

The study found that 44.1% of the participants were with a lower level of social inclusion and 55.9% were with a higher level. The frequency of injuries in elderly according to the level of social inclusion is shown in Table 5.

Table 5. The frequency of injuries in elderly according to according to the level of their social inclusion

Social inclusion	Falls during the last year		Total	p*
	Yes Number (%)	No Number (%)		
Low	52 (44.1)	36 (37.1)	88 (40.9)	0.302
High	66 (55.9)	61 (62.9)	127 (59.1)	
Total	118 (100.0)	97 (100.0)	215 (100.0)	

* χ^2 - test

The results of this study showed that almost half of the participants suffered an injury last year, suggesting that injury in elderly is a significant public health problem.

When observing the possible types of injury among participants, injuries caused by falls are particularly important. This study revealed that 54.9% of elderly experienced some sort of fall in the past year, were 67.0% of those who fell were women. The reason for this is genetic predisposition, such as bone mass reduction during menopause, which makes women more susceptible to falls and bone fractures (Batra et al., 2013; Chang & Do, 2015). Among the most common fall circumstances, 24.2% of them answered slipping. There were further 39.5% of participants who were injured on a flat surface in their home, while 30.2% of the fall incidents occurred outside the home, mostly in garden, 28.1% of them. With regard to the area where the participants live, the possibility of ice during the winter period should certainly be taken into account because any activity outside the home is a potential risk factor for injury. One study has shown that there is no significant association between the

incidence of falls in elderly people and their social inclusion (Durbin et al., 2016). The study conducted in Europe, on a relatively large number of participants had demonstrated that in the circumstances of injury in elderly the family members and relatives are more active around the injured elderly than when he or she is not injured (Pin & Spini, 2016).

This study showed an increased share of fall incidents in elderly with secondary school education (49.2%) as well as in those with slightly worse economic status than average (26.3%) although these differences were not statistically significant. From this it can be concluded that lower incomes are associated with lower life standard, their poorer health habits and reduced medicine availability. One Canadian study found a significant correlation between marital status (widows and divorced elderly persons) and frequency of falls in persons of both genders. An explanation would be that the benefits of marriage are closely related to health behavior such as active life. There was also a significant correlation between the risk of falls and men who had never graduated (Chang & Do, 2015), which was not proven in this study. The study carried out on an elderly population in Egypt emphasized the association of depressed states with the urban way of life, insomnia, disturbed marital life, the elderly who are in need, the absence of religiosity, various life stressors and predominantly female population (El-Gilany et al., 2018). Mohammad et al. (2016) advocate improving the quality of social areas for the elderly population and their communities to enable them to better interact with the younger population. The study on the elderly Chinese population (Pi et al., 2015) confirmed that injuries were caused by falls and how targeted preventive programs, measures and comprehensive interventions such as environmental protection, housing construction, training are needed to improve their quality of life. Another Chinese study on elderly population in nursing homes studied their level of loneliness, social support and depression symptoms, and confirmed the connection between loneliness and depression, which indicates a lower social inclusion (Zhao et al., 2018).

This study has confirmed that elderly people who are in contact with their close family on a daily basis experience less falls than people who contact them 1 to 2 times a month. That also applies for elderly and their friend contacts in the past year. The research conducted in Japan has shown how participation in the social life acts as a preventative factor in elderly population (Watanabe et al., 2017).

One of the limitations of this study is certainly the objectivity of the participants. Participation in

the study was voluntary, which is also one of the limitations. Since the survey covered the area of the city of Osijek, a greater number of participants from the territory of the whole Republic of Croatia should be involved in the following studies.

However, the results of this study confirmed the association between reduced contact with the family and increased falls incidence during one year in elderly population.

Conclusion

Except for frequent injuries, the most common cause of injury among elderly was a fall or slip and the most common location of the injury was knee and ankle. The study did not demonstrate a significant association between sociodemographic and socioeconomic characteristics of subjects with epidemiological characteristics of their injuries. However, the study has shown how elderly with lower family contact are at increased risk of injury. Given the frequency of injuries among elderly, an important factor in prevention of this public health problem should certainly be the possibility of their social inclusion as well as larger integration into society.

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DRUŠTVENA UKLJUČENOST I OZLJEDE U OSOBA STARIJE ŽIVOTNE DOBI

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Sažetak

Društvena uključenost, osim što pozitivno doprinosi dugovječnosti pojedinca, može biti zaštitni čimbenik protiv raznih depresivnih i psihičkih stanja uz preventivno djelovanje na ozljeđivanje kod osoba starije životne dobi. Cilj istraživanja bio je utvrditi povezanost epidemioloških, socioekonomskih i sociodemografskih obilježja ozljeda nastalih kod osoba starije životne dobi kao i povezanost društvene uključenosti osoba starije životne dobi i epidemioloških obilježja ozljeda. Ovo presječno istraživanje provedeno je na području grada Osijeka od lipnja do kolovoza 2017. godine te je uključilo 215 osoba starije životne dobi koji su samostalno popunili anonimni anketni upitnik o njihovim sociodemografskim, socioekonomskim i epidemiološkim obilježjima povezanim s ozljeđivanjem tijekom prošle godine kao i njihovoj društvenoj uključenosti. Tijekom jedne godine 54,9% osoba starije životne dobi doživjelo je ozljedu. Ispitanici su naveli pad ili poskliznuće kao najčešći uzrok ozljede i to najčešće izvan doma, dok su najčešće lokacije ozljede bile koljeno i potkoljenica. Također, istraživanje je pokazalo kako veći rizik za nastanak ozljede imaju starije osobe koje su u manjem kontaktu s bližom obitelji ($p=0,035$). S obzirom da je ozljeđivanje kod osoba starije životne dobi učestalo, kao bitan čimbenik u prevenciji ovoga javnozdravstvenog problema svakako bi trebalo istaknuti mogućnost njihove društvene uključenosti kao i veće integracije u društvo.

Ključne riječi: osobe starije životne dobi, ozljede, društvena uključenost, Hrvatska