Predictors of self-reported physical abuse among hospitalized older adults

Predyktory zgłaszanej przemocy fizycznej wśród hospitalizowanych osób starszych

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Abstract

Background. *Elder abuse and neglect are global problems. Nevertheless, large-scale epidemiological studies are rare. Thus, this study examined the 12-month prevalence of physical abuse, pertinent risk factors, and abuser characteristics among hospitalized older adults.* **Methods.** *In this cross-sectional study, 250 older adults (age ≥ 60 years) completed a researcher-designed questionnaire. Chi-squared analysis and uni- and multivariate logistic regression models were used.* **Results.** *Physical abuse was reported by 21.6% of the participants. The following variables emerged as independent predictors (adjusted odds ratio, 95% confidence interval) of physical abuse: age ≥ 70 years (4.28, 1.87–9.77), primary education (1.61, 0.44–5.93), female sex (2.50, 1.16–5.40), a low socioeconomic status (6.02, 2.38–15.26), city residence (4.18, 1.66–10.49), and the presence of a chronic disease (2.50, 1.08–5.78).* **Conclusions.** *Elder abuse is common in Poland. Living in a city, an older age (>70 years), and the presence of chronic diseases are risk factors for most forms of physical abuse. (Gerontol Pol 2021; 29; 146-157) doi: 10.53139/GP.20212925*

Keywords: *elder abuse, physical abuse, risk factors, victims, perpetrators*

Streszczenie

Wstęp. *Przemoc wobec osób starszych to problem globalny. Niemniej jednak prowadzenie na dużą skalę badań epidemiologicznych jest rzadkie. Dlatego w badaniu tym określono częstość występowania przemocy fizycznej w ciągu 12 miesięcy, istotne czynniki ryzyka i charakterystykę sprawców wśród hospitalizowanych osób starszych.* **Metody.** *W tym badaniu przekrojowym 250 osób starszych (w wieku ≥ 60 lat) wypełniło kwestionariusz opracowany przez badaczy. Zastosowano analizę chi-kwadrat oraz jedno i wielowymiarowe modele regresji logistycznej.* **Wyniki.** *Przemoc fizyczną zgłosiło 21,6% uczestników. Następujące zmienne okazały się niezależnymi predyktorami (skorygowany iloraz szans, 95% przedział ufności) przemocy fizycznej: wiek ≥ 70 lat (4,28, 1,87–9,77), wykształcenie podstawowe (1,61, 0,44–5,93), płeć żeńska (2,50, 1,16– 5,40), niski status społeczno-ekonomiczny (6,02, 2,38–15,26), mieszkanie w mieście (4,18, 1,66–10,49) oraz obecność choroby przewlekłej (2,50, 1,08–5,78).* **Wnioski.** *Przemoc wobec osób starszych jest w Polsce powszechna. Mieszkanie w mieście, starszy wiek (>70 lat) oraz obecność chorób przewlekłych są czynnikami ryzyka większości form przemocy fizycznej. (Gerontol Pol 2021; 29; 146-157) doi: 10.53139/GP.20212925*

Słowa kluczowe: *przemoc wobec osób starszych, przemoc fizyczna, czynniki ryzyka, ofiary, sprawcy*

Introduction

Elder abuse and neglect are significant and growing problems worldwide. They are global social problems that negatively affect all dimensions of the health of older adults and violate their rights. It is imperative that

social assistance programs, health systems, the general public, and the government pay urgent attention to this issue [1-3]. The global population of individuals aged 60 years and older was projected to more than double from 900 million in 2015 to approximately 2 billion in 2050. Therefore, it can be expected that the number of

victims of violence in this age group will also gradually increase. Reports published by the World Health Organization (WHO), the United Nations, and other international bodies delineate the harmful effects of violence, its risk factors, and proposed preventive actions [3,4].

In this research we focused solely on physical violence. The American Psychological Association definition of physical abuse was adopted: "Use of physical force that may result in bodily injury, physical pain, or impairment" [5]. Furthermore, a lot of worldwide research regarding physical elder abuse was conducted [6-10]. Like psychological abuse, physical violence can also be a disguised form of violence, although its main premise is to cause bodily harm and physical pain. Jerking, shaking, does not have to leave marks in the form of bruises or scratches. Even visible bruises are displaced by the victims and justified by imbalances. Moreover, a detailed understanding of the various forms of physical violence will allow for a more accurate determination of the prevalence of this phenomenon and to specify the most common risk factors. Furthermore, according to WHO [3] elder abuse is likely to have been an underestimation because only 1 in 24 cases of violence had been reported. The National Elder Mistreatment Study conducted in the United States found that only 31% of physical abuse cases were reported to the authorities [11]. There may be several reasons for this trend. First, older adults are afraid to report cases of abuse to the police, friends, family, and health care professionals. Second, they often feel ashamed to admit that they are victims of domestic violence. Finally, they fear that they will lose contact with their family and be left without any form of care. Thus, any indicator of the prevalence of violence within this age group is likely to be inaccurate and a gross underestimate. Physical violence has serious long-term effects: ranging from injuries (both physical and mental), frequent visits to emergency departments, increased admissions to trauma or geriatric wards, and may consequently contribute to an increase in mortality [3,12,13].

There have been no large-scale studies on elder abuse and neglect in Poland. Thus, the empirical literature in this domain is sparse. A nationwide study called PolSenior [14] found that almost 6% of the participating older adults were victims of violence. A 2009 and 2015 report on domestic violence against older adults and individuals with disabilities was published by a team of psychologists from the Institute of Psychology of the National Academy of Sciences. They reported that there was an increase in violence in 2015. Specifically, this percentage had increased from 4% in 2009 to 6% in 2015 [15]. However, Kołodziejczak et al. [16] found that violence

had affected approximately 40% of their respondents who were living in rural areas.

The research carried out both in the United States and Europe was conducted mainly among the general community of the older adults [17-19]. Interestingly, the results obtained in our work, despite being conducted among hospitalized persons, were similar to those obtained in other works. The study of elder abuse and neglect among hospitalized older adults has not been reported in Poland. So we undertook this study to be able to see the difference in terms of the data obtained. A hospital is associated with a safe place where help is obtained. As a result, perhaps the older adults were more likely to report acts of violence and express their opinions. On the other hand, we have strived to obtain the most credible and reliable results. Accordingly, we designed a study that excludes those with dementia or cognitive impairment. Thus, the Geriatrics Department was selected as the research site, where there is a possibility of a neuro-psychological assessment.

There is a group of risk factors that significantly influence violence as a dependent variable. Many studies show that statistically women experience violence more often than men [20-22]. Financial problems turn out to be another important factor [23,24]. Furthermore, people with lower education and people with chronic diseases are more likely to experience violence [20,21,24,25]. Thus, it is so important to conduct research with a special analysis of these independent variables in order to be able to distinguish a group of people particularly exposed to experiencing violence. This will allow to implement prophylaxis directed mainly at high-risk groups.

Elder abuse and neglect remain a major public health problem. Nevertheless, large-scale epidemiological studies are rare. A review of the empirical literature makes it evident that the issue of older adult abuse and neglect is unable to draw substantial attention from researchers. Disseminating information about this issue and publishing pertinent research findings will facilitate the implementation of measures that can counteract these acts of aggression. Indeed, this issue deserves substantial attention from researchers, healthcare professionals, social workers, and other professionals. Despite the possibility of implementing numerous preventive measures, the prevalence of this problem will increase across time because of progressive population aging. Thus, it is necessary to not only determine the prevalence of this problem but also develop effective interventions that can mitigate this issue [1-4,14,15].

This study aimed to determine the incidence of physical abuse during the past 12 months among hospitalized older adults in Poland. The factors that predict the occur-

rence of physical violence were also examined. Another objective of this study was to identify the sociodemographic characteristics and health-related factors that are correlated with the occurrence of physical abuse and delineate abuser characteristics.

Material and methods

Study area and period

This cross-sectional study was carried out in the Department of Geriatrics at University Hospital No. 1 in Bydgoszcz. Data collection was undertaken between April 2017 and December 2020.

Population and setting

The participants were 250 in-patients (99 men, 151 women) aged 60 years or older, who had been hospitalized in the Department of Geriatrics at University Hospital No. 1 in Bydgoszcz. The baseline characteristics of the participants are shown in Table I. The inclu-

sion criteria were as follows: a) aged 60 years or older, b) no diagnosis of dementia or cognitive impairment, c) hospitalized only in the Geriatrics Department and Clinic no. 1 of Dr Antoni Jurasz University Hospital in Bydgoszcz, and c) ability to independently complete the survey questionnaire.

The study was designed in such a way that the results meet the highest credibility and reliability standards. Therefore, potential respondents underwent a neurological and psychological assessment. This allowed us to exclude individuals with dementia and cognitive impairment before the study. The standard tool used by the psychologists in Poland is the MMSE and CDT. Additionally, participant anonymity was ensured. The patients participating in our study were mainly independent people who were admitted to the department for a CGA. Therefore, the above-mentioned neuropsychological assessment was of a diagnostic nature and was performed before the inclusion of patients in the study. Initially, older adults were selected based on inclusion criteria by the main author. In the next steps the authors:

Table 1. Socio-demographic characteristics of participants

Characteristics	Female (n=151)	Male (n=99)	Total (n=250)	Gender difference*
	N (%)	N (%)	N (%)	p
Age				
60-65 years	90 (59.6)	67 (67.7)	157 (62.8)	0.43
66-70 years	39 (25.8)	20 (20.2)	59 (23.6)	
>70 years	22 (14.6)	12 (12.1)	34 (13.6)	
Education				
Primary	40 (26.5)	19 (19.2)	59 (23.6)	0.43
Secondary	45 (29.8)	27 (27.3)	72 (28.8)	
Vocational	57 (37.7)	45 (45.4)	102 (40.8)	
Higher	9 (6.0)	8 (8.1)	17 (6.8)	
Family income, EUR				
<233 EUR	31 (20.5)	27 (27.3)	58 (23.2)	0.06
233-349 EUR	65 (43.0)	33 (33.3)	98 (39.2)	
350-465 EUR	46 (30.5)	38 (38.4)	84 (33.6)	
>465 EUR	9 (6.0)	1 (1.0)	10 (4.0)	
Marital Status				
Single (never married)	34 (22.5)	14 (14.1)	48 (19.2)	0.06
Married	58 (38.4)	31 (31.3)	89 (35.6)	
In a partnership	30 (19.9)	19 (19.2)	49 (19.6)	
Divorcee	12 (7.9)	15 (15.2)	27 (10.8)	
Widow/Widower	17 (11.3)	20 (20.2)	37 (14.8)	
Residency area				
City	103 (68.2)	37 (37.4)	140 (56.0)	<0.01
Village	48 (31.8)	62 (62.6)	110 (44.0)	
Chronic disease				
Yes	100 (66.2)	67 (67.7)	167 (66.8)	0.81
No	51 (33.8)	32 (32.3)	83 (33.2)	

* chi-square test

a) informed the patient about the subject and purpose of the research, b) obtained informed, verbal consent c) the instructions were given on the correct completion of the questionnaire d) supervised the self-completion of the questionnaire by the respondent. The investigators made every effort to ensure that the participants completed the questionnaire independently (i.e., without the presence of a family member, caregiver, or medical professional). Completed questionnaires were stored in a dedicated box. The entire procedure (including points a-d) of our study took approximately 30 minutes. At any time, the respondents could ask a question to the researchers located in the next room.

Ethical aspects

Ethical approval was obtained from the Bioethics Committee at Collegium Medicum, Nicolaus Copernicus University, Toruń, Poland (KB 259/2017).

Measurements

This study adopted the diagnostic survey method. A questionnaire was designed specifically for this study. Before the main study was conducted, a pilot study was conducted using a sample of 50 older adults. The respondents identified questions and answers that were ambiguous, inconsistent, and incomprehensible. Based on their comments, the questionnaire was edited and refined.

The research tool was a questionnaire that was designed specifically for this study. Socio-demographic characteristics and abuse occurrence were assessed using a 16-item questionnaire, which was developed based on literature reviews and approved by several experts, researchers, psychologists, social workers, nurses, and physicians [19,26-28]. The introductory section of the questionnaire contained statements that (a) described the aim of the study, (b) guaranteed participant anonymity, and (c) provided clear instructions about responding to the questionnaire items. The first part of the questionnaire consisted of 6 questions and concerned only socio-demographic data, such as: sex, age, education, marital status, family income, place of residence and also chronic diseases. Another 10 questions assessed participant experience of different forms of elder abuse and neglect during the past 12 months and the characteristics of violence perpetrators. The leading question in the questionnaire was question 1: Have you ever experienced violence (e.g. kicking, pushing and dragging, hitting, mocking, pushing, insulting) in your place of residence during the last 12 months?. The next questions concerned: a) Have you ever been a witness to elder abuse and neglect?, b)

Do you know victims of domestic violence?, c) In your opinion, elder abuse and neglect is a widespread phenomenon?, d) Who was the perpetrator of violence against you?, e) Which of the following forms of violence were used against you?, f) Have you ever reported the cases of violence used against you?, g) Is violence used against another member of your family (if so, please list against whom, indicating your relationship to this person)?. The questions were formulated in a simple and short way in a closed, alternative and multiple-choice form, so that they were fully understandable for the older adults. The structure of the questionnaire we used allowed us to distinguish the various types of physical violence, which were subjected to a detailed analysis in the above study:1) Jerking/Shaking, 2) Hitting, 3) Kicking, 4) Pushing.

Data analysis

Statistical analyses were conducted using Statistica (TIBCO, USA) version 13.3. Each type of physical violence was assessed separately. The dependent variables were the different forms of elder physical abuse. Socio-demographic characteristics and the presence of chronic diseases were treated as qualitative predictors. Chi-squared analysis was used to examine the relationship between categorical variables (Tables I and II). As a result, the significance of the relationship between the occurrence of chronic diseases, demographic variables and various forms of physical violence was established. Logistic regression analysis was conducted to examine the association between older adult physical abuse and the other study variables (Table III). All independent variables that reached a P-value less than 0.05 in the chi-square test were examined and included in the multivariate analysis. Thus, we tested multivariate regression models (A–D) to identify the determinants of physical abuse (Table V). The statistical significance level was set as P≤0.05.

Results

The overall incidence of elder physical abuse during the past 12 months was 21.6%. Further, the most frequently reported forms of physical violence were jerking/shaking (N=35, 64.8%), hitting (N=24, 44.4%), kicking (N=22, 40.7%), and pushing (N=19, 35.2%). Burning (e.g., with a cigarette) and choking were relatively rare (N=7, 13.0% and N=3, 5.6%, respectively). Therefore, these forms of violence were not included in the analysis.

Table II shows that the following variables emerged as risk factors for physical abuse: sex (female), age, edu-

Table II. Twelve month prevalence rate of elder physical abuse and general population estimates

Characteristics	Physical Abuse (n=54)									
	Jerking/Shaking		Hitting		Kicking		Pushing		The all forms of physical abuse	
	N (%)	p	N (%)	p	N (%)	p	N (%)	p	N (%)	p
Overall	35 (64.8)		24 (44.4)		22 (40.7)		19 (35.2)		54 (21.6)	
Sex		0.03		0.02		0.03		0.03		0.02
Female	27 (77.1)		20 (83.3)		18 (81.8)		16 (84.2)		40 (74.1)	
Male	8 (22.9)		4 (16.7)		4 (18.2)		3 (15.8)		14 (25.9)	
Age		<0.02		<0.01		<0.01		0.01		<0.01
60-65 years	13 (37.1)		5 (20.8)		8 (36.4)		7 (36.8)		22 (40.7)	
66-70 years	13 (37.1)		6 (25.0)		7 (31.8)		5 (26.4)		14 (25.9)	
>70 years	9 (25.8)		13 (54.2)		7 (31.8)		7 (36.8)		18 (33.4)	
Education		0.06		<0.01		0.02		0.01		<0.01
Primary	13 (37.1)		18 (75.0)		10 (45.5)		9 (47.4)		24 (44.4)	
Secondary	10 (28.6)		2 (8.3)		7 (31.8)		7 (36.8)		15 (27.8)	
Vocational	8 (22.9)		3 (12.5)		3 (13.6)		1 (5.3)		11 (20.4)	
Higher	4 (11.4)		1 (4.2)		2 (9.1)		2 (10.5)		4 (7.4)	
Family income, EUR		<0.01		<0.01		<0.01		0.04		<0.01
<233 EUR	16 (45.7)		17 (70.8)		12 (54.6)		9 (47.4)		28 (51.9)	
233-349 EUR	14 (40.0)		3 (12.5)		6 (27.3)		7 (36.8)		19 (35.2)	
350-465 EUR	4 (11.4)		3 (12.5)		3 (13.6)		2 (10.5)		6 (11.1)	
>465 EUR	1 (2.9)		1 (4.2)		1 (4.5)		1 (5.3)		1 (1.8)	
Marital Status		0.43		0.36		0.04		0.68		0.37
Single (never married)	4 (11.4)		5 (20.8)		3 (13.6)		4 (21.0)		10 (18.5)	
Married	14 (40.0)		11 (45.8)		5 (22.7)		5 (26.4)		19 (35.2)	
In a partnership	9 (25.8)		6 (25.0)		9 (40.9)		6 (31.6)		14 (25.9)	
Divorcee	5 (14.2)		1 (4.2)		4 (18.3)		2 (10.5)		7 (13.0)	
Widow/Widower	3 (8.6)		1 (4.2)		1 (4.5)		2 (10.5)		4 (7.4)	
Residency area		<0.01		<0.01		0.04		<0.01		<0.01
City	29 (82.9)		21 (87.5)		17 (77.3)		17 (89.5)		44 (81.5)	
Village	6 (17.1)		3 (12.5)		5 (22.7)		2 (10.5)		10 (18.5)	
Chronic disease		0.16		0.02		0.01		0.24		<0.01
Yes	27 (77.1)		21 (87.5)		20 (90.9)		15 (79.0)		44 (81.5)	
No	8 (22.9)		3 (12.5)		2 (9.1)		4 (21.0)		10 (18.5)	

cational level, socioeconomic status (low), city residence, and the presence of chronic diseases. Factors such as sex, age, family income, and place of residence had a statistically significant effect on the occurrence of all types of older adult physical abuse. Nevertheless, educational level was not a risk factor for one form of physical violence, namely, pushing. In contrast, the presence of chronic diseases had a significant effect on the occurrence of two forms of violence, namely, hitting (p=0.02) and kicking (p=0.01), and all forms of folder adult physical abuse (p<0.01).

The results of regression analysis, which underscored the risk factors associated with physical abuse and its subtypes, are shown in Table 3. The occurrence of older adult physical abuse was more than twice as common among women than among men (odds ratio [OR]= 2.19, 95% confidence interval [CI]: 1.12-4.28] and more than six times as common among those aged >70 years than among their younger counterparts (OR= 6.90, 95% CI: 3.07–15.52). In addition, individuals with a monthly income of EUR (euro) 233–349 and EUR 350-465 were less likely to have experienced elder physical abuse than those with an income of <EUR 233 (p<0.01). The occurrence of older adult physical abuse was more than 4 times as common among those living within the city than among those living in rural areas (OR= 4.58, 95% CI: 2.18-9.62). Individuals with a diagnosis of chronic diseases were also more likely to have been a victim of violence (OR=2.61, 95% CI: 1.24-5.50). Table III presents the results of logistic regression analysis of the socio-demographic predictors of the different types of elder physical abuse.

Table III. Logistic regression analysis of factors associated with types of elder physical abuse

Characteristic	Physical Abuse (n=54)				
	Jerking/Shaking	Hitting	Kicking	Pushing	The all forms of physical abuse
	OR (95%CI) p	OR (95%CI) p	OR (95%CI) p	OR (95%CI) p	OR (95%CI) p
Sex (Female vs Male)	2.45 (1.06-5.64) 0.04	3.63 (1.20-10.95) 0.04	3.21 (1.05-9.80) 0.04	3.79 (1.08-13.38) 0.04	2.19 (1.12-4.28) 0.02
Age (vs 60-65)					
66-70 years	3.11 (1.35-7.18) <0.01	3.44 (1.01-11.74) 0.05	2.51 (0.87-7.25) 0.09	1.98 (0.60-6.52) 0.26	1.91 (0.90-4.04) 0.09
>70 years	3.96 (1.53-10.24) <0.01	18.82 (6.09-58.13) 0.00	4.83 (1.62-14.42) <0.01	5.56 (1.80-17.11) <0.01	6.90 (3.07-15.52) <0.01
Education (vs Higher)					
Primary	0.84 (0.23-3.07) 0.80	7.02 (0.86-57.07) 0.07	1.53 (0.30-7.77) 0.61	1.35 (0.26-6.94) 0.72	2.23 (0.65-7.66) 0.20
Secondary	0.48 (0.13-1.80) 0.28	0.46 (0.04-5.36) 0.53	0.80 (0.15-4.29) 0.80	0.81 (0.15-4.29) 0.80	0.86 (0.24-3.01) 0.81
Vocational	0.25 (0.07-0.98) 0.05	0.48 (0.05-4.95) 0.54	0.22 (0.04-1.47) 0.12	0.07 (0.01-0.87) 0.04	0.39 (0.11-1.42) 0.15
Family income, EUR (vs <233)					
233-349 EUR	0.43 (0.19-0.96) 0.04	0.08 (0.02-0.27) <0.01	0.25 (0.08-0.71) 0.01	0.42 (0.15-1.19) 0.10	0.26 (0.13-0.53) <0.01
350-465 EUR	0.13 (0.04-0.41) <0.01	0.09 (0.02-0.32) <0.01	0.14 (0.04-0.53) < 0.01	0.13 (0.03-0.64) 0.01	0.08 (0.03-0.22) <0.01
>465 EUR	0.28 (0.03-2.43) 0.25	0.28 (0.03-2.28) 0.23	0.33 (0.03-3.55) 0.36	0.60 (0.07-5.38) 0.65	0.12 (0.01-1.00) 0.05
Marital Status (vs Widow/er)					
Single (never married)	1.00 (0.21-4.78) 1.00	4.19 (0.48-37.49) 0.20	2.40 (0.24-24.06) 0.46	1.59 (0.27-9.20) 0.60	2.17 (0.62-7.58) 0.22
Married	2.05 (0.55-7.63) 0.28	5.08 (0.63-40.84) 0.13	2.14 (0.24-18.99) 0.49	1.04 (0.19-5.63) 0.96	2.24 (0.71-7.11) 0.17
In a partnership	2.48 (0.62-9.89) 0.20	5.02 (0.58-43.68) 0.14	8.10 (0.98-67.11) 0.05	2.44 (0.46-12.86) 0.29	3.30 (0.99-11.05) 0.05
Divorcee	2.50 (0.54-11.54) 0.24	1.38 (0.08-23.17) 0.82	6.26 (0.66-59.57) 0.11	1.40 (0.18-10.62) 0.74	2.89 (0.75-11.12) 0.12
City (vs village)	4.48 (1.79-11.24) <0.01	6.29 (1.83-21.70) < 0.01	2.90 (1.04-8.13) 0.04	7.46 (1.69-33.04) <0.01	4.58 (2.18-9.62) <0.01
Chronic disease	1.82 (0.79-4.21) 0.16	3.84 (1.11-13.26) 0.03	5.51 (1.26-24.14) 0.02	1.94 (0.63-6.07) 0.25	2.61 (1.24-5.50) 0.01

Table IV. Distribution of perpetrators of elder physical abuse

Characteristic	Physical Abuse (n=54)				
	Jerking/Shaking	Hitting	Kicking	Pushing	The all forms of physical abuse
	N (%)	N (%)	N (%)	N (%)	N (%)
Overall	35 (64.8)	24 (44.4)	22 (40.7)	19 (35.2)	54 (100.0)
Abusers					
Spouses	13 (37.1)	11 (45.8)	7 (31.8)	5 (26.3)	18 (33.3)
Siblings	3 (8.6)	2 (8.3)	0 (0.0)	2 (10.5)	4 (7.4)
Cohabitant	11 (31.4)	7 (29.2)	7 (31.8)	7 (36.8)	16 (29.6)
Son	14 (40.0)	10 (41.7)	11 (50.0)	8 (42.1)	23 (42.6)
Daughter	1 (2.9)	0 (0.0)	0 (0.0)	0 (0.0)	1 (1.9)

Table V. Multivariate logistic regression analysis models for sociodemographic characteristics of elder

Predictors	Model A		Model B		Model C		Model D	
	AOR (95%CI)	p	AOR (95%CI)	p	AOR (95%CI)	p	AOR (95%CI)	p
Sex, Female	2.01 (0.98, 4.10)	0.05	2.01 (0.98, 4.10)	0.05	2.50 (1.16, 5.40)	0.02*	1.95 (0.86, 4.43)	0.11
Age, >70	4.28 (1.87, 9.77)	<0.01*	4.22 (1.84, 9.68)	<0.01*	1.94 (0.73, 5.18)	0.19	2.04 (0.71, 5.89)	0.19
Education, Primary	1.59 (0.43, 5.84)	0.03*	1.61 (0.44, 5.93)	0.03*	2.06 (0.53, 8.09)	0.06	1.33 (0.31, 5.75)	0.46
Marital Status, Married			0.89 (0.45, 1.77)	0.74	1.17 (0.56, 2.48)	0.68	0.85 (0.39, 1.87)	0.68
Income, <233 EUR					5.53 (2.35, 12.99)	<0.01*	6.02 (2.38, 15.26)	<0.01*
Place of residence, City							4.18 (1.66, 10.49)	<0.01*
Chronic disease							2.50 (1.08, 5.78)	0.03*

*- significant dependencies
Abbreviations: AOR- adjusted odds ratio

The most commonly reported perpetrators of older adult physical abuse were as follows: sons (42.6%), spouses (33.3%), and cohabitants (29.6%). Furthermore, across all the different forms of physical violence, sons, spouses, and cohabitants were the primary abusers (Table IV).

We developed four multivariate logistic regression models (models A–D), which were adjusted for sex, age, educational level, marital status, monthly income, place of residence, and the presence of chronic diseases. Models A and B included the same independent predictors (e.g., age > 70 years and primary education). However, in model C, female sex and monthly income <EUR 233 were associated with higher vulnerability to older adult physical abuse. Finally, in Model D, a monthly income <EUR 233, living within the city, and the presence of chronic diseases were retained as independent predictors of physical abuse (Table V).

The emergent interactions between these independent variables (female sex and the presence of chronic diseases; living within the city and socioeconomic status) are illustrated in Figures 1 and 2. Figure 1 shows that older women with chronic diseases were significantly more likely to have experienced physical violence. Similarly, Figure 2 shows that city residents with a significantly lower socioeconomic status were more likely to have experienced violence.

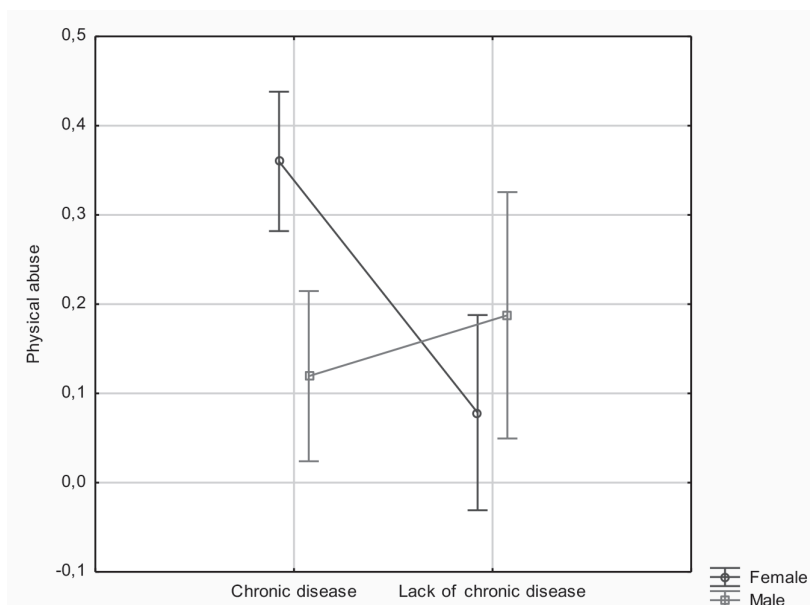**Figures for „Predictors of self-reported physical abuse among hospitalized older adults"**

Figure 1. Multivariate analysis between the occurrence of elder physical abuse, chronic disease, sex
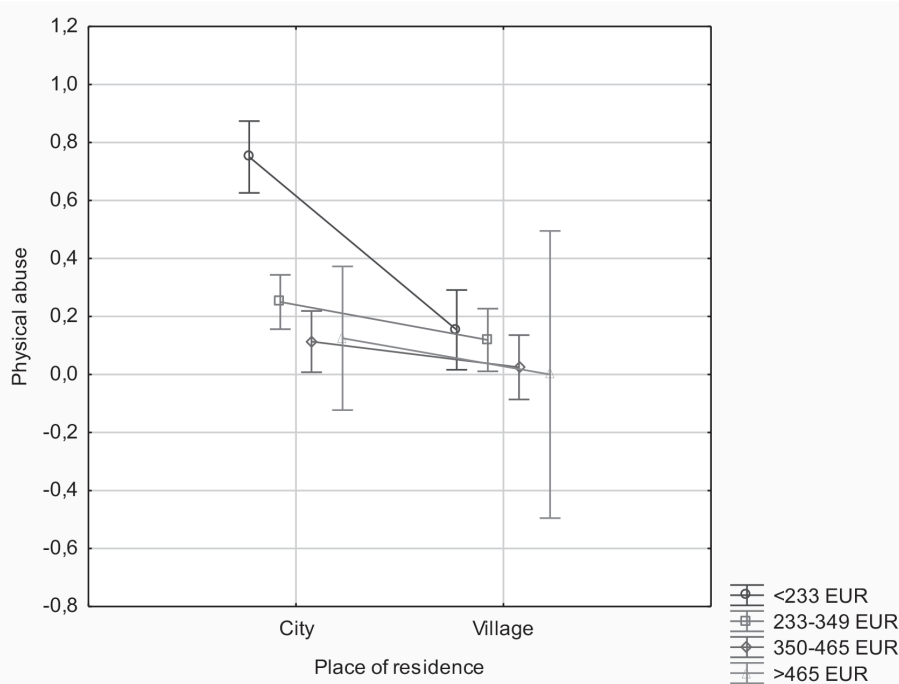
Figure 2. Multivariate analysis between the occurrence of elder physical abuse, monthly family income and place of residence

Discussion

The addressal of the issue of older adult abuse and neglect by the world's leading organizations (the WHO, United Nations, and European Commission) undoubtedly proves that it is a serious social problem and a global challenge [3,4]. Nevertheless, the literature on older adult abuse and neglect in Poland is sparse. This is the first population study to have estimated the prevalence of elder physical abuse in Poland. We tested multivariate logistic regression models to identify independent risk factors and eliminate confounding factors. In addition, our study is unique because we used a sample of hospitalized older adults. In this study, the rate of physical aggression was 21.6%. The present findings are consistent with those of past studies [15,19].

The problem of older adult abuse and neglect remains an underacknowledged and underresearched phenomenon. Studies in this area have been conducted in other countries. However, in Poland, this problem has been researched only sporadically. Therefore, the present findings allow us to draw only broad conclusions. Furthermore, no existing tool is regarded as the gold standard for older adult abuse detection. Notably, the methodologies used in such studies differ substantially. Researchers have used a variety of different research tools, because of which meaningful comparisons cannot be undertaken. Thus, it is quite difficult to compare past findings on the prevalence of violence and its risk factors. In addition, such comparisons are difficult because of differences in the adopted definition of elder abuse and neglect, research methodology, research tools, study environment, and sample characteristics.

A team of psychologists from the Institute of Psychology of the Polish Academy of Sciences found that 59.7% and 30.1% of their respondents had witnessed at least one form of older adult abuse and neglect outside and within their own family, respectively. On average, 43% of the respondents reported that, in recent years, they had witnessed the physical (38.4%), economic (44.9%), and psychological (44.7%) abuse and neglect of older adults outside their family. Further, 17% of them had witnessed instances of physical abuse (15.4%), financial exploitation (18.5%), and psychological abuse (17.5%) in their own family. The most commonly encountered forms of older adult physical abuse were pushing (40.7%) and hitting and beating (38.4%) [15]. On the other hand, the Public Opinion Research Center [29] found that approximately 5% of Poles live in a household in which acts of older adult abuse and neglect are perpetrated. Moreover, the most common forms of abuse were psychological abuse (3%), physical abuse (2%), and financial exploitation (1%). Furthermore, Kołodziejczak et al. [16] found that 40.1% of their older respondents who were living in rural areas had experienced violence. The most frequently reported forms of abuse were psychological violence (36.5%), neglect (21.9%), financial exploitation (8.8%), and physical violence (5.1%).

Large-scale research studies on elder abuse and neglect are being conducted worldwide. The Abuse of

the **Elderly** in the **European** Region (ABUEL) is a study that was conducted across seven European countries (Germany, Italy, Lithuania, Sweden, Portugal, Spain, and Greece). The participants were 4467 respondents aged 60–84 years, and the incidence of older adult abuse and neglect was assessed. Rates of abuse (women vs. men) during the past 12 months were as follows: psychological violence = 19.4% (18.9%vs. 20.0%), physical violence = 2.7% (2.6% vs. 2.8%), sexual violence = 0.7% (1.0% vs. 0.3%), and financial exploitation = 3.8% (3.7% vs. 4.1%) [17]. Another European survey conducted among 2880 60–97-year-old women from five countries (Austria, Belgium, Finland, Lithuania, and Portugal) found that the prevalence of violence was 28.1%. The most common form of violence was emotional violence (23.6%), followed by financial exploitation (8.8%), neglect (5.4%), sexual abuse (3.1%), and physical violence (2.5%) [18]. Additionally, a 2007 study analyzed the best available data generated by 52 studies conducted across 28 countries, which included 12 low- and middle-income countries and represented various world regions. The results showed that 15.7% of individuals aged 60 years and older had experienced some form of violence [19].

In this study, the following variables emerged as independent predictors of physical abuse: age >70 years, primary education, female sex, a low socioeconomic status, city residence, and the presence of chronic diseases. Wu et al. [30] found that depression is an independent risk factor for physical violence. Alraddadi [31] found that widowhood, singlehood, and the presence of chronic diseases are associated with vulnerability to physical violence. However, Kulakçi Altintas and Korkmaz Aslan [25] found that a lack of income was the only independent predictor of physical abuse in their study. On the other hand, in a study by Schiamberg et al. [10] showed that age was the only statistically significant demographic factor. People from younger age categories experienced physical violence more often.

Both the present and past findings indicate that women are significantly more likely to be victims of violence. There are several explanations for this sex difference. First, male violence against women is an expression of historically reinforced unequal power distribution between women and men. In addition, women are more likely to be stereotyped and to identify with the abuser. Further, beliefs that women constitute the weaker sexare prevalent among the general public. Anxiety, economic dependence, worry about the well-being of one's children, and environmental pressure are some of the reasons why women continue to live with their perpetrators and be a victim of violence. Further, because women express greater empathy and tend to be more expressive and open, they report acts of violence against them more often than their male counterparts [20,21,32,33].

In this study, older adult physical abuse was significantly more likely to have been experienced by individuals with a lower educational level, those with a low socioeconomic status, city residents, and those with chronic diseases. Similar results have been reported by past researchers [34-36]. Well-known risk factors for elder abuse and neglect are helplessness, fragility, dependence on others and loneliness- characteristics of older adults that make them an ideal victim. Furthermore, with age, disability and defenselessness increase, and cognitive functions deteriorate. Therefore, individuals who belong to the oldest age groups are most vulnerable to violence. Older adults often lose their social roles and privileges in their families. Afflicted with somatic diseases and a poor mental and physical state, they may become resigned and not seek help from others. Therefore, perpetrators may perceive them as a vulnerable target [35,36]. Victims of violence consider emotional dependence on their perpetrator and the guilt caused by reporting violence and seeking help to be the most difficult barriers to breaking their silence. Finally, some researchers consider the social status of this group to be a contributor to elder abuse and neglect. In this regard, the factors that trigger violence include an obsession with youth and a focus on the future, which reinforce negative perceptions of aging. Because of the physical decline caused by aging, older adults find it difficult to keep up with a fast--paced world. Systematic literature reviews and meta--analyses have identifiedthe major risk factors for older adult abuse and neglect,which include sex (female), age, socioeconomic status (low), physical and mental health problems, and functional dependence [19-21,25,36].

Analyses of the prevalence of elder abuse and neglect make it evident that they are not rare occurrences. Nevertheless, few evidence-based prevention and intervention strategies have been developed. Interventions and preventive programs include support groups, provide legal and psychological counseling, facilitate care coordination, and promote public education. Changing social attitudes plays a fundamental role in the prevention of elder abuse and neglect. This is a long-term task that should be undertaken by educating the general public, beginning with the youngest demographic groups. Educators play a significant role in such efforts. During didactic and educational processes, they have the opportunity to influence the attitudes of not only their students but also their parents and, consequently, potential caregivers of older adults. Nongovernmental organizations and

the media should also be involved in such efforts. As the setting may be outside of traditional school-settings/audiences, it would be important to introduce media and online campaigns. Furthermore training and education are also important for the workforce (which includes clinical and support staff, social workers, and other key stakeholder groups) that interface with older adults regularly (ie-senior organizational leaders, ombudsmen, neighbors) [36,37].

There are clear health promotion implications as well as educational opportunities in which clinicians can be targeted for enhancing knowledge, screening, and treatment planning concerning the abuse of older adults. Victims of violence often visit health care institutions. Therefore, screening for violence and providing counseling to victims should be practiced in healthcare facilities. Healthcare professionals should undergo training that will equip them to learn about violence and its various forms. Educational programs will enable medical professionals and the general public to recognize acts of aggression and intervene appropriately [21,36-39].

This study has several limitations. First, this was a cross-sectional study. Thus, the emergent risk factors are indicative of an association rather than a causal relationship. Second, the participants represented only hospitalized individuals. Third, individuals with dementia and severe cognitive impairment were excluded. They constitute a large percentage of the target population. However, past studies have found that they are at high risk for abuse and neglect. Therefore, some findings may not be generalizable to the larger population. This study was designed in such a way that the results meet the highest credibility and reliability standards. Thus, potential

respondents underwent a neurological and psychological assessment. Finally, the sample was recruited from only one center. Multicenter studies should be conducted using larger samples. The occurrence of violence is a taboo subject, especially among older adults. Furthermore, victims tend to be afraid and ashamed to talk about their problems. It is especially difficult for them to admit that they are a victim of violence. Because a large number of incidents remain undetected, the reported statistics are underestimates. Therefore, conclusions, especially those pertaining to the prevalence of this problem, should be drawn with caution.

Conclusion

The present findings suggest that exposure to violence is a significant problem among older adults. Individuals with the following characteristics were more likely to have experienced abuse: age >70 years, a low educational status, a low socioeconomic status, and living within the city. There is a need for further research on perpetrator and victim characteristics and the causal mechanisms that underlie the different types of violence.

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