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RESEARCH ARTICLE

The Risk of Suffering Violence by the Elderly People: The Power of Cognitive Functioning and Loneliness Through the Analysis of the Gamma Model

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ABSTRACT

Objective: The elderly people has been increasing and the danger of elderly people suffering violence also tends to grow. When the elderly people have cognitive weaknesses, are alone and helpless, the probability of suffering violence is very high. The main objective of this study is to analyze whether cognitive functioning, the loneliness felt by the elderly people and their affects can predict the risk of suffering violence.

Methods: The number of participants in this study was 101 of both genders, with ages ranging between 65 and 94 years. The instruments applied were a sociodemographic questionnaire, Arvini Range Test, the University of California, Los Angeles Loneliness Scale, the Mini Mental State Examination and Positive and Negative Affect Schedule.

Results: The results showed that after eliminating potentially influential observations, the adjusted model revealed that cognitive functioning and loneliness are predictors of the risk of suffering violence by the elderly people.

Conclusion: It is important to consider that the presence of subjective feelings of loneliness and how the elderly's brains cognitively work can be considered risk factors for violence against them. These variables must be taken into account in the preparation of caregivers and nursing homes so that violence against the elderly people can be prevented.

Keywords: risk of suffering violence, elderly people, cognitive functioning, loneliness, effects

Introduction

The World Health Organization (WHO) defines elder abuse as "a single or repeated act, or lack of appropriate action, occurring within any relationship where there is an expectation of trust, which causes harm or distress to an older person"[1] and it can be psychological, physical, sexual, neglect, etc.[1]. The study by Nathan et al.[2] reveals that physical and psychological neglect are the most recurrent, followed by psychological violence and physical violence in elderly people living in nursing home. According to Pillemer's theoretical model[3], the violence suffered by the elderly people in nursing homes may depend on the characteristics of the patients (e.g., health of patients, social isolation, gender), on the characteristics of the staff (e.g., age, education, burnout) and the nursing homes environment (e.g., level of care, rates, cost of patient care). Brandão et al.[4], identified that the elderly people who received hospital support, aged between 60 and 70 years, with no knowledge of reading and writing or who no longer exercised professional activity, showed a greater risk of suffering violence. In addition to this, they also found a relationship between the elderly's abilities for their daily activities (basic, instrumental and advanced) and the risk of suffering violence. In the study by Tung et al.[5], more than half of their sample reported having been exposed to violence in the community where they lived (58.9%). The authors proved that exposure to violence reduced social interactions between subjects, contributing to less perceived social support and an increase in the subjects' perception of loneliness. Loneliness is characterized as the social isolation perceived by the subjects[6], it is a feeling of being away from their family social network, friends or other people who are significant to them[7]. The study by Shugarman et al.[8], with participants aged ≥ 60 years, identified that when the elderly feels lonely, there is a greater risk of them suffering violence. The authors report that characteristics of the elderly people, as well as a weak social network or poor social functioning, can enhance violence against the elderly. From the point of view of cognitive functioning (e.g., attention skills, memory), it is known that elderly people with cognitive and physical alterations tend to suffer more violent episodes, for example, financial ones or neglect[9]. People with disability are more likely to experience violence at a very early age. Women are often victims of sexual violence and men of physical violence[10]. In the study by Conner et al.[11], with the objective of studying the factors that can predict violence against the elderly people who received longterm care, showed that cognitive functioning problems are a risk factor for the elderly people to suffer violence if these problems cause resistance to care or physical aggression in the elderly people. The presence of negative affects can also cause serious damage to the subjects' lives[12]. Affects are considered intense experiences of emotions that can be positive (e.g., pleasure or joy) or negative (e.g., sadness, discouragement)[13] and characterize the subjective well-being of subjects[14]. Intergenerational relationships between older and younger people, marked by respect, care or the sharing of affects, changed over time. Many elderly people do not feel listened to or respected by younger generations, which can lead to intergenerational conflicts or even violence against the elderly people[15]. The study by Alcalá et al.[16], when comparing the affects and emotions between elderly people with depression and those without depression, found that there were significant differences between the groups. Elderly people with depression showed more negative effects, basic negative emotions such as fear, hostility, guilt, sadness, and fatigue while the control group showed more positive effects and basic positive emotions such as joviality, self-confidence, being attentive and serenity. Currently, this issue in the elderly people is still little explored in the literature. Studies focus on adult subjects[5], on the negative effects of violent experiences at advanced ages[17], or even on the levels of caregiver burden[18,19] as triggering factors for violence against the elderly people. Thus, this study aims to understand whether cognitive functioning, loneliness and affects are predictors of the risk of suffering violence by the elderly people.

Methods

Participants

This study has 101 participants of both genders, the most prevalent being female (64.4%). The minimum age of the sample is 65 years and the maximum age is 94 years (76.09±8.84). The marital status of the participants is basically characterized by widowed subjects (58 subjects) and married subjects (31 subjects). Most subjects in the sample live in nursing homes (56 subjects), whose average time to live in these institutions is greater than 3 years (3.64±3.71). In this study, adult subjects aged ≥ 65 years were included, and subjects with severe cognitive or behavioral problems that made their response to the protocol unfeasible were excluded.

Measures

The protocol of this study consisted of a sociodemographic questionnaire to collect the

characteristics of the participants, the Arvini Range Test, the University of California, Los Angeles (UCLA) Loneliness Scale, the Mini Mental State Examination and Positive and Negative Affect Schedule. The Arvini Range Test Scale (Portuguese version of Mendes and Gemito, 2017 cited by Mendes et al.[20]) is designed to assess the risk of violence that elderly people may suffer. The scale score can vary between 0 and 27 points, in a total of 27 items that compose it. Its Cronbach Alpha is 0.727. The University of California, Los Angeles (UCLA) Loneliness Scale (Portuguese version of Pocinho et al.[21]), assesses the loneliness felt by the elderly people, which is greater the higher the score obtained in this instrument. Values can range from a minimum of 16 points to a maximum of 64 points. Cronbach's Alpha is good, with a value of 0.905. The Mini Mental State Examination (MMSE; Portuguese version by Guerreiro et al.[22]) assesses cognitive functioning based on a set of cognitive functions (e.g., orientation, attention, language, etc.). The score is also awarded taking into account the literacy level of the participants and varies between a minimum value of 0 points and a maximum value of 30 points. According to the authors of this version, there is good validity and reliability between observers. Finally, the Positive and Negative Affect Schedule (PANAS; Portuguese version by Galinha and Ribeiro[23]) was applied, which assesses positive affects through 10 items and negative affects through another 10 items. As for its internal consistency, Cronbach's Alpha for positive affects is 0.86 and for negative affects is 0.89.

Procedure

For this study, Portuguese elderly people living in the community and elderly people living in nursing homes were contacted. Regarding the elderly living in the community, the team of researchers contacted them in person. They were informed of the purpose of the study, the ethical and deontological duties inherent to the investigation and the voluntary nature of their participation in the study. Their participation in the study only took place after signing the informed consent and the protocol was applied individually in their real-life space, their privacy and confidentiality being always ensured. As for the subjects who lived in nursing homes, the directors of the institutions who were asked to collaborate in the study were contacted. After knowing the objectives of the study, the direction allowed contact with the elderly and/or their legal representatives. All those who signed the consent informed and met the study criteria, responded to the protocol in a private room at the institution. The voluntary nature of participation in the study, as well as the ethical and deontological conduct and duties inherent to the investigation, were also communicated and assured. Due to the pandemic situation caused by COVID-19, all the required prevention and safety procedures and measures were ensured.

Data analysis

The statistical software R, R-Studio was used, which allowed the analysis of the collected data. A descriptive analysis of the sample data was carried out, in particular, the calculation of the mean and standard deviation and the percentages and frequencies according to the type of study variable (e.g., quantitative or nominal). Statistical assumptions about data normality and homogeneity were also calculated. The Gamma Regression Model with logarithmic link function was used to study the variable "risk of suffering violence". This study took into account the significance levels of p-value <.05.

Results

Prediction of the risk of suffering violence by the elderly people

The coefficients of the variables explaining the risk of suffering violence by the elderly people are shown in table I.

Table I: Variable coefficients: cognitive functioning, loneliness, positive effects and negative affects

	Estimated value	**SE**	**t value**	**p-value**
Intercept	2.333	.190	12.301	<2e-16***
Cognitive functioning	-.007	.005	-1.417	.160
Loneliness	.005	.003	1.553	.124
Positive affects	-.045	.036	-1.265	.209
Negative affects	.071	.047	1.510	.134

Note: SE= standard error; *P* = p-value (*.05; **.01; ***.001).

This gamma model does not reveal any significant covariate for the risk of suffering violence by the elderly people. The values of residual deviations vary between -0.61 and 0.54. The residual deviation value is 4.1296 for 95 degrees of freedom. The quality of this adjustment given by the Akaike Information Criterion (AIC) is 437.46. The covariates to be included in the gamma model were automatically calculated, new results were found for the adjusted model (table II).

Table II: Variable coefficients: cognitive functioning, loneliness and negative affects

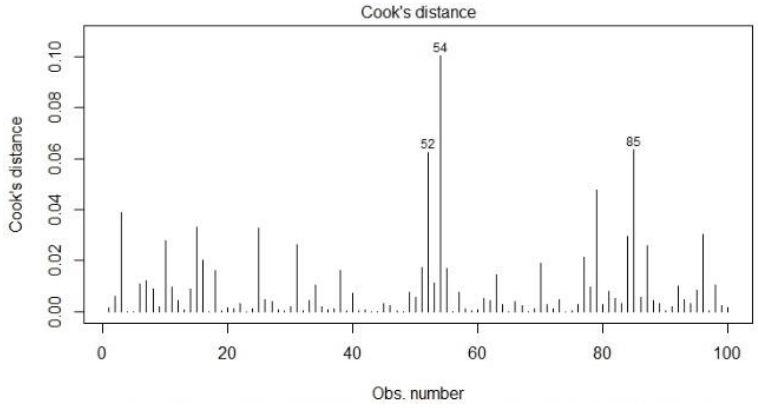
	Estimated value	SE	t value	p-value
Intercept	2.256	.182	12.409	<2e-16***
Cognitive functioning	-.009	.005	-1.702	.092
Loneliness	.005	.003	1.541	.127
Negative affects	.074	.047	1.572	.119

Note: SE= standard error; *P* = p-value (*.05; **.01; ***.001).

This gamma model fit eliminated a covariate, positive effects, and did not identify any covariate as significant. This fit showed residual deviation values between -0.61 and 0.56, with a residual deviation value of 4.1938 with 96 degrees of freedom. The AIC value is 437.01, lower than the AIC of the previous model. The p-value to verify the suitability of this model is 1, which shows that it is an adequate model.

The calculation of Cook's distance (figure 1) made it possible to identify the observations that effectively influenced the model. 3 effectively influential observations were identified, namely observations 52, 54 and 85. If there is any modification or exclusion of these observations in this model, it may undergo significant changes in its parameters.

Figure 1. Cook's Distance



These three influential observations were removed and the coefficients of the gamma model were recalculated (table III).

Table III: Variable coefficients: cognitive functioning, loneliness, positive effects and negative effects

	Estimated value	SE	t value	p-value
Intercept	2.293	.176	13.026	<2e-16***
Cognitive functioning	-.008	.005	-1.739	.085
Loneliness	.006	.003	1.903	.060
Positive affects	-.020	.033	-.633	.528
Negative affects	.056	.043	1.292	.200

Note: SE= standard error; *P* = p-value (*.05; **.01; ***.001).

With this new gamma model, there are no significant covariates in the model. Residual deviations have values between -0.60 and 0.37. The value of the AIC is 408.51. The residual deviation is 3.4574 for 92 degrees of freedom. Given the value of p-value =1, the hypothesis that this regression model is adequate. A new model fit value was performed, which automatically considered the covariates to be included in the model (table IV).

Table IV: Variable coefficients: cognitive functioning and loneliness

	Estimated value	**SE**	**t value**	**p-value**
Intercept	2.330	.158	14.79	<2e-16***
Cognitive functioning	-.010	.005	-2.17	.033*
Loneliness	.008	.003	2.87	.005**

Note: SE= standard error; *P* = p-value (*.05; **.01; ***.001).

With this new adjustment, the affects (positive and negative) were eliminated and there are now two significant covariates at the usual levels of significance (5%), namely, cognitive functioning and loneliness. Residual deviations range from -0.59 to 0.37. The AIC has a value of 406.52 (lower than the previous model) and the residual deviation value is 3.5294 with 94 degrees of freedom. Given the value of p-value=1, it is accepted that this model is adequate. Comparing this model with the one previously obtained, this one proves to be the best adjusted to explain this data set.

Discussion

The main objective of this study was to analyze whether cognitive functioning, loneliness and affects were predictors of the risk of suffering violence in the elderly people. The results of this study revealed that cognitive functioning and loneliness are predictors of the risk of suffering violence in the elderly people.

In the study by Serra et al.[18], the severity associated with cognitive and behavioral changes in elderly people with dementia were also shown to be predictors of violence against these subjects. Cognitive functions can be impaired by experiences of violence, this being demonstrated in those people who are able to evoke their emotions that derive from these severe experiences.[24]

In the study by Nosek et al.[25], women with disabilities (e.g., cerebral palsy, multiple sclerosis, etc.) are more vulnerable to violence. From an emotional point of view, they suffer rejection and emotional abandonment, physically they are subjected to confinement or physical restraint and from a sexual point of view they could be subjected to forcing sexual activity or fondling, etc. Also, in a study with women aged between 70 and 75 years, when assessing the risk of violence in their relationship with a partner, Cations et al.[17] found that women who had experienced violence in their intimate partner had worse mental health, greater risk of depression, and greater vulnerability to violence than women who did not have this type of life experience. Women, in fact, are often the victims, with a higher risk of suffering physical violence, mental neglect and violence in general, even when living in nursing homes. And when they suffer from dementia, the risk of mental neglect is much higher[2]. In addition to nursing homes, it is important to attend to caregivers. In the study by Kishimoto et al.[26], carried out with 123 caregivers of elderly people with clinically mild cognitive dysfunction, it was found that 15.4% caregivers reported violence and 30% reported some kind of violence. With regard to loneliness, our results are in line with the study by Dong et al.[27], who found that as the loneliness of the elderly people increased the risk of suffering violence. When mental and physical health is poor, or the natural environment of life may be problematic or with few people, social isolation and loneliness in the elderly tend to manifest [28]. Also, Dong et al.[29] found in their study that more loneliness was correlated with the risk of suffering violence. The feeling of sometimes being left out in life, feeling of often lacking companionship or confounding factors were positively related to the risk of elderly people aged ≥ 60 years suffering violence.

In the study by Cooper et al.[30], feelings of loneliness do not reveal a significant relationship with the presence of at least one indicator of violence. On the other hand, the fact that "people do not feel comfortable interacting with others" has already been shown to be significantly related to

the possibility of violence. The COVID-19 pandemic has reduced social interactions between people, causing greater loneliness and social isolation, factors that have fueled violence [31]. On the other hand, the study by Chang and Becca[32] showed that elderly people who remained physically distant during the pandemic phase were less likely to experience violence. However, these authors consider that, in general, there has been an increase in violence against the elderly people in this pandemic phase, compared to life before the COVID-19 pandemic. Other factors such as favorable economic conditions, not living alone or living closer to urban centers may favor less isolation, loneliness[28] or other serious risk factors for the elderly people.

This study did not allow us to identify the differences in predictive effects between institutionalized and non-institutionalized elderly people, as well as between men and women. However, it highlights the importance of knowing and evaluating cognitive functioning, affects and loneliness, in nursing homes or in the community. This can help to mitigate the conduct of violence against elderly people or even build policies to protect them, even though elderly people with a sense of community may be more protected from suffering violence [32]. The frequency and severity of these risk factors should be evaluated in future investigations, as well as the implementation of longitudinal studies that assess the manifestation of these potentially dangerous factors for the elderly people over time.

Conclusions

In this investigation, when potentially influential observations were eliminated, the best model of the study revealed that the presence of cognitive functioning and loneliness are important characteristics that should be considered as predictors of the risk of suffering violence by the elderly people. The risk of violence against the elderly people can occur in men as well as in women, whether they live in nursing homes or live in the community. The mental assessment of these subjects is important as a measure to prevent possible abuse.

Conflicts of Interest Statement: There are no conflicts of interest in this study.

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