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EPIDEMIOLOGY OF AGGRESSION MORTALITY IN THE ELDERLY

EPIDEMIOLOGIA DA MORTALIDADE POR AGRESSÕES EM IDOSOS

EPIDEMIOLOGÍA DE LA MORTALIDAD POR AGRESIONES EN ANCIANOS

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ABSTRACT

Objective: to describe mortality due to aggression in the elderly. **Method:** this is a quantitative, epidemiological and descriptive study, carried out with data from the Mortality Information System (MIS). Deaths from aggressions occurred between 2003 and 2014 were analyzed according to the basic cause of death, the triennium of occurrence, sex, age group, region, municipality, place of occurrence and the means used to perpetrate aggression. **Results:** it is highlighted that the mortality due to aggression was the second largest cause of deaths due to external causes, with a percentage ranging from 12.02 (2003-05) to 9.16 (2012-14). Male overmortality was identified by aggressions in all age groups and the increase in Mortality Coefficients (CM) in the North, rising from 14.67/100 thousand (2003-05) to 20.25 / 100 thousand (2012-14), $\Delta = 38.04\%$. **Conclusion:** evidence of the results obtained gives visibility to the deaths due to aggression in the elderly and highlights the importance of using the data generated by the MIS as a subsidy to the public policies directed to the elderly. **Descriptors:** Mortality; Aggression; Old man; Descriptive Epidemiology; Information systems; Health Management.

RESUMO

Objetivo: descrever a mortalidade por agressões em idosos. **Método:** trata-se de um estudo quantitativo, epidemiológico e descritivo, realizado com dados do Sistema de Informação sobre Mortalidade (SIM). Analisaram-se os óbitos por agressões, ocorridos entre 2003 e 2014, segundo a causa básica do óbito, o triênio de ocorrência, o sexo, a faixa etária, a região, o município, o local da ocorrência e o meio utilizado para perpetrar a agressão. **Resultados:** ressalta-se que a mortalidade por agressões foi a segunda maior causa de óbitos por causas externas, com percentual variando de 12,02 (2003-05) a 9,16 (2012-14). Identificaram-se a sobremortalidade masculina por agressões em todas as faixas etárias e o incremento dos Coeficientes de Mortalidade (CM) na região Norte, subindo de 14,67/100 mil (2003-05) para 20,25/100 mil (2012-14), $\Delta=38,04\%$. **Conclusão:** evidenciam-se nos resultados obtidos dão visibilidade aos óbitos por agressões em idosos e evidenciam a importância da utilização dos dados gerados pelo SIM como subsídio às políticas públicas direcionadas aos idosos. **Descritores:** Mortalidade; Agressão; Idoso; Epidemiologia Descritiva; Sistemas de Informação; Gestão em Saúde.

RESUMEN

Objetivo: describir la mortalidad por agresiones en ancianos. **Método:** se trata de un estudio cuantitativo, epidemiológico y descriptivo, realizado con datos del Sistema de Información sobre Mortalidad (SIM). Se analizaron las muertes por agresiones ocurridas entre 2003 y 2014, según la causa básica del óbito, el trienio de ocurrencia, el sexo, el grupo de edad, la región, el municipio, el lugar de la ocurrencia y el medio utilizado para perpetrar la agresión. **Resultados:** se resalta que la mortalidad por agresiones fue la segunda mayor causa de óbitos por causas externas, con porcentual que varía de 12,02 (2003-05) a 9,16 (2012-14). Se identificaron el exceso de mortalidad masculina por agresiones en todos los grupos de edad y el incremento de los Coeficientes de Mortalidad (CM) en la región Norte, subiendo de 14,67 / 100 mil (2003-05) a 20,25 / 100 mil (2012-14), $\Delta = 38,04\%$. **Conclusión:** se evidencian en los resultados obtenidos dan visibilidad a las muertes por agresiones en ancianos y evidencian la importancia de la utilización de los datos generados por el SIM como subsidio a las políticas públicas dirigidas a los ancianos. **Descriptores:** Mortalidad; Agresión; Anciano; Epidemiología Descritiva; Sistemas de Información; Gestión em Salud.

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INTRODUCTION

It is understood that the aging of the population is a matter of great relevance for public health around the world. It is estimated that in the next five years, for the first time in history, the number of older people over 65 will exceed that of children under five on the planet.¹

It is reported, by recent data, the existence of 865 million elderly people in the world, which corresponds to approximately 12% of the entire population. It is estimated that by 2050 there will be 2.4 billion elderly people, or 26.2% of the world population.²

It is known that the population of elderly people in Brazil, represented by individuals 60 years of age or older, increased by about 600% in the last 50 years, from three million in 1960 to 20.5 million in the year of 2010 (10.8% of the total).³ It is expected that Brazil, in the year 2025, will house some 32 million elderly people, becoming the sixth nation in the world with the largest absolute number of elderly people.⁴

It should be emphasized that the growing increase of the elderly population should not be considered a problem, since it is undoubtedly an achievement due to the process of development and social advancement. It is emphasized that the greater fragility and the physiological vulnerability of this age group make it a potential victim of several gloomy occurrences. It is shown that violence to the elderly, for example, constitutes a phenomenon that has assumed great proportions in modern society⁵⁻⁶ and represents a major public health problem.⁷⁻⁸

Violence against the elderly was conceived as a family issue until the end of the first half of the 20th century. It is reported that, since the 1970s, it has become the goal of scientific studies and public policy in several countries around the world, including Brazil.⁵

Violence against the elderly is constituted as a single or repeated action or an absence of appropriate action, causing suffering and distress, and may occur in any relationship where there is expectation of trust.⁹ It is noted that among the various forms of violence aggressions are defined as injuries imposed by another person employing any means with the intention of injuring (hurting) or killing.¹⁰

With the exception of Korea and Papua New Guinea, the countries of Africa and Latin America share the first 60 highest mortality rates due to aggression, especially in

Honduras, El Salvador, Cote d'Ivoire, Jamaica, Venezuela, Belize and Guatemala, which are at the top of the list, with coefficients above 41 deaths per 100,000 inhabitants. Brazil is in the 26th position when considering the mortality coefficients for aggressions in the world.¹¹

It is added that, during the period from 2000 to 2014, 765,672 people died of aggression in Brazil. A mortality coefficient of 28.2/100 thousand inhabitants and 29.4/100 thousand inhabitants, respectively, was estimated in 2013 and 2014.³ It should be noted that coefficients of mortality due to gender-based violence have high values for the men, being, on average, about ten to 12 times larger than the coefficients found among women.¹¹

The number of publications on violence among the elderly, especially in the Brazilian population, is still incipient.¹²⁻³ It is shown in a study carried out in Brazil¹⁴ with data from the Mortality Information System (MIS), in 2000, deaths due to aggression in individuals aged 60 years or over. It is reported that the coefficient of mortality found corresponded to 9.5/100 thousand inhabitants, being 18.1/100 thousand among elderly men and 2.5/100 thousand among elderly women. It is stated that, more recently, a mortality coefficient for aggressions in the elderly of 9.7 per 100 thousand inhabitants.¹⁵

It is noted that, although the elderly are not the group with the highest risk of death due to aggression, mortality due to violence has increased among them, which can mean a public health problem, especially when the population increase is expected in this age group. It is imperative to use mortality statistics to identify health problems affecting this population.¹⁶

It is believed that the greater knowledge of the magnitude, characterization and trends of mortality due to aggressions in the elderly in Brazil could support the planning, evaluation and implementation of actions aimed at reducing and preventing this event, seeking a greater positive impact in the levels of health care and in the living conditions of the Brazilian elderly population.

OBJECTIVE

- To describe mortality due to aggression in the elderly.

METHOD

This is a quantitative, epidemiological and descriptive study on mortality due to aggression occurred in the elderly population

in Brazil during the period from 2003 to 2014. Secondary data from official databases of the Mortality Information System (MIS) electronic portal of the Department of Informatics of the Unified Health System (DATASUS).³

It is standardized at the national level that the MIS be fed through the Death Certificates (DC) based on the basic cause of death reported by the attending physician. It is noted that the municipal and state health secretaries send their data to the Ministry of Health for the DATASUS database. It should be emphasized that these data can only be made publicly available upon receipt of information from all Brazilian Federal Units (UF).¹⁷ It is understood, therefore, that the time cut established for this research was the period from 2003 to 2014, since the data was collected in April 2016 and information regarding the deaths of 2015 were not yet available.

The population of this study is therefore composed of data on deaths from aggressions occurring between individuals aged 60 and over in the period from 2003 to 2014 and notified to the MIS. It is known that, for purposes of classification of the basic cause of death by aggressions, those classified in codes X85 to Y09 of the International Statistical Classification of Diseases, Tenth Revision, ICD-10.

Deaths were studied for three-year occurrences¹⁸⁻⁹ (2003-05, 2006-08, 2009-11 and 2012-14), with the purpose of reducing fluctuations in the number of deaths recorded each year, analyzing them according to region (North, Northeast, Midwest, South and Southeast), the municipality where the death occurred, the sex (male and female), the age group (60 to 69, 70 to 79 and 80 years or more), (firearm, sharp or penetrating object, blunt object, unspecified means and other means) and the place of death (hospital, domicile, public road and others / ignored). It is highlighted that the dependent variable was the basic cause of death, according to ICD-10.

The Mortality Coefficients (MC) were calculated for each 100 thousand inhabitants according to the groupings of external causes, sex, age group, municipality and region of death. The triennial mean of deaths recorded in the MIS and, in the denominator, the average population of each triennium were calculated according to the following formula: $MC = (\text{mean triennial deaths per cause group} / \text{population in the middle of the studied triennium}) \times 100 \text{ thousand}$.

The demographic data published by the Brazilian Institute of Geography and Statistics

(IBGE)³ were used to carry out the epidemiological calculations.

Moreover, the percentage changes were calculated ($\Delta\%$) MC for aggressions in the elderly according to the following formula: $\Delta (\%) = (\text{coefficient of the 2nd triennium} - \text{coefficient of the 1st triennium} / \text{coefficient of the 1st triennium}) \times 100$. It is noted that, to obtain Proportional Mortality (PM) for the basic cause of death, the following formula was used: $PM = \text{deaths in the triennium, by determined cause group} / \text{triennial average of deaths, by determined causes} \times 100$.

The ratio of over-mortality according to sex and age ranges was also measured. It is pointed out that the average three-year percentage was calculated for the variables "means used to perpetrate the aggression" and "place of death".

All data was analyzed in the program Microsoft Excel 2016 after the elaboration of spreadsheets in that same software.

In this study, unidentified secondary data of public domain and available on DATASUS electronic portal were used. It should be noted that, in accordance with the existing ethical and legal aspects, there was no need for ethical appreciation by the Research Ethics Committee.

RESULTS

Over the 12 years analyzed (2003-2014), 8,058,246 deaths of elderly people in the country were reported to the MIS, of which 258,355 deaths were motivated by external causes. Considering the coefficients of mortality by specific types of external causes, higher values were found for accidents ranging from 63,70 / 100 thousand (2003-05) to 86,15 / 100 thousand (2012-14). It should be noted that the coefficient of mortality from aggressions varied little during the period analyzed, ranging from 10.51 / 100 thousand in the first triennium to 9.95 / 100 thousand in the last three years ($\Delta = -5.34\%$). The coefficients of mortality by events of undetermined intention varied from 17.93 / 100 thousand (2003-05) to 13.81 / 100 thousand (2012-14). Such cases refer to cases in which the available information was not sufficient to allow its attribution.

It was revealed by the distribution of proportional mortalities by types of external causes in Brazil (Table 1), that the aggressions were the second largest cause of death, despite having a reduction in the period studied, with a percentage varying from 12.02 (2003 -05) to 9.16 (2012-14).

Table 1. Proportional mortality in the elderly by types of external causes in the three-year period 2003-05 to 2012-14. Rio de Janeiro (RJ), Brazil, 2016.

Types of external causes	2003-05	2006-08	2009-11	2012-14
Accidents	72.88	76.58	78.21	79.36
Aggressions	12.02	10.77	9.91	9.16
Suicides	8.32	7.88	7.17	7.01
Other defined causes	6.78	4.77	4.71	4.47

Source: Mortality Information System (MIS).³

The mortality coefficients according to the Brazilian regions are shown in figure 1. The mortality coefficients for aggressions in the elderly in the northern region of Brazil varied from 14.67 / 100 thousand in the three-year period 2003-05 to 20.25 / 100 thousand in the three-year period 2012-14 (Δ = 38.04%). It is observed that the mortality coefficients of the Southeast region were the ones of smaller magnitude among the analyzed regions, having suffered a reduction of 23.24%

between the triennia 2003-05 and 2012-14, going from 9.22 to 7.08 deaths per 100,000 inhabitants. It is reported that in the 2012-14 triennium, the sum of the mortality coefficients of the Southern (MC = 7.93 / 100,000) and Southeast (MC = 7.08 / 100,000) regions was lower than the coefficient detected in the Northern regions (MC = 20.25 / 100,000) and Center-West (MC = 16.51 / 100,000).

Figure 1. Mortality coefficients (100,000) due to aggressions in the elderly in the regions of Brazil in the three-year period from 2003-05 to 2012-14. Rio de Janeiro (RJ), Brazil, 2016. Source: Mortality Information System (MIS).³

Among the ten Brazilian capitals with the highest mortality rates due to aggression in the elderly (2012-14), six in the North region,

two in the Midwest region and two in the Northeast region (Table 2).

Table 2. Capitals of Brazil with the highest mortality rates (100 thousand inhabitants) due to aggression in the elderly in the triennium 2012-14. Rio de Janeiro (RJ), Brazil, 2016.

Capitol	Region	Total deaths in triennium	Annual average of deaths	Elderly Population	Mortality coefficient (2012-14)
Boa Vista (RR)	North	20	6.67	14.729	45.26
Rio Branco (AC)	North	24	8.00	21.620	37.00
Palmas (TO)	North	11	3.67	9.978	36.75
Maceió (AL)	Northeast	71	23.67	79.087	29.92
Porto Velho (RO)	North	21	7.00	24.153	28.98
Cuiabá (MT)	Midwest	34	11.33	44.817	25.29
Manaus (AM)	North	76	25.33	108.081	23.44
Macapá (AP)	North	13	4.33	20.508	21.13
São Luís (MA)	Northeast	48	16.00	77.971	20.52
Goiânia (GO)	Midwest	69	23.00	124.682	18.45

Source: Mortality Information System (MIS).³

The mortality coefficients were higher for males in all the three-year periods studied, being higher in the three-year period 2003-05, with sex ratio corresponding to 7.98.

The mortality rates in the age range of 60 to 69 years were higher among male elderly.

It is known that in the female sex, the mortality coefficients were higher in the age group of 80 years or more, consequently, the male over-mortality due to aggressions in this study decreased with the advancement of age (Table 3).

Table 3. Mortality coefficients (100 thousand inhabitants) and ratio of excess mortality by aggressions in the elderly according to sex and age group in the three-year period from 2003-05 to 2012-14. Rio de Janeiro (RJ), Brazil, 2016.

Triennials (N/100.000)				
Age group	2003-05	2006-08	2009-11	2012-14
Male				
60 to 69 years	23.30	21.54	21.28	20.62
70 to 79 years	17.20	16.73	17.16	17.80
80 years or more	14.87	16.12	17.07	15.95
Female				
60 a 69 years	2.52	2.30	2.41	2.32
70 a 79 years	2.60	2.82	2.60	2.67
80 years or more	2.66	3.23	3.68	3.76
About elderly mortality				
60 a 69 years	9.25	9.35	8.83	8.88
70 a 79 years	6.60	5.93	6.60	6.68
80 years or more	5.60	4.99	4.64	4.24

Source: Mortality Information System (MIS).³

The coefficients in the age group of 60 to 69 years were reduced among the deaths occurred in males, during the triennia evaluated. An increase in the mortality coefficient was observed in females every three years evaluated in the group of elderly women aged 80 years or older.

The firearm was the instrument most used in fatal aggressions against the elderly during the period studied (2003-2014), with prevalence of 42.85%. It was verified that 22.89% of the deaths were perpetrated by

sharp or penetrating objects; 13.69%, by forceful objects; 11.98%, by other instruments and 8.59%, by unspecified means. It can be noticed that in relation to the proportion of the use of the firearm, the value of 44.89 was obtained in the triennium 2003-05; 43.64, in the triennium 2006-08 and 41.70, in the last two three-year periods evaluated (2009-11 and 2012-14).

Table 4 shows that, in all triennia evaluated, the highest percentage of deaths occurred in the household.

Table 4. Proportion of deaths due to aggression against the elderly by triennia according to the place of occurrence in the triennium from 2003-05 to 2012-14. Rio de Janeiro (RJ), Brazil, 2016.

	Place of occurrence			Triennials 2012-14
	2003-05	2006-08	2009-11	
Home	32.99	33.85	32.78	33.20
Hospital	29.23	28.92	30.85	28.94
Public highway	20.22	21.54	21.37	21.13
Others/Ignored	17.56	15.69	15.00	16.73

Source: Mortality Information System (MIS).³

DISCUSSION

External causes are documented as prominent factors of morbidity and mortality in Brazil since the 1980s. It should be noted that the pattern of deaths due to external causes in Brazil differs from other places in the world in the following aspects: most deaths are caused by accidents or assaults, unlike most countries in North America, Europe, the Middle East and Oceania where most of the deaths are motivated by suicide, wars and civil strife.⁵

It is considered the maximum expression of interpersonal violence, the death by aggression, that has deep social meaning. It is said to reflect social problems related to macro-social variables such as inequality, impunity, corruption, the presence of organized crime and others, as well as aspects of private spaces of interpersonal coexistence, specifically violence domestic. It is not by chance that the highest coefficients of mortality from aggression occur in low-developing countries and they are much more frequent in countries where there are social inequalities.¹¹

The highest coefficient of mortality from aggression in this study was recorded in the 2003-05 triennium (10.5 / 100 thousand), a rate that corresponds to less than 50% of the mortality coefficient for aggressions found for the Brazilian general population, corresponding to 28.6 deaths per 100 thousand inhabitants.¹⁵

According to official data, the age range of 20 to 24 years is the highest risk of death due to aggression in Brazil (67.1 / 100 thousand) followed by the age groups of 15 to 19 (56.3 / 100,000) and from 25 to 29 years old (54.6 / 100,000). The elderly are aged 60-69 years, the mortality coefficient for aggressions is 10.4 / 100 thousand and 8.7 / 100 thousand inhabitants among the elderly aged 70 years or over. It is known that the lowest rates of aggression mortality correspond to individuals from zero to four years (1.7 / 100 thousand), from five to nine years (0.6 / 100,000) and from ten to fourteen (4.2 / 100 thousand).¹⁵

It is noteworthy that, although it presented a lower magnitude when compared to other age groups, the mortality rate due to aggression in the elderly in Brazil is higher than in many developed countries.¹⁴ It should be emphasized that Latin America is the region with the (19.9 / 100 thousand) followed by the Caribbean (16.3 / 100 thousand), Africa (10.1 / 100 thousand), North America (5.6 / 100 thousand), Asia (2.1 / 100

thousand), Oceania (1.3 / 100 thousand) and Europe (1.2 / 100 thousand).²⁰

It is thought that the high rate of deaths from events of undetermined intention found in this study may have underestimated the mortality coefficients for aggressions, as well as may have interfered in the results of proportional mortality by types of external causes.

Differences were observed in the pattern of distribution of violence against the elderly among Brazilian regions. It is reported that the highest mortality rates were found in the North, Northeast and Central West regions, which coincides with the pattern of violence against the elderly identified by other authors. The study results on mortality in the Brazilian general population over the last 28 years (1980 to 2008) showed that the same regions (North, Northeast and Center-West) had the highest mortality rates due to aggressions throughout the country.⁵

These findings can be associated with strong social inequalities, low average levels of schooling, as well as the existence of areas of agricultural frontiers with intense conflicts over land tenure, common characteristics in less socio-economically developed regions of Brazil.^{5,21}

The prevalence of mortality due to aggression in males presented in this study by other authors was observed.^{15,20-2} It is detailed in a research carried out in 2013 and found a mortality coefficient for aggressions (60-69 years) of 19.5 / 100 thousand among the elderly and 2.6 / 100 thousand inhabitants among the elderly. It is reported that among the oldest (70 years and over), the coefficient was 16.9 / 100 thousand inhabitants among the elderly and 2.9 / 100 thousand inhabitants among the elderly.¹⁵

It has been shown in other studies that male over-mortality exists for most causes of death and in practically all age groups and that life expectancy at birth is always lower among men.²²⁻⁴ It is conceivable that men both die and kill more because they often expose themselves to situations of accidents and violence because of masculine reaffirming behaviors that symbolize greater power and require virility and aggressiveness, making them paradoxically more vulnerable to early deaths due to preventable complications.²³

By comparing the male mortality coefficients by age groups, the decrease in deaths in more advanced age groups was indicated. This demonstrates the heterogeneity of the characteristics of the elderly population since those who are most

vulnerable to risks tend to die at younger ages and survivors tend to be less vulnerable by "pressing" the mortality coefficients of the elderly for decreasing values.²⁵

It is inferred that the firearm was the most used instrument to perpetrate the deaths, a fact also observed by several other authors.^{5,15,20-6} It is emphasized that a study showed that Brazil presents mortality rate per gun of fire of 20.7 / 100 thousand inhabitants occupying the tenth position among 100 countries analyzed.²⁷ It is reported that the coefficient detected in Brazil is much higher than in several countries that did not record a single case of death by firearm, Japan, England, Wales, Luxembourg, Iceland and Republic of Korea, and 207 times greater than countries like Poland, Germany, Austria, Spain and Denmark (0.1 / 100 thousand). It should be noted that the highest mortality rate in the study was recorded in Honduras (66.6 / 100,000) followed by El Salvador (45.5 / 100,000) and the Virgin Islands - United States of America (45.0 / 100 thousand).

In a study carried out in Maceió, Alagoas, 625 deaths were carried out by firearm, with ten cases among elderly men and no cases of death by firearm among elderly women.²⁸

The whole Brazilian society is concerned about the wide use of firearms and it is estimated that in Brazil there is a vast arsenal of this type of instrument in the hands of the population: 15.3 million, of which 6.8 are registered and 8.5 not registered. Of note, of these, 3.8 million are in criminal hands. It is noted that, despite the laws restricting trade and the carrying of firearms, smuggling facilitated by the incipience of surveillance in border areas allows for easier access and use of the same for the perpetration of homicides.^{20,1}

It should be pointed out that the home of the elderly as the most frequent scenario of death by aggression is consistent with the results presented in the last World Report on Violence and Health of the World Health Organization (WHO).⁹ In a study carried out in Aracaju, Sergipe, showed that approximately 97% of violence against the elderly occurred in the home environment.²⁹ It is noticed that among the general population, a study conducted in Itabuna, Bahia, found that 57.2% of the deaths due to aggression occurred on public roads; 20.5% in hospital; 11.9%, in another place and only 10.4% occurred at the victim's home.²¹

It is recommended by the Pan American Health Organization that the health sector should help seek solutions and applications of preventive measures and control of all forms

of violence against the elderly. In this context, there is a marked prevalence of deaths due to aggression in the elderly's own home, Primary Health Care (PHC) has an enormous potential to build strategies for prevention, early detection and follow-up of individuals and families vulnerable to situations of violence since their professionals routinely work in the home of the elderly.³⁰

Some limitations in this research are presented in relation to studies with secondary data. It is understood that the MIS, despite being one of the first information systems implemented by the Ministry of Health and presenting improvements over time in both coverage and quality of records, it can produce data that is biased by potential problems in completing the Death Certificates and possible underreporting of deaths.¹⁵

CONCLUSION

The findings of this study show the importance of using the data on mortality generated by the official health care agencies, both to give visibility to the deaths caused by aggressions in Brazilian elderly people, and to subsidize public policies for the prevention and control of lethal violence against the elderly. Knowledge was added to the theme, considering the inclusion of the analysis of variables not explored in national and international studies such as the region of death, the capital where the death occurred, the age group, the means used to perpetrate the aggression and the place of occurrence of death.

Other investigations on mortality due to aggression in elderly people are suggested, especially in the Brazilian regions that presented high occurrences over the three-year periods analyzed. It is pointed out that the development of new studies to better delineate the vulnerability of the elderly man in relation to the lethal aggression is relevant.

Finally, it should be pointed out that violence against the elderly is a socio-historical phenomenon that directly affects the health of the victims, the family and the community. It is defined that combating this scourge that threatens the life, health and happiness of all requires measures that go beyond repressive actions and consider a set of articulated and systematized actions among different governmental sectors, diverse social segments and the population in general. It is pointed out that care and protection measures practiced from the primary health care levels could contribute significantly to the reduction of mortality rates due to aggression in the elderly.

REFERENCES

1. Suzman R, Beard JR, Boerma T, Chatterjs S. Health in an ageing world-what do we know? *Lancet*. 2015 Feb;7(385):484-6. Doi: [10.1016/S0140-6736\(14\)61597-X](https://doi.org/10.1016/S0140-6736(14)61597-X)
2. United Nations. Department of Economic and Social Affairs. World population prospects the 2015 revision: key findings and advanced tables [Internet]. New York: United Nations; 2015 [cited 2018 Jan 17]. Available from: <https://esa.un.org/unpd/wpp/>
3. Ministério da Saúde (BR), Departamento de Informática do SUS. Informações de saúde (TABNET) [Internet]. Brasília: Ministério da Saúde; 2016 [cited 2018 Jan 10]. Available from: <http://datasus.saude.gov.br/informacoes-de-saude/tabnet>
4. Bodstein A, Lima VVA, Barros AMA. The vulnerability of the elderly in disasters: the need for an effective resilience policy. *Ambient soc*. 2014 Apr/June;17(2):157-74. Doi: <http://dx.doi.org/10.1590/S1414-753X2014000200011>
5. Reichenheim ME, Souza ER, Moraes CL, Jorge MHPM, Silva CMFP, Minayo MCS. Violence and injuries in Brazil: the effect, progress made, and challenges ahead. *Lancet*. 2011 June;377(9781):1962-75. Doi: [https://doi.org/10.1016/S0140-6736\(11\)60053-6](https://doi.org/10.1016/S0140-6736(11)60053-6)
6. Ho CS, Wong SY, Chiu MM, Ho RC. Global prevalence of elder abuse: a meta-analysis and meta-regression. *East Asian Arch Psychiatry* [Internet]. 2017 June [cited 2018 Apr 07];27(2):43-55. Available from: <http://www.easap.asia/index.php/component/k2/item/771-1703-v27n2-p43>
7. Yon Y, Miktron CR, Gassoumis ZD, Wilber KH. Elder abuse prevalence in Community settings: a systematic review and meta-analysis. *Lancet Glob Health*. 2017 Feb;5(2):147-56. Doi: [10.1016/S2214-109X\(17\)30006-2](https://doi.org/10.1016/S2214-109X(17)30006-2)
8. Carmo EA, Souza TS, Nery AA, Vilela ABA, Martins Filho IE. Trend of mortality from external causes in elderly. *J Nurs UFPE on line* [Internet]. 2017 Jan [cited 2018 May 21];11(Suppl 1):374-82. Available from: <https://periodicos.ufpe.br/revistas/revistaenfermagem/article/view/11918>
9. Paraíba PMF, Silva MCM. Profile of violence against the elderly in the city of Recife-PE, Brazil. *Rev bras geriatr gerontol*. 2015 Apr;18(2):295-306. Doi: <http://dx.doi.org/10.1590/1809-9823.2015.14047>
10. Garcia LP, Freitas LR, Silva GD, Höfelmann DA. Corrected estimates of femicides in Brazil, 2009 to 2011. *Rev panam salud pública* [Internet]. 2015 May [cited 2017 Oct 12];37(4-5):251-7. Available from: <https://www.scielo.org/pdf/rpsp/2015.v37n4-5/251-257/pt>
11. Tavares R, Catalan VDB, Romano PMM, Melo EM. Homicides and social vulnerability. *Ciênc Saúde Coletiva*. 2016 Mar;21(3):923-34. Doi: <http://dx.doi.org/10.1590/1413-81232015213.12362015>
12. Bolsoni CC, Coelho EBS, Giehl MWC, d'Orsi E. Prevalence of violence against the elderly and associated factors - a population based study in Florianópolis, Santa Catarina. *Rev bras geriatr gerontol*. 2016 July/Aug;19(4):671-82. Doi: <http://dx.doi.org/10.1590/1809-98232016019.15018>
13. Warmling D, Lindner SR, Coelho EBS. Intimate partner violence prevalence in the elderly and associated factors: systematic review. *Ciênc Saúde Coletiva*. 2017 Sept;22(9):3111-25. Doi: <http://dx.doi.org/10.1590/1413-81232017229.12312017>
14. Gawryszewski VP, Jorge MHPM, Koizumi MS. Injury among the elderly: the challenge to integrate preventive activities in public and individual levels. *Rev Assoc Med Bras*. 2004;50(1):97-103. Doi: <http://dx.doi.org/10.1590/S0104-42302004000100044>
15. Ministério da Saúde (BR), Secretaria de Vigilância em Saúde Departamento de Vigilância de Doenças e Agravos não Transmissíveis e Promoção da Saúde. Saúde Brasil 2014 - uma análise da situação de saúde e das causas externas [Internet]. Brasília: Ministério da Saúde; 2015 [cited 2018 June 20]. Available from: http://bvsms.saude.gov.br/bvs/publicacoes/saude_brasil_2014_analise_situacao.pdf
16. Silva EA, França LHFP. Violence against the elderly in the city of Rio de Janeiro. *Estud Pesqui Psicol* [Internet]. 2015 Apr [cited 2018 June 22];15(1):155-77. Available from: <http://pepsic.bvsalud.org/pdf/epp/v15n1/v15n1a10.pdf>
17. Preis LC, Lessa G, Tourinho FSV, Santos JLG. Mortality epidemiology for external causes in the period 2004 to 2013. *J Nurs UFPE on line* [Internet]. 2018 Mar [cited 2018 May 27];12(3):716-28. Available from: <https://periodicos.ufpe.br/revistas/revistaenfermagem/issue/view/2569>
18. Ramalho MOA, Frias PG, Vanderlei LCM, Macêdo VC, Lira PIC. Evaluation of the

incompleteness in the filling out of death certificates of children under one year of age in the State of Pernambuco, Brazil, 1999-2011. *Ciênc Saúde Coletiva*. 2015 Sept;20(9):2891-8. Doi:

<http://dx.doi.org/10.1590/1413-81232015209.09492014>.

19. Marro MJ, Cardoso AM, Leite IC. Desigualdades regionales en la mortalidad por diabetes mellitus y en el acceso a la salud en Argentina. *Cad Saúde Pública*. 2017 Oct;33(9):2-16. Doi:

<http://dx.doi.org/10.1590/0102-311x00113016>

20. Souza ER, Melo AN, Silva JG, Franco SA, Alazraqui M, González-Pérez GJ. Multicentric study of deaths by homicide in Latin American countries. *Ciênc Saúde Coletiva*. 2012 Dec;17(12):3183-93. Doi:

<http://dx.doi.org/10.1590/S1413-81232012001200004>

21. Costa FAMM, Trindade RFC, Santos CB. Deaths from homicides: a historical series. *Rev Latino-Am Enferm*. 2014 Nov/Dec;22(6):1017-25. Doi:

<http://dx.doi.org/10.1590/0104-1169.3603.2511>

22. Melo ACM, Silva GDM, Garcia LP. Mortality from assault in young men in Brazil, 2010-2014: an ecological study. *Cad Saúde Pública*. 2017 Nov;33(11):1-16. Doi:

<http://dx.doi.org/10.1590/0102-311x00168316>

23. Moura EC, Gomes R, Falcão MTC, Schwarz E, Neves ACM, Santos W. Gender inequalities in mortality due to external causes in Brazil, 2010. *Ciênc Saúde Coletiva*. 2015 Mar;20(3):779-8. Doi:

<http://dx.doi.org/10.1590/1413-81232015203.11172014>

24. Camargos MCS, Gonzaga MR. Live longer and better? Estimates of healthy life expectancy in the Brazilian population. *Cad Saúde Pública*. 2015 July;31(7):1460-72. Doi:

<http://dx.doi.org/10.1590/0102-311X00128914>.

25. Daniel F, Antunes A, Amaral I. Representações sociais da velhice. *Aná Psicológica* [Internet]. 2015 Sept [cited 2018 June 18];33(3):291-301. Available from: <http://publicacoes.ispa.pt/index.php/ap/article/view/972/pdf>

26. Lee LK, Fleegler EW, Farrell C, Avakame E, Srinivasan S, Hemenway D, et al. Firearm laws and firearm homicides: a systematic review. *Jama Intern Med* [Internet]. 2017 Jan [cited 2018 June 21];177(1):106-19. Doi: [10.1001/jamainternmed.2016.7051](http://dx.doi.org/10.1001/jamainternmed.2016.7051)

27. Waiselfisz JJ. Mapa da violência 2016: homicídios por armas de fogo no Brasil [Internet]. Rio de Janeiro: Flacso; 2016 [cited 2018 June 23]. Available from: https://www.mapadaviolencia.org.br/pdf2016/Mapa2016_armas_web.pdf

28. Trindade RFC, Costa FAMM, Silva PPAC, Caminiti GB, Santos CB. Map of homicides by firearms: profile of the victims and the assaults. *Rev Esc Enferm USP*. 2015 Oct;49(5):744-55. Doi:

<http://dx.doi.org/10.1590/S0080-623420150000500006>

29. Aguiar MPC, Leite HA, Dias IM, Mattos MCT, Lima WR. Violence against the elderly: case description in the city of Aracaju, Sergipe, Brasil. *Esc Anna Nery Rev Enferm*. 2015 Apr/June;19(2):343-9. Doi:

<http://dx.doi.org/10.5935/1414-8145.20150047>

30. Santos MS, Silva JG, Branco JGO. Fighting violence under the family health strategy: challenges for health care. *Rev Bras Promoç Saúde*. 2017;30(2):229-38. Doi: [10.5020/18061230.2017.p229](http://dx.doi.org/10.5020/18061230.2017.p229)

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