

THE VULNERABILITY OF THE ELDERLY IN DISASTERS: THE NEED FOR AN EFFECTIVE RESILIENCE POLICY

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Introduction

Longevity has been identified as one of the most significant demographic changes of the 21st century. According to the 2012 report of the United Nations Population Fund (UNPF), in 2000 there were already more people worldwide aged 60 years or over than children under 5. Moreover, it is forecast that for the first time in the history of humanity, in 2050 there will be more people in this age group than children under 15.

There are currently 810 million people aged 60 or over worldwide, which equates to 11.5% of the global population, and the expectation is that this number will reach a billion in less than 10 years and more than double by 2050, affecting two billion people or 22% of the world's population. Japan is the only country in the world where more than 30% of the population is aged 60 or over, but, according to predictions, there will be 64 countries in 2050 in which the elderly population will make up 30% of the population.

Brazil, like other developing countries, is seeing a proportional drop in the population of young people and an increase in the proportion and absolute number of the elderly. The 2010 Demographic Census carried out by IBGE (Brazilian Institute of Geography and Statistics) highlighted a significant increase in the latter group over the last 50 years. In 1960, 3.3 million Brazilians were 60 or over and made up 4.7% of the population; in 2000, 14.5 million or 8.5% of Brazilians fell into this group. Over the last decade there has been a big jump: in 2010, this group represented 10.8% of the population, equating to 20.6 million people. In half a century (1960-2010), Brazilian life expectancy has increased by 25.4 years, rising from 48.0 to 73.4. Furthermore, over this period the average number of children per woman fell from 6.3 to 1.9, which is below the level for population replacement. It is forecast that in the period from 1950 to 2025 the elderly in Brazil will increase fifteen-fold, compared with a five-fold increase in the total population. If this

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occurs, the country will lie in sixth place as regards its cohort of the elderly, with roughly 32 million people aged 60 or over in 2025.

These changes, which have altered the Brazilian age pyramid, with a narrower base and a broader top, reflect the structure of an ageing population, which is a characteristic of more developed countries. However, ageing populations pan out differently in developing countries, where longevity is a recent phenomenon. As the World Health Organization states in its 2011 report *Global Health and Aging* (2011), it took more than 100 years in France for the percentage of the elderly aged 65 to rise from 7% to 14%, whereas in societies like Brazil, China and Thailand, this selfsame demographic path will be completed in around two decades. The prediction is that in 2050, 80% of the elderly will live in low income countries. At present, for each three people aged 60 or over, two of them live in developing countries, and the outlook for 2050 is that this number will rise to almost four out of five people. For 2020, the expectation is that the total number of people aged 60 or more will reach a billion, of whom 710 million will live in developing countries. What this means is that ageing populations in countries like Brazil represent a real challenge, both for politicians and society at large, especially for families who are legally responsible for caring for the elderly.

In Brazil, the first specific law to ensure the rights of the elderly was the National Senior Citizens Policy (*Política Nacional do Idoso*, PNI) (Law No 8.842 of 4th January, 1994), which was later regulated by the Senior Citizens' Statute (*Estatuto do Idoso*) (Law 10.741/2003), which states: "Families, society and the State have a duty to guarantee senior citizens all citizenship rights, ensuring they take part in the community and defending their dignity, well-being and right to life" (art.3, indent I). In turn, the "active ageing" policy championed by the World Health Organisation is based on the premise that ageing well is part of a collective construction which should be facilitated by public policies and access to healthcare throughout people's lives. This means "optimizing opportunities for health, participation and security in order to enhance quality of life as people grow older" (WHO, 2005).

Nevertheless, the targets laid down in laws and policies aimed at the elderly are still a long way from being met, chiefly in developing countries, where the shortage of material, human and technological resources, amongst others, is rendering the problems that affect the elderly population difficult to address whilst overburdening national infrastructures.

Faced with this reality, this work endeavours to analyse the vulnerability of the elderly in the context of disasters as part of Civil Protection and Defence, in the belief that within the group of vulnerable people – "children, pregnant women, the elderly and the disabled", as defined in Law 12.608, of April 2012, and in the Civil Defence Glossary (1998) –, the elderly are particularly at risk in emergencies. This is because in addition to the decline in functional capabilities stemming from the ageing process, multiple factors contribute to reducing senior citizens' resilience, such as illness, obesity, disability and living in at-risk areas, amongst others. Additionally, accidents at home or outside the home, together with illness and functional limitations, make the elderly even more vulnerable in disasters, as variables such as risk perception, state of alertness, attention, agility and mobility are compromised and hinder responses in these situations.

We have tried to systematise existing knowledge of the area, with the overall objective of contributing towards increasing the resilience of the elderly population as part of Civil Protection and Defence. To do so, we have researched how the phenomenon of population ageing raises new challenges in terms of protection measures. We have identified the causes for the vulnerability of the elderly and how they give rise to limiting factors when addressing disasters. The studies have been limited to natural disasters, given their increased intensity in recent years and the serious consequences they engender.

Variables that impact on the increased vulnerability of the elderly

Functional decline

A decline in functional ability as a whole can be seen during the natural and progressive ageing process. Variables such as risk perception, state of alertness, attention and mobility reduce gradually, considerably increasing the individual's vulnerability and the likelihood of becoming a victim of a critical event. Different factors and processes – physical, economic, social, psychological and physiological – all contribute to this vulnerability. Functional decline has been identified as the main manifestation of senior citizens' vulnerability, as shown by a state of fragility encompassing functional ability, balance and mobility, cognitive functioning, sensory deficiencies, emotional conditions/presence of symptoms of depression, availability and suitability of family and social support, environmental conditions and nutritional state and risk (LACAS; ROCKWOOD, 2012).

Bearing in mind that health and functional state are key factors in determining the individual's response capability, and that, according to the World Health Organisation (WHO, 1946), "health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity", equivalence between wellbeing and functionality can be assumed. Both represent the presence of autonomy (individual decision-making ability and command over actions, establishing and following own rules) and independence (ability to complete something using own resources), enabling individuals to look after themselves and their lives (MORAES, 2012). It can also be inferred that as the ageing population comprises a rather heterogeneous age group, with ages ranging from 60 to more than 100, the elderly population features differing degrees of autonomy and independence. In this way, the impact, direct or indirect, of critical events can influence the lives and health of this age group in differing forms and to differing intensities.

Accidents

The functional decline of the elderly can be further exacerbated by the consequences of accidents, both in the home and in public spaces. This increases their vulnerability in disasters, as these consequences may compromise the required mobility and agility, making it difficult for both themselves and rescue teams to react when a disaster strikes. Moreover, the vulnerable condition of the elderly means that the consequences of accidents are much more serious for them than for the population from other age groups,

as they tend to have to spend longer in hospital and rehabilitation, and tend to be at a higher risk of dependency and death afterwards. With this in mind, it is worth stressing the prevalence of falls, which can greatly reduce senior citizens' quality of life, contributing to a drop in functional capacity, autonomy and independence.

In Brazil, in accordance with data from the Health Ministry (BRAZIL, 2009), falls and their consequences for the elderly have reached epidemic proportions, culminating in unfavourable outcomes, such as fragility, death, institutionalisation and a general worsening of health. Some factors that predispose the elderly to falls are physical fragility, use of medication which can lead to alterations in balance and/or vision, and a host of conditions, such as osteoporosis, for instance. However, falls may also occur due to a lack of prevention, be it at home, in institutions or in the communities where the elderly live.

The gravity of this scenario means that preventing falls is seen as a challenge to population ageing. According to the WHO's Global Report on Falls Prevention in Older Age (2010), it is estimated that 28% to 35% of over 65-year-olds experience falls every year. For the over 70s, the estimate ranges between 32% and 42%. The study stresses that in addition to causing significant physical and psychological limitations, which compromise senior citizens' quality of life and health, the injuries arising from falls, particularly fractures, have a critical economic impact on families, the community and society. Fractures, which lead to a high post-surgery mortality rate, can be linked to a range of factors both connected to the patients themselves and to their environment, such as unsuitable pavements, dim lighting, carpets and furniture location. With this in mind, the WHO report (2010) considers that the main factors to protect against falls are related to behavioural changes geared toward a healthy lifestyle and environmental modifications, such as adapting homes and improving public roads, for example.

Ageing and urbanisation

The 2010 IBGE Demographic Census shows that in 78 Brazilian municipalities, the elderly population already represents 20% of the population. In other words, one in five people are 60 years of age or over. More than half (53.2%) of the roughly 20.6 million people over 60 live in the most populous municipalities with more than 100 thousand inhabitants.

Bearing in mind that ageing and urbanisation are two worldwide trends, society needs to rethink the place of the elderly in towns and cities, in terms of infrastructure and services that are able to meet the demands of this population. The growth in the number of senior citizens living in towns and cities becomes problematic when the urban area's infrastructure and services are deficient, and there is environmental pollution and an increase in irregular occupations, all risk factors that intensify the vulnerability of the elderly to natural threats. Public spaces, buildings, open spaces, transport systems and housing represent the main characteristics of a city's physical environment. These have a major influence on personal mobility, and should theoretically be conceived so as to minimize the incidence of falls and injuries, seek to provide security against crime and encourage positive behaviour in relation to health and social participation. A city that

is tailored to the reality of ageing contributes toward safe mobility, social participation, maintaining functional capacity and autonomy, and to helping increase resilience when disasters strike.

In this way, in addition to concerns about the conditions of public spaces - such as adaptations to the public transport network, traffic signs, pollution and the provision of specific areas to facilitate autonomy, independence and access for senior citizens -, the urban question must encompass the architecture of buildings, domestic spaces and provision of leisure and sport facilities that are compatible with the needs and capabilities of senior citizens.

It is worth stressing that the topic of urbanisation is the subject of the National Civil Protection and Defence Policy (PNPDEC), Law 12.608, enacted in April 2012, which has brought about considerable advances in Civil Defence and the way in which this dovetails with Urban Planning.

“Natural” disasters or disasters with natural causes

The term “natural disasters” is widely used in Brazil both by the media and government bodies directly responsible for risk management and disasters in Brazil, as stated in all the official documents of the National Secretariat of Civil Defence of the Ministry of National Integration, as well as by the equivalent bodies at state and federal level. It is well worth highlighting that this designation was and still is used in the former Codification of Disasters, Threats and Risks – CODAR, now the COBRADE - Brazilian Classification and Codification of Disasters – to classify the origins of disasters.

In contrast, the International Strategy for Disaster Reduction - UNISDR and specialists in the area insist that a disaster is characterised by a highly abnormal situation and therefore can never be considered as a natural event.

Despite this stance of UNISDR, which was formulated some years ago now, the Ministry of National Integration in its Normative Ruling No 1, of 24th August 2012, classifies disasters as technological or natural, depending on the origins or primary causes. Classified as natural disasters are those “that may imply human losses or other health impacts, damage to the environment, interruption of services, and social and economic disturbances”. In this article, the terms “disasters of natural origin or natural causes” are used, as suggested by UNISDR.

The serious consequences of disasters with natural causes in recent years highlight the considerable shortcomings of safety systems, particularly in developing countries. The data shows that the majority of the 3.3 million deaths caused by disasters in the last 40 years have been in poor countries. These countries also suffer the consequences of disasters for longer, insofar as they do not possess the ability to recover swiftly, which further worsens conditions of vulnerability (UNISDR, 2012).

According to UNDP – United Nations Development Programme (2012), “in Brazil, the myth that the country is immune to natural disasters has lost ground. In January 2011, for example, intense rainfall in the Serrano region of Rio de Janeiro caused the worst landslide in the country’s history”. For Carlos Nobre, Secretary for Research

and Development Policies and Programmes at the Ministry of Science, Technology and Innovation – MCTI, this episode was the wake-up call for Brazilian perceptions of major disasters: “It became obvious to managers and to the population that the prevention angle needs to be emphasised. This was the conjuncture that changed our perspective forever: prevention is fundamental” (CASTRO, 2012). This thinking corroborates a study published previously by Masato Kobiyama *et al* (2006), according to which the increased impact of disasters with natural causes is mainly due to the increase in population, unregulated occupation due to the intense process of urbanisation and industrialisation, with the lack of investment in the prevention phase at the root of the problems faced.

Valencio *et al.* (2009) stress that,

Of the various possible interpretations on what are designated disasters, one has to be taken into account in Brazil in particular; that is, what is recognised as a disaster at the institutional civil defence level is first and foremost a phenomenon of public perception of a vulnerability in the State’s relationship with society when faced with the consequences of a threat it has not managed to prevent or has not been able to minimise the damage sufficiently. (p.5)

According to Debarati Guha-Sapir, one of the top specialists in the world on disasters and director of the Centre for Research on the Epidemiology of Disasters (CRED), a body that provides the UN with annual data on worldwide victims and is the point of reference for this topic, “there is no political will in Brazil to prepare the country to deal with natural disasters”. At a press conference at the UN to present new statistics on the number of victims from disasters with natural causes in the world, she was categorical: “Brazil has enough money to deal with the problem of natural disasters and could have set up a prevention system years ago. But the overwhelming reality is a lack of political will” (CHADE, 2009).

As regards disaster prevention technology, the data shows that Brazil has acted reactively and not preventively. In 1966, straight after the intense rainfall in Rio de Janeiro that year, the Geotechnics Institute was set up. In 1975, it became the Geotechnics Superintendency and, in 1988, it began monitoring hillsides in the Rio de Janeiro municipality. Next, the Geo-Rio Foundation was established in 1992, whose disaster alert system is now called the Rio Alert System. It is worth stressing that since this Foundation was created there has been a significant drop in the number of deaths caused by landslides in Rio de Janeiro city. Another example of reactive action is the fact that it was only after the major disasters that hit Bumba in Niterói (2010) and in the Serrana Region in Rio de Janeiro state (2011), which resulted in more than a thousand victims, that the National Centre for Monitoring and Natural Disasters Warning (CEMADEN/MCTI) was set up and the National Centre for Risk and Disaster Management (CENAD/MI) was restructured in July 2011.

As for the systematisation of data on disasters in Brazil, which became available in 2012 when the Brazilian Natural Disasters Atlas 1991-2010 was published, it is of note

that amongst the research limitations identified by the document were the variations and inconsistencies in recording human, material and economic damage, which to an extent undermines the historic database guiding the National Civil Defence System. The absence of specialised professionals at municipal level and the consequent lack of agreement and standardisation of the information published in the documents which record disasters also contribute to the shortcomings of the compiled data.

The Atlas identifies twelve natural phenomena related to the relevant disasters nationwide that were recorded in the five Brazilian regions over the twenty years under consideration: drought; rapid flooding; gradual flooding, hurricanes and/or cyclones; tornadoes; hail; frost; fire; mass movements; river erosion, linear erosion; marine erosion. Of all the disasters recorded between 1991 and 2010, drought corresponded to 16,944 entries (54%); rapid flooding and water-logging was second in terms of the highest incidence, with a total 6,771 records (21%); gradual flooding corresponded to 3,673 records (12%); hurricanes and cyclones, and hail, came next with 2,249 and 1,369 entries respectively and equated to 7% and 4%. The other disasters with natural causes - linear, marine and river erosion, forest fires, mass movements, tornadoes and frost - were of little import over the timeframe under consideration. They were therefore classified in the category "Others", with 903 incidences, representing 2% of the total records.

In this way, there has been an increase in the incidence of disasters, according to the data presented: of a total 31,909 disasters, 8,671 (27%) took place in the 1990s and 23,238 (73%) in the 2000s. Taking into account the shortcomings in record-keeping, as a trend it can be said that disasters have growth potential. In its final considerations, the Atlas concludes that the historic record of disasters in Brazil exposes the vulnerability of the Brazilian population to extreme situations related to climate phenomena and observes that:

a risk culture needs to be created that still does not exist in Brazil so that citizens are prepared to participate in the decision-making process. This measure can be made viable by providing access to quality information and by the main social stakeholders exchanging thoughts and reflections as part of a drive for participation and involvement of all sectors of society (p.91).

In 2011, according to official data from the Brazilian Natural Disaster Yearbook, 795 disasters with natural causes were recorded, which caused 1,094 fatalities and affected 12,535,401 people. Although the Southern Region was most affected by disasters (6,855,449 affected people), the region that suffered the greatest impact as a result of the power of destruction was the South East. The number of fatalities witnessed in this region is 7.29 times higher than that in the four other areas, due chiefly to the event that hit the Serrana Region of Rio de Janeiro, which represented 87.95% of total fatalities. Of the total number of affected persons (12,535,401), flooding was the disaster that affected the Brazilian population the most (56.19%) and was also the one that caused the highest number of fatalities (47.35%).

Of note is the fact that the natural right to life and wellbeing has been formally recognised by the Constitution of the Federative Republic of Brazil. It is the responsibility of Civil Defence to guarantee this right, specifically in disaster scenarios. Civil Protection and Defence in Brazil is organised under a system called the National Civil Protection and Defence System (SINPDEC), comprising the bodies and institutions of the Federal administration, the States, the Federal District and the Municipalities, as well as public and private bodies of note in the civil protection and defence sphere. The National Secretariat of Civil Defence - SEDEC, part of the Ministry of National Integration, is the central body of this system, tasked with coordinating civil protection and defence actions throughout the country (Law No. 12.608, of 11th April 2012).

Reducing the occurrence and intensity of disasters, which is the general objective of Civil Defence, encompasses prevention, mitigation, preparation and recovery actions and is multisectoral in its approach at the three levels of government - federal, state and local -, and with high levels of community involvement. However, as Masato Kobiyama *et al* (2006, introduction) state,

In Brazil, natural disasters are treated in a segmented fashion among the different sectors of society. In recent years, the damage caused by these phenomena has intensified due to poor urban planning.

For the authors, integrated actions between the community and universities are crucial in minimising the effects of natural disasters, and they posit that the knowledge produced in the academic community should be passed on to society and used in preventive projects in an organised manner. At the local level, they suggest setting up community groups empowered to act before, during and after the event, thus helping civil defence management bodies.

The elderly in disasters

Sources for consultation dealing specifically with the elderly in the context of disasters proved insufficient for a more complete approach. Nevertheless, based on the information to which we had access, it is apparent that due to their vulnerability the elderly remain one of the hardest hit groups in critical situations.

The issue of the vulnerability of the elderly in disasters is the topic of the report *Older people in disasters and humanitarian crises: guidelines for best practice*, by HelpAge International – HAI (2000), a global network of not-for-profit organisations that has been working with humanitarian agencies for over 20 years to address the special needs of the elderly in development projects for emergencies. The report has suggested ways in which the capacities and contributions of this social group can be bolstered. It includes guidelines on helping to understand and address the special needs of senior citizens in these situations, based on a broad range of research carried out in Asia, Africa, Europe and the Americas and many years' experience of disasters. When disasters strike, according to the document, specific elderly-related protocols are needed which require guidelines

for, among others: evacuating persons with limited mobility such as residents of nursing homes; emergency shelters with no physical barriers; access to medication in a timely manner; availability of carers to assist with daily chores and tasks; access to support equipment such as walking sticks, wheelchairs and walking frames; and access to medical equipment, such as oxygen canisters.

It should be pointed out that HAI is the only international organisation working specifically to address the needs of the elderly, to defend their rights and to recognise the abilities and the contribution of the elderly in humanitarian crises. The fact that the organisation highlights the problems most commonly identified by the elderly in these situations and the needs to be addressed to improve serving this group is illustrative of how this reality has become an issue on the global stage. In its report, the HAI considers that for those working in developing countries, population ageing remains one of the questions most overlooked, and that in crisis situations the stated objective of the majority of organisations is to provide humanitarian assistance to communities, where possible to the most vulnerable. Yet research has clearly shown what can happen if senior citizens are not seen as being more vulnerable, as often they are excluded from social and economic recovery support programmes. This group urgently needs to be included in humanitarian response actions, as less than 1% of these actions target the elderly and disabled.

We can observe that the problems of the elderly take second place when it comes to government priorities and few non-governmental organisations (NGOs) include the elderly in their target populations. The common oversight is that senior citizens are very difficult to empower, they are not receptive to new ideas and they are incapable of effectively participating in community and economic activities.

Another observation is that the lack of awareness and information on the contribution of the elderly and their circumstances, problems and needs, creates negative images of old age. While awareness of the problems of the elderly has improved, such images and preconceptions remain, exacerbating this age group's "invisibility" and position as a non-priority. This goes back to the fact that "old age", as a symbolic concept, is interpreted by societies in accordance with their different cultural, historic and economic contexts.

The question of the vulnerability of the elderly in disasters, which has been broached in a number of international publications, will now be addressed. The article entitled "Elderly suffer cognitively during evacuation caused by natural disasters" (ISAUDE, 2012) presents the results of research carried out at the University of Pennsylvania School of Nursing, where 17 patients in long-term care were monitored. The patients were aged 86 on average and had fallen prey to a serious summer storm. They were all evacuated and transferred to other premises with different health care professionals and physical environments. The researchers remarked that during a disaster, physiological changes associated with ageing and the presence of chronic conditions made senior citizens more susceptible to illness or injury, or even death.

Referring to the Kobe disaster in 1995, the article "Recovery and Reconstruction after the Great Hanshin-Awaji Earthquake in Japan" (Murata, 2006) states that in some affected areas senior citizens were in the majority and 44% of the fatalities were over 65.

The effects of Hurricane Katrina, which hit the USA in 2005, on the elderly population were recorded in the article *Decline in Health Among Older Adults Affected by Hurricane Katrina* (22/01/2009), published by the Johns Hopkins Bloomberg School of Public Health. The study, which was undertaken in New Orleans, illustrates that in the year after the disaster, in addition to the increase in mortality, the health of survivors 65 or over showed a considerable decline. According to Lynda Burton, the study's main author, "there was a significant increase in the prevalence of patients with cardiac diagnoses, cardiac failure and sleeping problems".

Also with reference to Hurricane Katrina, the report *Current Status of the Social Situation, Wellbeing, Participation in Development and Rights of Older Persons Worldwide* (UNITED NATIONS, 2011) records that of the 1330 people who died, the majority were elderly. In the state of Louisiana, 71 percent of those who lost their lives were older than 60 years of age. The document states that the Louisiana Department of Health recorded that approximately 70 senior citizens living in care homes died on this occasion and many were abandoned by their carers during the disaster.

The same report also emphasises that a tsunami in Indonesia in 2004 mostly killed the elderly and children. In Europe during the 2003 heat wave the majority of deaths were among the elderly population, while just in France 70% of deaths were people aged 75 and over. As for the aforementioned earthquake that hit Kobe in 1995, more than half the fatalities were senior citizens and this group accounted for 90% of the subsequent deaths.

It is worth considering another complicating factor for the elderly: secondary disasters. According to the Civil Defence, outbreaks of leptospirosis stand out as one of the most prevalent secondary disasters in Brazil. Mortality resulting from this illness tends to increase amongst elderly patients and it also makes them more vulnerable when facing new situations of risk.

It is worth noting a fact that occurred in the recent past in Japan after the disaster caused by a tsunami in the Fukushima plant in March 2011. At the time, a group of more than two hundred Japanese retirees calling themselves the "Skilled Veterans' Unit", comprising engineers and other professionals, all over 60 years of age, got together of their own free will and volunteered to replace younger people in the work of trying to control the leak at the plant. They alleged that as they were elderly and at the end of their lives, they would not have time to develop cancer. In an interview with the BBC, the architect of the idea, Yasuteru Yamada, a 72-year-old retired engineer, stated: "On average, I've probably got another 13 to 15 years of life remaining. Even if I were exposed to the radiation, cancer needs 20 to 30 years to develop; therefore, we senior citizens have fewer chances of contracting cancer". This behaviour, a reflex of cultural conditioning, reflects the sense of responsibility felt by Japanese senior citizens towards society, which they see as a concept which only functions as a whole rather than individually.

Final considerations and recommendations

Sources for consultation dealing specifically with the situation of the elderly in the context of natural disasters in Brazil proved insufficient for a more detailed ap-

proach to the topic. Nevertheless, based on the information to which we had access, we have observed how public policy instruments only partially address the needs of the elderly, as far as increasing longevity and improving quality of life are concerned. In emergency situations, demands to reduce the vulnerability of this social group go unheeded, and preventive actions that could increase their resilience throughout the ageing process are overlooked. This picture becomes even more troubling given the increased frequency and intensity with which disasters with natural causes are occurring throughout the world.

In accordance with some of the data obtained in our research, a trend can be seen in the growth potential for disasters over the last two decades, despite the shortcomings in record keeping. This being the case, it is crucial that citizens are made aware of the idea of building a risk culture, chiefly as regards to the inclusion of the elderly.

In Brazil, using the sources we consulted as a basis, we were not able to identify specific protocols regarding prevention, preparation and rescue to help the elderly in disasters, despite what is stipulated in the National Civil Protection and Defence Policy, and in Law 12.608, of 2012, where article 2, indent IV states: “Suggest procedures to help children, adolescents, pregnant women, **the elderly** and the disabled in disasters, whilst observing the applicable legislation” (our bold characters).

It has been shown that the elderly become more vulnerable in disasters as they are more liable to chronic illness and incapacity, resulting both from the natural decline in their functional capacity and from greater exposure to accidents. This confirms the importance of having protocols that specifically take into account the needs and abilities of this group in the area of civil protection and defence. Looking at the whole spectrum of actions, accident prevention is of great importance, mainly in terms of falls, which considerably increase the fragility of senior citizens and which have taken on the dimension of an epidemic in Brazil. This fact shows that accident prevention policies are clearly needed for the elderly population as a means of indirectly increasing their resilience in disasters. Preventing accidental injuries, understanding their causes, adopting pedestrian protection measures, implementing policies to prevent falls and fires in the home (aimed at minimising their incidence) and providing assistance on questions of safety are measures that should be adopted by society as a whole.

As regards disaster prevention technology, the data shows that Brazil has acted reactively and not preventively. It can therefore be inferred that disasters arise from the combination of threats, conditions of vulnerability and capability, or insufficient measures to reduce the negative consequences of risk.

The rapid and unplanned urbanisation process of recent decades has been identified as having created economic and social consequences and also as having compromised cities' infrastructure in terms of meeting society's basic needs. This has increased the vulnerability of one part of the elderly population, who, through no choice of their own, have to live in potentially flood and landslide-prone areas. Bearing in mind that ageing and urbanisation are two global trends, it is urgent that both governments and society change the cultural benchmarks regarding the elderly who live in urban areas, based on a new vision of ageing.

Undoubtedly, a paradigm shift is underway. The elderly (or old age) are being reinvented in the current political and socioeconomic context in modern societies. Yet these changes are not taking place at an adequate pace. Despite the importance of public policies and the entire legal apparatus in favour of the elderly, with the National Senior Citizens Policy (PNI) and the Senior Citizens' Statute of particular note, effective action is still insufficient. Programmes, projects and actions should be implemented over the coming decades to guarantee and promote the autonomy and independence of the elderly, thus strengthening their resilience in the face of disasters with natural causes.

Lastly, the elderly do not represent a homogenous group, given that an array of specific conditions - financial resources, cultural differences, access to education, to leisure, to basic sanitation and healthcare services, for example - impact on their quality of life and influence their individual ageing process. Therefore, due to the specificities that distinguish them from each other, not all senior citizens have equal or similar needs, and this aspect also needs to be taken into account by public policies, including those on protection in disasters.

Finally, what can be inferred is that there is no such thing as the "elderly" as a universal category, but "senior citizens", who should be seen in all their multiple guises and specificities, particularly when implementing an effective policy for reducing disaster risks for all segments of society.

The results of this study highlight shortcomings that could be addressed by means of specific measures for helping the elderly. Recommendations include:

(1) promote the drawing up of specific protocols on prevention, preparation and rescue, targeted at the elderly in disaster contexts, by civil defence stakeholders at the three levels of government;

(2) develop an information system with statistical data on elderly victims (survivors and fatalities) of disasters with natural and technological causes, which could underpin future research in this area;

(3) methodologically evaluate the level of effectiveness of the whole framework of protection measures for the elderly developed within public and private institutions;

(4) in conjunction with Brazilian industry, stimulate the manufacture of easy-to-use products specifically for the elderly.

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THE VULNERABILITY OF THE ELDERLY IN DISASTERS: THE NEED FOR AN EFFECTIVE RESILIENCE POLICY

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Abstract: This article presents an analysis of the vulnerability of the elderly in un/natural disasters, since the elderly may have a higher degree of fragility in emergency situations among the vulnerable group. The aim is to support increasing the resilience of the elderly during critical events as part of Civil Protection and Defence. The data collection undertaken under the methodology of this research comprises senior citizens' rights as stipulated by Brazilian law, reports produced by official agencies, international documentation and general literature concerning this issue. The various Brazilian governmental projects and programmes focusing on the vulnerability of the elderly have not been effective as regards natural disasters. Therefore the results encourage Civil Defence to develop specific protocols on prevention, preparedness and rescue for the elderly.

Keywords: Elderly, Vulnerability, Disaster, Civil Protection.

Resumo: Este artigo apresenta uma análise sobre a vulnerabilidade do idoso diante dos desastres de causas naturais, considerando-se que, dentro do grupo vulnerável, os idosos podem apresentar maior grau de fragilidade em situações de emergência. O objetivo é contribuir para o aumento da resiliência da população idosa, no âmbito da Proteção e Defesa Civil, por ocasião de eventos críticos. Os procedimentos metodológicos da pesquisa incluem a coleta de dados na legislação referente aos direitos do idoso, em relatórios produzidos por órgãos oficiais, em documentos internacionais e na literatura que trata do tema do idoso e questões afins, de modo geral. Conclui-se que, no Brasil, os diversos projetos e programas governamentais voltados para os idosos não são eficazes para reduzir a vulnerabilidade desse grupo social diante de desastres, sendo necessária a elaboração de protocolos específicos de prevenção, preparação e resgate para a população idosa por parte dos agentes da Defesa Civil.

Palavras-chave: Idoso; Vulnerabilidade; Desastres; Proteção Civil.

Resumen: Este artículo presenta un análisis de la vulnerabilidad de las personas mayores ante los desastres por causas naturales, teniendo en cuenta que, dentro del grupo vulnerable,

ellas pueden tener un mayor grado de fragilidad en situaciones de emergencia. El objetivo es contribuir para aumentar la capacidad de resiliencia de la población de edad avanzada, bajo la Protección Civil, durante los eventos críticos. Los procedimientos metodológicos de la investigación incluyen la recopilación de datos respecto a la legislación, los informes de organismos oficiales, documentos internacionales y en la literatura que aborda el tema de modo general. Se concluye que, en Brasil, los diversos programas de gobierno dirigidos a las personas mayores no son eficaces para reducir la vulnerabilidad de este grupo social antes del desastre, lo que exige el desarrollo de protocolos para la prevención, la preparación y la recuperación de la población de edad avanzada por la Defensa Civil.

Palabras clave: Personas. Mayores; Vulnerabilidad; Desastres; Protección Civil.
