

# Aging and Social Security Policies: A Systematic Review Protocol

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## Protocol

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# Abstract

**Background:** Aging is a process of changes dictated by the concurrent action of the biopsychosocial determinants. Population aging is a phenomenon that occurs on a global scale in heterogeneous ways, representing the growth of elderly at a greater rate than the number of newborn. Previous empirical evidence suggests that population aging has become a concern for several sectors of society. Among these, the social security policies that play a fundamental role in supporting the elderly. Given the rise of research on aging and its importance in the various health and social outcomes, it is necessary to initiate processes of compilation and synthesis of this evidence to facilitate the understanding of the importance of this variable into social security policies for public health, especially, for the elderly's health.

**Methods:** The included studies will be qualitative and quantitative original research articles. This systematic review protocol will be conducted following the Cochrane Manual and will follow the statement of PRISMA-P. Searches will run from April 2021 to July 2021, and will be carried out from the following electronic databases: Embase, Web of Science, Scopus, PubMed Central, CINAHL, ASSIA and APA PsycNet. Two reviewers will obtain the eligible articles, published from 1979 to 2020, to assess the quality of each study and extract the data. A narrative and qualitative synthesis will be used to analyze the primary outcomes. If data are pertinent for quantitative analysis, a meta-analytic approach will be held.

**Discussion:** The findings of this review will contribute to a better understanding of the impact of aging in social security policies and will help to establish causality in terms of the effects of this public policy on elderly's health and their access to the healthcare system. This information can be used to identify effective interventions that could be implemented to improve the management of public health and social security policies at old age.

**Ethics and dissemination:** The approval of an ethics committee is not required for a systematic review protocol. The results will be published in a peer-reviewed social or health science journal.

**Systematic Review Registration:** PROSPERO CRD42021225820

## Background

Population aging is poised to become one of the most significant social transformations of the 21st century, with implications for virtually every sector of society, including the labor and financial markets, the demand for goods and services such as housing, transportation, social protection, family structures and intergenerational ties [1]. It is estimated that by 2050, there will be 1.5 billion people aged 65 and older worldwide, more than doubling the number of individuals in this age group in the year 2020 [2]. The percentage of older people in the global population is expected to increase from 9.3% in 2020 to 16.0% in 2050, indicating that by the middle of the 21st century, one in six people worldwide will be 65 years of age or older [2].

The World Health Organization [3] conceptualizes elderly people based on age criteria for research purposes. Based on this criterion, an elderly person is one who is aged 60 or over who lives in developing countries and one who is aged 65 or over who lives in developed countries. However, the aging process depends on biological, psychological, and social factors. Biological factors are characterized by progressive age-changes in metabolism and physicochemical properties of cells, leading to impaired self-regulation, regeneration, and to structural changes and functional tissues and organs. Psychological factors refers to human awareness and his adaptability to the ageing process and social factors are limited to the role of an old person is culturally conditioned and may change as customs change [4, 5].

Aging is a continuous, multidimensional and multidirectional process of changes dictated by the concurrent action of the genetic-biological and socio-cultural determinants of the life cycle [6]. From birth to death, there is a sequence of events configured in stages, which are related to the reproductive process of society, such as, childhood, adolescence and adulthood. The stages of human development require the performance of specific tasks that trigger a process of qualitative transition of competencies to cope with their specific demands [7]. The morphological, functional, biochemical and psychological changes that occur during the aging process bring with them physical-motor, sensory, social and emotional limitations that affect the autonomy and freedom of the individual, making him susceptible to dependence on care [8].

The way of aging varies from individual to individual and may be genetically determined or influenced by lifestyle, environmental characteristics and nutritional status of each one, and does not happen simultaneously in the whole organism nor is it associated with the existence of a disease [9, 10]. Dependency conditions are often influenced by adverse factors such as the quality of care received and/or environmental restrictions. In general, the dependency of the elderly is related to production/consumption, health maintenance or not, physical and mental ability/disability, and performance or not of household chores [11]. In spite of, there also remains the conception on the part of working-age individuals that, in old age, their material existence needs will be provided by the government or by family members, involving an intergenerational transfer mechanism [12].

Studies have shown that, currently, the elderly person can be represented as a being who maintains control of their body to preserve their youth, who is active, wise, and willing to fulfill their dreams and desires, but it can also be represented as the poor, sick, isolated, asexual and abandoned to their fate [13, 14]. These different images of old people coexist in contemporary society, and it is possible to find an active individual, with his own income and without dependence on others or a dependent beneficiary of disability pension granted by the State.

Analyzing old age as a specific stage of the life cycle is essentially to investigate the transformation of forms of solidarity and the transformations of the family from which emerge new forms of care and management of old age, which accompanied the progress of capitalism [15]. All these factors contribute for the elderly to have their self-esteem affected, many rejecting their own aging due to the image they make of themselves as a result of social impositions. For many elderly people, the reality of exclusion

was present throughout their entire life trajectory and it became even more accentuated in old age. These conditions bring even worse repercussions, when one thinks that in the only phase that they believed to achieve dignity and respect, they become victims of an oppressive and excluding system [16]. However, treating old age from the perspective of physical decay and the absence of social roles, leads to think about the need for a progressive socialization of the management of aging, which was for a long time considered proper of the family sphere, as well as of private or philanthropic institutions. After all, on account of cultural and even demographic issues, the subject of aging has become a public issue [17].

In this sense, the first milestone in the conquest of rights for the elderly, and for all of society, was on December 10th, 1948, when the United Nations (UN) globally consolidated and proclaimed the Universal Declaration of Human Rights. This document was drawn up with universal pretensions, with the intention of establishing a minimum level of protection for all human beings, regardless of their race, origin, color, age, sex, religion, nationality, etc.; since the atrocities committed during the Second World War showed the legal uncertainty of leaving the provision and application of human rights to the discretion of each State [18]. The Declaration of Human Rights represents the commitment of the UN members to direct social protection to a broad and universal concept, seeking to inspire societies towards a more humanitarian and solidary development.

From then on, the principle of human dignity was considered to be of maximum, supreme, moral, ethical, and intangible spiritual value. The dignity of the individual came to serve as a propellant of the intangibility of human life, resulting from it, the respect for physical and psychological integrity of people, the admission of the existence of material and patrimonial assumptions, minimum required so that one can live and respect the fundamental conditions of freedom and equality [19]. It is assumed, therefore, that dignified aging occurs when the target population has access to all their rights, respecting the regional, cultural and even experience specificities.

Among the fundamental rights established by the Universal Declaration of Human Rights, social security stands out, as it originates from society's need to establish protection methods against the various risks inherent to the human being, such as illness, pregnancy, and old age, ensuring financial support to cover events that prevent or hinder work throughout life [20]. According to Morlachetti *et al.* social security, work and family support represent the main sources of financial resources in old age and the importance of each of these categories varies from one country to another, according to the characteristics of socioeconomic development, the labor market and the stage of demographic transition [21]. Hence, it is undeniable that social security is an extremely important social policy area in the lives of the elderly population, especially so, because in many countries this kind of policies are who guarantee access to health care and social care.

It happens that, the decision-making on social security policies in each country are based on indicators established by politicians and experts who proceed from the financial viability of the system [22, 23]. However, social security is beyond economic and fiscal issues, it is necessary to understand that the system is directed to a social stratum dependent on that policy and its changes affect the population

both socially and individually. Especially in old age, a stage of life whereby the individual faces many losses, in which the stressor potential of uncontrollable events tends to be greater, insofar as there is a decrease in resources and an increase in the possibilities of living with negative events [24].

To the effects of old age can be added those of poverty, malnutrition, low educational level, being female, belonging to groups excluded by racial criteria, and age discrimination [25]. The greater the sense of control over the event, the lower the chance of developing adaptation problems, such as depressive symptoms, social isolation, somatic illnesses, and dependency [26]. Social security was created precisely to balance these losses in old age, so that the individual can feel embedded within a public healthcare system and supported by a retirement benefit, pension, insurance, among others, at the moment when he is no longer inserted into the labor market.

Since the degree of dependence of the elderly is largely determined by the provision of income paid by the state, it can be seen that when the state power modifies the requirements for receiving pension benefits, it is affecting a considerable fraction of the income of entire families [27]. In other words, the profile of the social security system adopted by the governments will influence the quality of life that the elderly population will achieve in a general perspective, and in the individual criterion, it may directly influence the development of problems in the field of mental health. Thus, the knowledge in dealing with the aging process must be a public policy commitment.

The United Nations warns that older people are increasingly seen as contributors to development, whose capacities to act for their own improvement and that of their societies must be woven into policies and programmed at all levels [28]. In the coming decades, many countries will likely face fiscal and political pressures regarding public systems of health care, pensions, and social protections for an increasingly aging population.

The homogenizing notions that deal with aging, especially demography, chronology with emphasis on the extension of life by statistical numbers, associated with speeches and practices that characterize old age, have been serving as subsidies not to expand social rights, but to restrict them and to dismantle the protective social policies for the elderly [29]. Therefore, to characterize aging based on social security policies can play a decisive role in demonstrating how this category has been treated as a public issue in a global perspective and affects the health of elderly people.

To date, there is a lack of synthesis dealing with the relationship between aging and social security policies. It is aimed to systematically review the literature for studies that have investigated the impact of aging into social security policies. To achieve this objective, the systematic review will answer the following questions: How is aging characterized based on social security policies? Has aging been used to justify changes in social security policies?

## **OBJECTIVES**

The objective is to prepare a protocol for a systematic review that characterizes the aging process based on the social security policies, understand whether and in which aspects this characterization promotes changes in social security policies and in the lives of elderly people, mainly in terms of their health and access to healthcare systems.

## **Methods And Analysis**

This systematic review will be carried out following the Cochrane Manual for Systematic Reviews [30] and the data obtained will be reported from the guidelines and recommendations of the model 'Preferred Reporting Items for Systematic Reviews and Meta-Analyses Protocols' (PRISMA-P) [31]. Citations and references will be managed in Mendeley software and the data will be extracted and reported in a flowchart. This systematic review protocol has been registered in the International Prospective Registry of Systematic Reviews – PROSPERO (Registry number: CRD42021225820).

### **Eligibility Criteria**

#### Types of studies

The type of studies included will be only qualitative and quantitative original research articles. In addition, the review will include full and available free of charge for downloads studies, published in English, Portuguese, Spanish and French from 1979 to 2020. Protocol; dissertations; books; book chapters; reports; clinical essays; case reports; commentaries and unpublished manuscripts conference material; review articles; meta-analysis and systematic reviews will be excluded from the review, once this type of literature could contain anecdotal or reflexive evidence based on primary studies that could duplicate or skew the results found in the searches. Furthermore, studies whose main objective is the validation of instruments and scales will also be excluded. A new search will be conducted before the final analysis to retrieve other studies for review and possible inclusion.

### **Types of Participants**

This review will consider participants who are in the transition process to retirement or retired. Retirement is defined as the transition of elderly (> 60 years) from labor force engagement to inactivity.

### **Patient and Public Involvement**

No patient involved.

### **Types of outcome measures**

The results may represent an outcome that indicates or report on the relationship, influence or contribution of the population aging process into the social security policies.

### **Search strategies**

## Electronic searches

The databases will be searched from April 2021 to July 2021 and will be carried out from the following electronic databases: Embase (Excerpta Medica Database), Web of Science (Science and Social Science Citation Index), Scopus, PubMed Central, CINAHL (Cumulative Index to Nursing and Allied Health Literature), ASSIA Proquest (Applied Social Sciences Index and Abstracts) and APA PsycNet (American Psychological Association).

## Search criteria

The controlled vocabulary browser was used for the search strategy MeSH (Medical Subject Headings) and EMTREE (Embase Subject Headings) for the establishment of the following keywords: *aging* and *social security*. Additionally, Boolean operators were used to specifying the syntactic structure of the search terms, which were tested and established for all databases. Table 1 presents the full search criteria.

<b>Table 1.</b> Full Search criteria for electronic databases		
<b>Keywords</b>	<b>Numeration</b>	<b>Search criteria</b>
Social Security	1.	Social Security*
	2.	MeSH/EMTREE descriptor Social Security (this term only)
	3.	#1 OR #2
Aging	4.	Aging*
	5.	MeSH/EMTREE descriptor Aging (this term only)
	6.	#4 OR #5
	7.	#3 AND #6

## Study Records

### Selection Process

All search results will be imported into Mendeley software to manage data and eliminate duplicates. Two independent reviewers will make a preliminary selection of titles and summaries of the texts for inclusion and exclusion. Subsequently, the full text will be obtained and two reviewers will apply the inclusion and exclusion criteria to identify the relevant studies that will be included in the systematic review analysis. Discrepancies will be resolved in consensus with the intervention of the third reviewer.

### Data Extraction Process

The data will be extracted by two independent researchers using the Mendeley Software to verify the existence of duplicate references. These two researchers will review the titles and abstracts of articles that potentially meet the inclusion criteria. Next, the researchers will independently review the full text of potentially eligible studies. After the process of extracting the data, two of the researchers will deal with any disagreement through consensus and, if necessary, with the involvement of a third researcher. The selection procedure will be documented according to PRISMA guidelines and reported in a flowchart [32].

### **Quality assessment**

The quality assessment of the qualitative studies will be assessed using the Critical Appraisal Skills Programme (CASP) assessment tool [33]. The review will include different types of studies so versions of the Ottawa - Newcastle (NOS) quality assessment scale will be used, adapted for case-control studies, cohort studies, cross-sectional and survey studies [34]. The studies will be evaluated by two researchers, independently. To resolve any disagreements in the scoring of articles, the opinion of a third researcher will be consulted.

### **Data synthesis**

In this review, findings will be presented and synthesized using a narrative and thematic synthesis approach. A narrative synthesis will be performed by presenting a table with the most important results of the selected articles according to the items described in the data extraction. Thus, categories of analysis will be also created according to the central theme of the review, mainly associated to the characterization of aging based on the social security policies.

After performing the systematic review, if data are pertinent for quantitative analysis, a meta-analytic approach will be used. Depending on the results of heterogeneity assessment between studies, it will be selected the fixed model or random effects model. The I<sup>2</sup> statistic (and 95% CI) will be used to assesses the heterogeneity of the studies. This statistic will be interpreted using the following suggested classification: low (25%-49%), moderate (50%-74%) and high ( $\geq 75\%$ ) heterogeneity [35]. The significance of the heterogeneity will be calculate using the  $\chi^2$  test with Cochrane's Q statistic ( $P < 0.05$ ) [36]. Additionally, if meta-analysis is feasible, it will be conducted a subgroup analysis based on participant characteristics such as: sex, ethnicity, outcome measures, care setting and intervention characteristics. All statistics analyses will be performed using the Cochrane Collaboration's software (RevMan V.5.3) [37].

### **Ethics and dissemination**

The review will search and evaluate primary sources obtained in previous researches; therefore, no formal approval from an ethics committee is required. The results of the systematic review will be published in an international peer-reviewed journal. Likewise, the authors will plan a presentation at possible national or international conferences to disseminate the results among the academic community.

## **Discussion**



The population aging has been increasing as a concern in the contemporary society and has become an object of study for multiple areas of knowledge and social security is a public policy of extreme relevance to people in old age, which faces direct political pressure due to the aging population phenomenon. The results of this systematic review are expected to provide a detailed and synthesized description of how aging is characterized based on social security policies, identifying the possible implications of this process for the maintenance or reform of social security systems, and especially, on its implications for the health of people who are of retirement age or retired.

The proposed systematic review will be reported following the systematic statement and meta-analysis of PRISMA-P (2015). Any correction or improvement made to this protocol during the development of the study will be reported in PROSPERO and will be indicated in the final report. The strengths of this review are: the inclusion of studies applied in different human contexts (social, economic, psychological, clinical) about aging and social security; and the inclusion of studies from 1979 to 2020 in four languages: English, Portuguese, Spanish and French. On the other hand, the main limitation of this review is the non-inclusion of grey literature (dissertations, books, chapters, reports, conference material, opinion pieces, commentary and reviews), which could omit important information that could contribute to the development of this review. However, due to the accumulation of published empirical data, resulting from basic research on the subject in question, its collection may be representative of the review.

## **Abbreviations**

UN: United Nations; CASP: Critical Appraisal Skills Programme; NOS: Newcastle-Ottawa Scale; PRISMA-P: Preferred Reporting Items for Systematic Reviews and Meta-Analyses Protocols.

## **Declarations**

### **Ethics approval**

The approval of an ethics committee is not required for a systematic review protocol. The results will be published in a peer-reviewed social or health science journal.

### **Consent for publication**

Not applicable.

### **Competing interests**

None declared.

### **Availability of data and materials**

The datasets generated and analysed during the current study are publicly available.

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## Authors' Contributions

LT contributed to the conception of this systematic review. The manuscript of the protocol was drafted by LT and FU and revised by JP, LRJ and HM. All authors developed to search and assessment strategies. All authors read and commented critically on each draft of the manuscript. Finally, all authors approved the final manuscript.

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## References

1. United Nations. Resolution 47/5. Proclamation on Ageing; 1992.
2. United Nations. World Population Ageing 2020 Highlights: Living arrangements of older persons. Population Division: Department of Economic and Social Affairs; 2020.
3. World Health Organization. Active ageing: a policy framework, 2002.
4. Pereira A, Freitas C, Mendonça C, et al. Envelhecimento, estresse e sociedade: uma visão psiconeuroendocrinológica. *Ciências & Cognição*, Vol. 01: 34–35, 2004. <http://www.cienciaecognicao.org>. Accessed 9 February 2021.
5. Dziechciaż M, Filip R. Biological psychological and social determinants of old age: Bio-psycho-social aspects of human aging. *Ann Agric Environ Med*. 2014;21(4):835–8. doi:10.5604/12321966.112994.
6. Baltes PB, Smith JL, Psychology. From Developmental Contextualism to Developmental Biocultural Co-constructivism, *Research in Human Development*, 1:3, 2004, p. 123–144. doi: 10.1207/s15427617rhd0103\_1.
7. Denssen MA, Costa Junior AL. (Orgs). *A ciência do desenvolvimento humano: tendências atuais e perspectivas futuras*. Porto Alegre: Artmed; 2008.
8. Camarano AA, Scharftein EA. Instituições de Longa Permanência para Idosos: abrigo ou retiro? In: Camarano, AA. (Org.). *Cuidados de longa duração para a população idosa: um novo risco social a ser assumido?* Rio de Janeiro: Ipea, 2010. p.163–185.
9. Palácios J. Mudança e Desenvolvimento Durante a Idade Adulta e a Velhice. In: Coll C, Palacios J, Marchesi A. *Desenvolvimento Psicológico e Educação Psicologia Evolutiva Vol.1 2ª.Ed.* Porto Alegre: Artmed; 2004.

10. Ávila AH, Guerra M, Meneses MPR. Se o velho é o outro, quem sou eu? A construção da auto-imagem na velhice. *Pensamento Psicológico*. 2007;3(8):7–18.
11. Camarano AA. Envelhecimento da população brasileira: uma contribuição demográfica. Rio de Janeiro: IPEA; 2002.
12. Camarano AA (Org.). Novo regime demográfico: uma relação entre população e desenvolvimento? Rio de Janeiro: IPEA; 2014.
13. Parales CJ, Dulcey-Ruiz E. La construcción social del envejecimiento y de la vejez: Un analisis discursivo en prensa escrita. *Revista Latinoamericana de Psicología*. 2002;34(1–2):107–21. ISSN: 01200534.
14. Ogg J, Renaut S, Hillcoat-Nallétamby S, Bonvalet C. L'articulation des politiques publiques du vieillissement et du logement en France et au Royaume-Uni. *Espace populations sociétés*. 2012. doi:<https://doi.org/10.4000/eps.3886>.
15. Debert GG. A reinvenção da velhice: socialização e processos de reprivatização do envelhecimento. São Paulo: Edusp, Fapesp; 1999.
16. Minayo MCS, Coimbra Junior CEA. (Orgs. Antropologia, saúde e envelhecimento. Rio de Janeiro: Editora FIOCRUZ; 2011.
17. Debert GG. *Novas Imagens do Envelhecimento e a Construção Social do Curso da Vida*. São Paulo: Sumaré; 2000.
18. Bobbio N. *Dicionário de política*. Vol. I, Norberto Bobbio, Nicola Matteucci e Gianfranco Pasquino; trad. Carmen C, Varriale et ai.; coord. trad. João Ferreira; rev. geral João Ferreira e Luis Guerreiro Pinto Cacaís. - Brasília: Editora Universidade de Brasília, 1ª ed., 1998. Vol.
19. Melo ND. O Princípio da Dignidade Humana e a interpretação dos Direitos Humanos. *Âmbito Jurídico*, Rio Grande, XI, n. 54, jun 2008.
20. Ibrahim FZ. *Curso de Direito Previdenciário*. 20ª ed. Rio de Janeiro, Impetus, 2015.
21. Morlachetti A, Guzmán JM, Cuevas M. Estrategias para abogar en favor de las personas mayores. Santiago del Chile: CEPAL/CELADE/UNFPA; 2007.
22. Prammer D. How does population ageing impact on personal income taxes and social security contributions? *The Journal of the Economics of Ageing*, Volume 14, 100186, ISSN 2212-828X, 2019. <https://doi.org/10.1016/j.jeoa.2018.12.005>.
23. Heer B, Polito V, Wickens MR. Population aging, social security and fiscal limits. *Journal of Economic Dynamics Control*. 2020;116(103913):ISSN 0165–1889. <https://doi.org/10.1016/j.jedc.2020.103913>.
24. Fontes AP, Neri AL. Resiliência e velhice: revisão de literatura. *Ciência Saúde Coletiva*, 20 (5), 1475–95, 2015. <https://doi.org/10.1590/1413-81232015205.00502014>.
25. Neri AL. O legado de Paul B. Baltes à Psicologia do Desenvolvimento e do Envelhecimento. *Temas psicol. Ribeirão Preto*, v. 14, n. 1, p. 17–34, jun. 2006. ISSN 1413-389X.

26. Diehl M. Self-development in adulthood and aging: the role of critical life events. In: Ryff C, Marshall UW, editors. *The self and society in aging processes*. New York: Springer; 1999.
27. Camarano AA. *Muito além dos 60: os novos idosos brasileiros*. Rio de Janeiro: IPEA; 1999.
28. United Nations. *World Population Ageing 2020 Highlights: Living arrangements of older persons*. Population Division: Department of Economic and Social Affairs; 2020.
29. Teixeira SM. O Envelhecimento e as Reformas no Sistema de Seguridade Social no Brasil Contemporâneo. *Textos, Contextos (Porto Alegre)*, vol. 17, núm. 1, 2018, p. 126–137.
30. Higgins JPT, Thomas J, Chandler J et al, editors. *Cochrane Handbook for Systematic Reviews of Interventions version 6.1 (updated September 2020)*. Cochrane, 2020.
31. Moher D, Shamseer L, Clarke M, et al. Preferred reporting items for systematic review and meta-analysis protocols (PRISMA-P) 2015 statement. *Syst Rev*. 2015;4:1.
32. Moher D, Liberati A, Tetzlaff J, et al. The PRISMA Group. Itens de relatório preferidos para revisões sistemáticas e meta-análises: a declaração PRISMA, 2009. *PLoS Med* 6 (7): e1000097. <https://doi.org/10.1371/journal.pmed.1000097>.
33. Critical Appraisal Skills Programme. *CASP Qualitative Studies Checklist*. [online] Available at: URL; 2018.
34. Wells G, Shea B, O'Connell D, et al. The Newcastle-Ottawa Scale (NOS) for assessing the quality of nonrandomized studies in meta-analyses [webpage on the Internet]. Ottawa: Ottawa Hospital Research Institute; 2011.
35. Higgins J, Thompson S. Quantifying heterogeneity in a meta-analysis. *Stat Med*. 2002;21:1539–58. doi:10.1002/sim.1186.
36. Higgins J, Thompson S, Deeks J, et al. Measuring inconsistency in meta-analyses. *BMJ*. 2003;327:557–60. doi:10.1136/bmj.327.7414.557.
37. Review Manager (RevMan). [Computer program]. Version 5.3. Copenhagen: The Nordic Cochrane Centre, The Cochrane Collaboration; 2014.

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