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Tendencies of studies addressing the eldest individuals of aged population in the community: a (inter)national systematic review*

TENDÊNCIAS DOS ESTUDOS COM IDOSOS MAIS VELHOS NA COMUNIDADE:
UMA REVISÃO SISTEMÁTICA (INTER)NACIONAL

TENDENCIAS DE LOS ESTUDIOS CON LOS ANCIANOS MÁS VIEJOS DE LA
COMUNIDAD: UNA REVISIÓN SISTEMÁTICA (INTER)NACIONAL

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Rosalina Aparecida Partezani Rodrigues⁵

ABSTRACT

The purpose of this study was to identify and analyze the tendencies and types of studies published in Brazil and abroad, involving elders aged ≥ 80 years, living in the community. A systematic review of national literature was performed using the LILACS and SciELO databases, and PUBMED and EMBASE for international literature, covering publications of the last two decades. Twelve national and 162 international references were selected. Biological sciences were the prevalent area both at the national (50%) and international (74.1%) levels. All national studies were observational, 91.7% of which were cross-sectional. Of the international studies, 93.3% were observational, 48.1% of which were cross-sectional and 37.6% were cohort studies. The United States were the country responsible for 41.4% of all international publications. Brazil and China were the only developing countries with international publications. Despite the significant number of international scientific publications as of 2005, this fact has not been observed at the national level.

KEY WORDS

Aged.
Demographic aging.
Health of the elderly.
Review.

RESUMO

O estudo objetivou identificar e analisar as tendências e tipos de estudos, publicados no país e no exterior, envolvendo idosos ≥ 80 anos residentes na comunidade. Realizou-se uma revisão sistemática da literatura nacional nas bases de dados LILACS e SciELO e internacional nas bases PUBMED e EMBASE, nas duas últimas décadas. Seleccionaram-se 162 referências internacionais e 12 nacionais. Predominou a área das ciências biológicas, tanto no nível nacional (50%) quanto internacional (74,1%). Todos os trabalhos nacionais foram observacionais, sendo 91,7% de estudos transversais. Dentre os internacionais, 93,3% foram observacionais. Destes, 48,1% de estudos transversais e 37,6% de estudos de corte. Os Estados Unidos foram responsáveis por 41,4% do total de publicações internacionais. O Brasil e a China foram os únicos países em desenvolvimento a apresentar produções internacionais. Apesar do significativo aumento no número de produções científicas internacionais a partir de 2005, o mesmo ainda não foi constatado em nível nacional.

DESCRIPTORES

Idoso.
Envelhecimento populacional.
Saúde do idoso.
Revisão.

RESUMEN

El estudio objetivó identificar y analizar las tendencias y tipos de estudios involucrando ancianos ≥ 80 años residentes en la comunidad, publicados a nivel nacional e internacional. Se realizó una revisión sistemática de la literatura pertinente nacional en las bases de datos LILACS y SciELO, e internacional en las bases PUBMED y EMBASE en las dos últimas décadas. Se seleccionaron 162 referencias internacionales y 12 nacionales. Predominó el área de las ciencias biológicas, tanto a nivel nacional (50%) como internacional (74,1%). Todos los trabajos nacionales fueron observacionales, y 91,7% de ellos fueron transversales. De entre los internacionales, 93,3% fueron observacionales. De ellos, el 48,1% fueron estudios transversales y 37,6% estudios de cohorte. Estados Unidos fue responsable del 41,4% de publicaciones internacionales. Brasil y China fueron los dos únicos países en desarrollo que presentaron producciones internacionales. A pesar del significativo aumento en el número de producciones científicas internacionales a partir de 2005, el fenómeno no se ha constatado a nivel nacional.

DESCRIPTORES

Anciano.
Envejecimiento de la población.
Salud del anciano.
Revisión.

* Extracted from the dissertation "Avaliação geriátrica global dos idosos mais velhos residentes em Ribeirão Preto (SP) e Caxias do Sul (RS): indicadores para envelhecimento longo", University of São Paulo, College of Nursing, 2009. ¹ RN. PhD in Nursing, University of São Paulo at Ribeirão Preto, College of Nursing Ribeirão Preto, SP, Brazil. rossetidi@hotmail.com ² RN. MSc in Nursing, University of São Paulo at Ribeirão Preto, College of Nursing Ribeirão Preto, SP, Brazil. elizandra_p@yahoo.com.br ³ M.D. PhD in Neurosciences. Hospital das Clínicas, Federal University of Rio Grande do Sul. Porto Alegre, RS, Brazil. mcruz@hcpa.ufrgs.br ⁴ RN. Professor, Federal University of Rio Grande do Sul, Department of Assistance and Vocational Guidance. Porto Alegre, RS, Brazil. epmorais@hotmail.com ⁵ RN. Full Professor, University of São Paulo at Ribeirão Preto, College of Nursing Ribeirão Preto, Department of General and Specialized Nursing. Ribeirão Preto, SP, Brazil. rosalina@eerp.usp.br

INTRODUCTION

Various factors may be mentioned as the propellers of studies and research in the field of aging, among them: the rapid increase of the elderly population in Brazil; the challenge of multiple medical, psychosocial and economic problems generated by aging in society; and the interest of health professionals to study this science that has gained academic attention: the field of Gerontology⁽¹⁾.

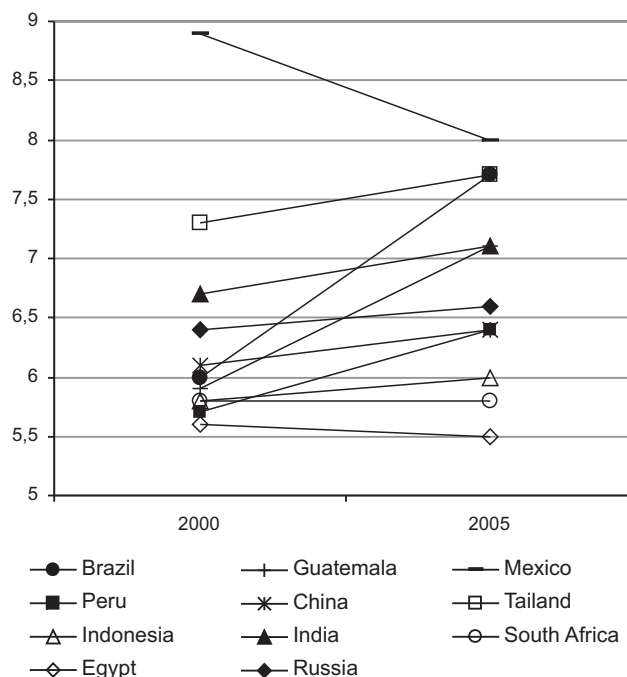
There were 600 million elderly individuals (= 60 years old) worldwide in 2000 and this figure is expected to reach 1.2 billion in 2025 and two billion in 2050⁽²⁾. According to the Brazilian Institute of Geography and Statistics (IBGE)⁽³⁾, the average life expectancy in developed countries varies from 78 years (United States of America) to 82.6 (Japan). In Brazil, it has reached an average of 72.8 years in 2008, while it was 67.2 years in China in the same year⁽³⁾.

The oldest-old individuals, i.e., those 80 years old or older, totaled approximately 80 million in 2000⁽²⁾, with an expectation to reach 395 million in 2050, a 4.9 times increase, while about 69% of them will be living in developing countries. Even though individuals 80 years old or older represent about 1.3% of the world population and 3% of the population live in developed regions, this age group is the segment of the population with the most rapid growth⁽²⁾.

While the average geometric rate of annual growth of the elderly population in general (= 60 years old) is approximately 3.3% in Brazil, among the oldest-old individuals this rate is about 5.4%⁽³⁾, and is one of the highest in the world. This Brazilian phenomenon has two different explanations: (1) developed countries are close to reaching a plateau in the curve of population aging, (2) most of the large developing countries such as China, India and Indonesia are in an earlier phase of socioeconomic development and Russia is attempting to recover from its difficult transition from the communist to the capitalist model, and, a third possible explanation, (3) the rapid universalization of the public health care service in Brazil (SUS) from 1989, which, despite its low quality, has been indicated by the WHO as an example to be followed by developing countries⁽²⁾.

Recent national studies have shown that the segment with the largest proportion (60%) among the oldest-old individuals is between 80 and 84 years of age⁽⁴⁻⁵⁾. Data from the United Nations Organization (UN)⁽⁶⁾ show that among the most diverse developing countries, Brazil displayed more rapid growth in the group of 80 to 84 years of age between 2000 and 2005, as shown in Figure 1.

The rapidity of the demographic and epidemiological transition experienced by the country in recent decades introduces a number of crucial issues for managers and researchers of health systems, with repercussions for society as whole, especially in a context of acute social inequality, poverty and fragility of institutions⁽⁷⁾.



Source: United Nations, 2009

Figure 1 - Rate of acceleration in the proportion of 80 to 84 years old individuals between 2000 and 2005 in various developing countries

The elderly population in Brazil is estimated to reach 30 million in 2020, which will rank the country sixtieth in the world in terms of absolute elderly population⁽⁷⁾. Obviously, the implications of this dramatic increase represent a concern for the economic, social security, health, and welfare sectors of any nation.

A heavier load of chronic-degenerative diseases in society is associated with population aging added to additional disability and increased use of health services⁽⁸⁾. However, the degree of human development of a population associated with health prevention policies can delay the development of diseases and disabilities even when implemented in more advanced phases of life⁽⁷⁾. This phenomenon, which countries more developed socioeconomically experience and thus where individuals have a longer life expectancy, is associated with *Compression of Morbidity*⁽⁹⁾, meaning that individuals experience fewer years lived with disability.

The theory of Compression of Morbidity would also be the main explanation why disability and not longevity *per se* would generate more costs to the health system. Hence a comparison among elderly individuals at the age of 70 revealed that those functionally independent live on average almost three years longer (84.3 years old) than those who are dependent (81.6 years old), while the longer survival did not imply heavier costs to the health system⁽⁸⁾.

Also, many interventions have been demonstrated to be more cost-effective for the oldest-old individuals than for middle-aged individuals, raising important scientific evidence against ageism in the health system⁽¹⁰⁾.

Even though there are not many studies addressing cost-effectiveness among the oldest-old, these results raise the question whether the same would occur in a comparison between the oldest-old individuals and youngest-old individuals. These results jointly have a profound impact in terms of public health, since preventing and treating complications in oldest-old individuals should be carried out but not only due to ethical reasons. In fact, these interventions should also be associated with a lower final cost for the health system as a whole.

Prevention is more effective as the level of complexity lowers (from primary to tertiary). However, even interventions at the secondary and tertiary levels in the elderly population have been effective in delaying incapacity and in diminishing the final cost to the health system⁽¹¹⁾.

Therefore the growth of this population group has, due to its social importance, recently raised an interest in the peculiarities of the health-disease continuum in this age range. This growth has, in the last two decades, propelled the development of studies of a biological, clinical, psychological and social nature to clarify the characteristics peculiar to this age range.

In fact, this age group presents not only biomedical characteristics different from other individuals, including younger elderly individuals, but also psychological, cultural, socioeconomic and epidemiological particularities that should be particularly studied⁽¹²⁾.

OBJECTIVE

To identify and analyze the approaches and tendencies of studies that evaluate the oldest-old individuals resident in a community, both at the national and international levels.

METHOD

A bibliographic study of an exploratory nature with quantitative approach was developed. A bibliographic search of the national publications was carried out in the LILACS and SciELO databases in addition to an international search in the PUBMED and EMBASE databases.

The following key words and their equivalents in Portuguese were used to search studies published in the international and national databases, respectively: *very-old* or *oldest-old*, *80 years old* or *older* or *octogenarians* and *community* or *populational*. The criterion of community sample refers to the interest for studies addressing the condition of health and disease and their multiple dimensions in the oldest old living in their *natural habitat*, that is, in a community. All studies published between 1989 and 2008 were analyzed one by one. In the LILACS database, given the reduced number of studies found, we opted for enlarging the search using the tool *related documents* when the reference source met the inclusion criteria.

The following limits were elected for international publications: studies in English, human, individuals 80 years old or older, clinical and nursing journals published in the last two decades. In the EMBASE database we opted for searching *only* EMBASE.

All those studies that evaluated at least one sample or subsample of individuals 80 years old or older were included as long as these lived in a community, both in national and international databases. Articles were initially selected through key words found in the title or abstract and when necessary the full text was consulted.

With the material available, the stages outlined below were followed:

a) Reading of material and selection of those that met the inclusion criteria including those that appeared in the databases.

b) Development of a table with the characteristics of the study and other variables of interest.

c) Analytical reading aiming to identify the following variables: (1) number of the article to check whether it appeared again in the search in other databases; (2) descriptor used to identify the population of oldest-old; (3) theme or subject addressed in the study; (4) type of study; (5) country of origin; and (6) year and journal.

d) Categorization and analysis of variables with tables and graphs in the Excel and SPSS version 15.0.

The papers were categorized as:

- **Biological:** articles that had a biological and/or clinical focus on the oldest-old such as physiological alterations of aging, prevalence of morbidities and mortality rates, functional and cognitive assessment, among other geriatric variables.

- **Psychological:** cognitive and behavioral changes due to normal and pathological aging including the concepts of quality of life, self-evaluation of health status, sexual activity, feelings of finitude and death, solitude, depressive symptoms, anxiety, psychosis and suicide.

- **Sociological:** search for health services, public resources, social and family support, leisure activities, social relationships, institutionalization and successful aging.

- **Ethnologic/ Racial:** studies that compared two or more ethnicities or races.

The research project was submitted to and approved by the Research Ethics Committee at the University of São Paulo at Ribeirão Preto, College of Nursing (protocol 0692/2006).

RESULTS

We opted to exclude the SciELO database from the results because all (six) of the articles selected from it were also found in the LILACS database.

Considering the remaining national and international databases, a total of 174 articles were selected for this study. All the selected articles are distributed in Table 1 according to the databases.

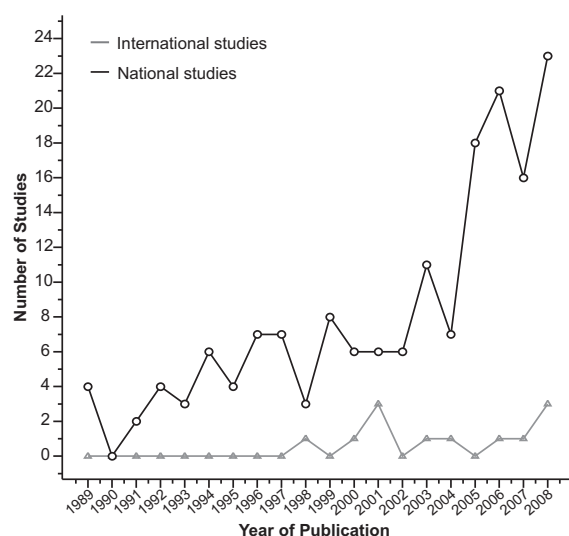
Table 1 - Distribution of selected articles according to databases - Ribeirão Preto, SP, Brazil - 2009

Databases	Studies found	Studies selected
Lilacs	44	12
PubMed	295	61
Embase	318	101
Total	657	174

Of the 174 selected studies, 162 (93.1%) were international (PubMed e EMBASE). Of these, 37 (22.8%) addressed the oldest elderly using the term *very-old*, 69 (42.6%) used the term *oldest-old*, and the remaining used diverse terms such as *old-old*, *very-elderly* and *octogenarians*, among others. Among these studies, 66 (40.7%) were published in journals whose focus was geriatrics and/or gerontology and 11 (6.8%) were published in nursing journals.

A total of 12 studies published in national periodicals were selected from the LILACS database. Of these, six (50%) used the expression "80 years old or older" to refer to the oldest-old, four (33.3%) used the term "oldest old" and two (16.7%) used the term "octogenarians". No studies were published in geriatrics and/or gerontological journals and only one article was published in a nursing journal. Five (41.7%) studies were carried out in Rio Grande do Sul, three (25%) in Minas Gerais, two (16.7%) in São Paulo, one in Paraná and another in Rio de Janeiro.

Despite a certain fluctuation, international studies tended to display a significant growth in number over the years. Brazil started to present publications on the topic only beginning in 1998, with two peaks of production: one in 2001 and another in 2008, with three publications each. A linear trend of growth was not observed in national publications. The international publications in turn, which were already presenting a gradual increase up to 2003/2004, presented a significant and sustained increase in production beginning in 2005 as showed in Figure 2.

**Figure 2** - Temporal trend of the number of national and international publications addressing the oldest old - Ribeirão Preto, SP, Brazil - 2009

Most of the studies selected at the international level had a biological (74.1%) focus, followed by psychological, sociological (8.6%) and in a smaller proportion, ethnological (Table 2). In relation to national studies, 50% had a biological focus, followed by psychological (33.3%) and social (16.7%). No study with an ethnological/racial focus addressing the Brazilian oldest-old was found.

All the national studies had an observational approach and 91.7% were cross-sectional studies (Table 2). Cohort studies addressing the oldest elderly were not found in Brazil. Almost all the international studies (98.2%) were also observational, but the preponderance of cross-sectional studies (48.1%) was not significant in relation to cohort studies (37.8%).

Table 2 - Distribution of international and national studies according to the focus and type of study - Ribeirão Preto, SP, Brazil - 2009

Focus	International	National
	n (%)	n (%)
Biological	120 (74.1)	6 (50)
Psychological	23 (14.2)	4 (33.3)
Social	14 (8.6)	2 (16.7)
Ethnicity/Race	5 (3.1)	0
Total	162 (100)	12 (100)
Type of study		
Transversal	78 (48.1)	11 (91.7)
Cohort	61 (37.6)	1 (8.3)
Review	7 (4.3)	0
Case-control	5 (3.1)	0
Case control	5 (3.1)	0
Qualitative	3 (1.8)	0
Experimental	3 (1.8)	0
Total	162	12

Figure 3 shows the number of international publications according to the countries of the universities with which the primary authors were affiliated. There was a predominance of studies in the United States of America, which was responsible for 41.4% of the total international publications, followed by Sweden (9.9%), Canada (6.8%), England and Italy (6.2% each). Brazil and China stood out because they were the only developing countries to contribute to international publications addressing the oldest-old.

Of the total of studies published in the USA, 46 (68.7%) were biological studies, 11 (16.4%) were psychological, 6 (8.9%) were sociological and only four (6%) were ethnological or racial studies.

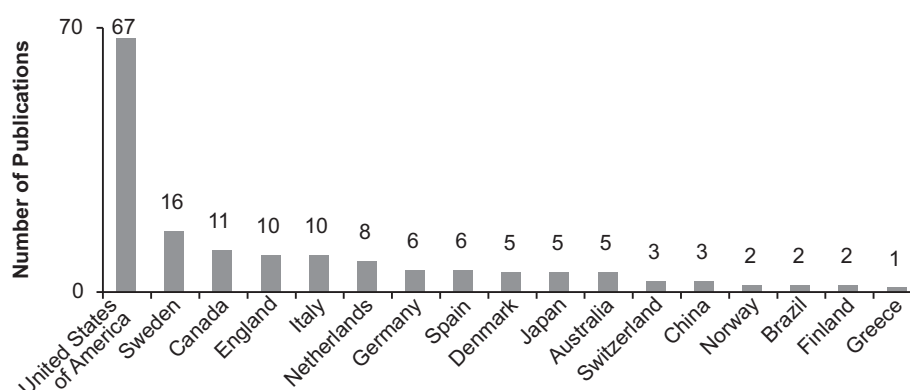


Figure 3 - Number of international studies between 1989 and 2008 according to countries of origin - Ribeirão Preto, SP, Brazil - 2009

DISCUSSION

The number of studies addressing the oldest-old, both at the national and international levels, is not growing at the same pace as the population has aged. This result indicates that, especially at the national level, research focused on issues related to the oldest-old is still incipient.

While international studies present a significant growth from 2005 on (Figure 2), the same trend is not observed in relation to national publications. Considering the rapid growth of the elderly population in the country, especially the oldest-old (Figure 1), this is a result that causes concern. The inconstant growth in relevant scientific research at a national level can be, at least in part, explained by the limited institutionalization of teaching in Geriatrics and Gerontology at the university level in the country.

However, as a national positive aspect, in addition to the populous China, Brazil was the only developing country to present international studies addressing the oldest-old. On the one side, such insufficient scientific research also reveals the limited participation of developing countries among the international publications directed to this age group, given that this age group is the one that most rapidly growing in many developing countries⁽²⁾.

Care practice research versus preventive research

Most of the studies, both national and international, take a geriatric approach that emphasizes functional and cognitive assessment. This reflects the global concern that teaching institutions and health systems remain extremely focused on providing care, especially regarding the oldest-old.

Population aging imposes a heavier load of diseases and more incapacity on the population, resulting in an increased use of health services^(8,13). However, prevention is crucial in this situation, since it is effective not only among adults and younger elderly individuals, but also in the most advanced phases of life⁽⁷⁾. For its part, the WHO⁽²⁾ has addressed various issues and expressed concern related to population aging, especially regarding strategies such as encour-

aging health promotion and disease prevention policies, mainly those focused on the oldest-old.

The prevalence of functional dependency in performing daily living activities varies from 15%⁽¹⁴⁾ to 25%⁽¹⁵⁾ among individuals older than 60 years old to 45% among individuals 80 years old or older⁽⁴⁾. Even though the family faces a significant challenge, which is caring for an incapacitated elderly individual, the state government should support the work process that accrues from such a responsibility. Although this support is essential, it cannot amount only to professional visits from the local health unit, as provided in the National Health Policy for the Elderly (PNSEI)⁽¹⁶⁾. It is not only nonexistent or inaccessible for all the dependent oldest elderly individuals, but this support is also insufficient. Because in Brazil caring for an elderly individual is an activity predominantly restricted to the family scope, public opinion about this issue has remained hidden and lacks visibility⁽¹⁷⁾.

The elderly statute provides that the place of choice to care for the dependent elderly is at home with the family, but it does not provide the means for the family to be able to keep its elderly at home⁽¹⁸⁾. The state should create mechanisms to pay for family and/or professional caregivers as is the case in many developed countries⁽¹⁹⁾, although the cost associated with this policy is not insignificant.

On the other hand, many studies have shown that the early detection and appropriate treatment of diseases at the primary and secondary levels can delay or even prevent the onset of elderly functional dependency, and reduce the yearly costs to the health system from incapacitated old individuals⁽¹¹⁾. These epidemiological and observational studies have increasingly supported the Theory of Compression of Morbidity⁽⁹⁾, addressed in the introduction of this study.

Hence, the goal to achieve as high and healthy life expectancy as possible, enabling elderly individuals to live the greatest number of years possible without functional dependency should be the goal of any national health system. In this context, studies focused on the assessment of factors associated with successful aging should necessarily be fomented by government agencies, since private investment is not expected in this field.

Studies with non-biomedical approaches

The historical importance of subtypes of mental disorders also suffers the influence of population aging, as dementia cases, so frequent among the elderly, are increasingly more prevalent in Brazilian society⁽²⁰⁾. Hence, studies specifically assessing the cognitive function among the Brazilian oldest-old are essential.

Very few sociological studies among the elderly were conducted in Brazil; only two studies were identified, and only one was conducted with a subsample of individuals 80 years old or older. The analysis of the relation between the socioeconomic factor and the health condition of Brazilian elderly individuals in general⁽¹³⁾, coupled with the increased population of the oldest-old individuals, reveals the importance of such studies.

Research designs

A characteristic common to all the Brazilian studies was the absence of cohort studies. These studies need more planning and infrastructure and therefore, are more expensive and difficult to conduct in developing countries⁽²¹⁾. Cross-sectional studies, however, can be very useful in providing information about various aspects of the health-disease continuum such as prevalence, associations among variables and the formulation of hypotheses, at a relatively low cost and over a short time, when compared to a longitudinal design⁽²¹⁾.

Although qualitative studies addressing the elderly in general⁽²²⁾ were observed in a higher proportion in the nursing field, their frequency was low in this analysis. These studies permit uncovering aspects of aging and old age oftentimes occult to researchers. Therefore, from the point of view of the elderly individuals themselves, the researcher can discuss issues of a psycho-socio-cultural nature and recognize patterns and variations impossible to grasp through a quantitative methodology.

The role of Geriatrics and Gerontological Nursing in the research and care provided to the oldest-old

In Brazil, the PNSPI⁽¹⁶⁾ determines the creation of State referral health centers for the elderly and suggests that elderly individuals with functional dependency, those fragile, and those older than 75 years of age be preferably cared for by experts in elderly health, both at a medical and nursing level.

The few studies in the country addressing the different dimensions of aging reflect the need to pay more attention to the field of Gerontology/Geriatrics, both in care practice and in the academic field. In regard to this issue, the PNSPI⁽¹⁶⁾ and the Statute of the Elderly⁽¹⁸⁾, determines competencies related not only to the care network but also to implementing elderly health promotion.

The reduced number of international studies published in nursing journals indicates that this field needs further research focused on the oldest-old. The contribution of gerontological

nursing to national scientific publications relative not only to the topic "oldest old", as well those aged 60 or older⁽²²⁾, is limited: only two recent studies, a master's thesis and a doctoral dissertation, addressing the oldest-old⁽⁴⁻⁵⁾ are highlighted.

LIMITATIONS

It should be noted that although this study addressed the oldest-old, those individuals 80 years old or older, there is no consensus in the literature concerning what age should be the *operational* age for someone to be considered as such. On the other hand, even though the PNSPI⁽¹⁶⁾ does not refer to the oldest-old, it determines that elderly individuals 75 years old should be considered *fragile*.

A limitation concerning the use of any chronological classification is that, as aging is a heterogeneous process, in individual terms it is always easier for health professionals to think of elderly individuals in terms of *functional age* rather than simply *chronological age*. However, such a concept is not feasible from an epidemiological perspective when using a chronological cutoff point may be more reasonable.

Another limitation is that this study considered only studies that presented a community focus and excluded studies addressing other fields concerning the oldest-old, such as hospitals and long term care facilities.

CONCLUSION

Even though Brazil is one of the countries with the highest growth in the number of individuals in the 'very old' age range, contrary to the trend since 2005, one cannot state there is a national trend of an increased number of studies addressing the oldest-old. National studies addressing the reality of the Brazilian population of the oldest-old are essential for an appropriate planning of actions in public health toward this population.

Enlarging evidence concerning the aging process and implementing interventions to promote successful aging might contribute to preserving the functional capacity of elderly individuals as long as possible.

Therefore, this study aims to quantify and contribute to the development of studies related to care delivered to the elderly, especially the oldest ones. It is expected that this analysis will contribute, even if modestly, to encouraging further gerontological research in the country and enable appropriate actions necessary to the well being of the Brazilian elderly population.

Hence, national health systems such as the Brazilian SUS should seek to promote, as much as possible, the maintenance of health and functional capacity in the elderly, seeking the compression of morbidity, the ultimate goal of which is to promote increased life expectancy free of incapacity. This should be the ultimate goal of the entire gerontological science.

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