

Evolution of publications on health of the older adults in the *Journal Ciência & Saúde Coletiva*

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Abstract *The present study analyzed the profile of publications related to the health of the older adults in the Journal Ciência & Saúde Coletiva, in terms of quantitative evolution, methodological approach, thematic and institutions involved. The selection of articles considered the title, abstract and descriptors and covered all the content published between 1996 and 2019. The articles included were classified according to the year of publication, type, theme, methodological approach and institutional link of the first author. Data analysis was based on absolute and relative frequencies, in addition to summary (mean) and variability (standard deviation) measures. The results showed a consistent increase in publications on the health of the older adults in the Journal Ciência & Saúde Coletiva, with a predominance of the quantitative approach, mainly focused on investigating the topic related to health conditions and the use of health services and supplies. In the majority, the main author was linked to a public teaching/research institution, located in the Southeast region. The results indicate that the journal contributed to give greater visibility to the health of the older adults, but that the publications on this theme reproduce the inequality observed in the national scientific production.*

Key words *Health of the Older Adults, Aging, Scientific publications*

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Introduction

Population aging consists of the changing of the age structure of a population, with an increase in the proportion of older adults people in its composition, due to the combination of falling fertility and falling mortality, concentrated in older ages. In Brazil, this process accelerated in the last decade of the 20th century. In five decades, the average number of children per woman has decreased from 6.3 (1960) to 1.9 (2010), slightly below the replacement level¹. The older adults (60 years old or more), who in 1950 represented 4.9% of the Brazilian population, totaled 7.9% in 2000, 10.2% in 2010, and it is estimated that this proportion will reach 23.9% in 2040².

At the individual level, the largest number of years lived tends to negatively impact health, due to cellular damage and decreased physiological reserves that affect an aged organism. In this stage of life, the occurrence of chronic health conditions (such as hypertension and diabetes) and the decline in cognitive and physical abilities impair the autonomy of the older adults and compromise their quality of life³. At the collective level, population aging poses challenges to society, in order to promote healthy aging, avoiding that the prolongation of existence occurs with predominance of precariousness of health and loss of quality of life. The challenges posed go beyond attention to a population morbidity profile, in which the predominance of chronic health conditions requires continuous attention from health services. Thus, issues as distinct (but interconnected) as the physical, socioeconomic and cultural environments that favor healthy aging, violence, the construction of social protection networks, home and long-term care and the social benefits resulting from investment in healthy aging become part of the list of challenges and expand the scope of reflections on the issue^{3,4}.

Historically, science has always been called upon to provide answers to the challenges posed by changing societies, and in this aspect, responses must go in line with the interests of society⁵. If population aging initially points to demography as the science that would naturally be in charge of its investigation, its repercussions on health (individual and collective) bring it closer to a more comprehensive scientific spectrum, which extrapolates the specificities of demographic science. In this context, collective health constitutes a multidisciplinary field of knowledge (theoretical explanatory or interpretive knowledge) and practices (interventions) aimed at the preven-

tion, control and eradication of health problems, at the population level. In the field of collective health, knowledge from different disciplines, sheltered in the health sciences and in the human and social sciences, is used in the development of interdisciplinary cooperative studies, which seek to produce knowledge about the health of specific population groups⁶.

In 1996, right after the 10th National Health Conference, the Brazilian Association of Collective Health (Abrasco) launched the *Journal Ciência & Saúde Coletiva (C&SC)*, with the purpose of providing a space for dissemination and reflection on knowledge (theoretical and practical) of the scientific disciplines that make up the Collective Health field. The journal proposed to integrate the multiplicity of scientific perspectives that make up this field of knowledge and practice, constituting a vehicle for communicating the advances of knowledge in public health, with the aim of subsidizing public policies, management and service offerings within the scope of the Unified Health System (SUS)⁵.

Considering the repercussions of population aging for the health of the older adults (especially in the collective perspective) and the mission and purpose assumed by C&SC, the present work aimed to describe and analyze the profile of publications related to the health of the older adults in this journal, in terms of its quantitative evolution, methodological approach, thematic contemplated and institutions involved.

Methodology

To screen the publications about the health of the older adults in *Ciência & Saúde Coletiva (C&SC)*, all the content published between 1996 and 2019 was searched on the journal's website. The selection included original, theoretical articles (essays or debate articles) and literature reviews; comments (related to debate articles), letters to the editor and reviews were excluded. The selection of articles was based on the title and summary. When the reading of the abstract did not allow a decision to be made regarding the inclusion (or not) of the article, it was read in its entirety. This survey was carried out by two researchers, individually, and later, the selected material was collated to identify and resolve discrepancies and inconsistencies.

The included articles were classified according to the year of publication, type of article, theme, methodological approach and institution

of the first author. Regarding the type, the articles were classified as original, review and theoretical (opinion or essay). The reading of the objective allowed to identify the object of study, which was used in the classification of the article regarding the theme. The categories used in the thematic classification were defined by consensus by the authors, and later aggregated into broader categories. The classification related to the methodological approach was restricted to empirical articles, classified into quantitative, qualitative or mixed (simultaneous use of quantitative and qualitative approaches). The institutional connection of the first author was used to define the institution responsible for the article, in terms of its location, type and identification (name). The institution's location was based on the five major Brazilian geographic regions; the type of institution considered the categories teaching / research, teaching only and other public bodies (other than teaching and research). In addition, in the classification of institutions, it was classified as to management, whether public or private.

Data analysis was based on absolute and relative frequencies, as well as summary measures (mean) and variability (standard deviation). For the analysis of quantitative evolution over time, the calendar years were grouped into five-year intervals (five-year periods), except for the most recent period, between 2016 and 2019, which constituted a quadrennium. For each period of years, the total number and the annual average of published articles were calculated, in addition to what they represented, in proportional terms, in relation to the total of articles published by the journal. The results were presented in tables and graphs, and for the variables theme and name of the institution, only the 10 most frequent categories were presented in a table, the others being aggregated in a category called "other". The data were stored and analyzed using the Excel® program, from the Microsoft Office package, version 2010.

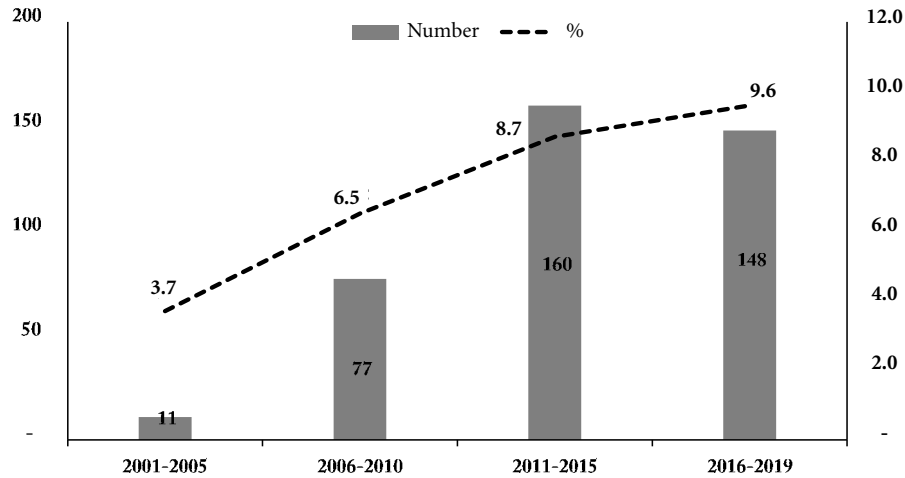
Results

Between 1996 (launch year) and 2019, *Journal Ciência & Saúde Coletiva* published 396 articles that contemplated the health of the older adults, with an average of 17.2 (sd = 19.1) per year (the first of which was published in 2002). Graph 1 describes the evolution of the number of articles, in absolute and relative terms (to the total number of publications of the journal) between the

years 2001 and 2019. In both cases, there is a consistent growth: there were 11 articles published in the period 2001-2005 (representing 3.7% of the total published) and 148 (9.6% of the total) published in the period 2016-2019; the decade started in 2011 concentrated 77.8% (n = 308) of publications on the health of the older adults. In average terms, the growth trend was similar: 2.2 articles / year in the period 2001-2005; 15.4 between 2006-2010, 32.0 between 2011-2016 and 37.0 in the most recent years (2016-2019) (data not shown in the graph).

As for the type of article, 85.4% (n = 338) are empirical, the remainder (14.6%) being revised (bibliographic or documentary) and theoretical. Among the empirical articles, 79.3% used quantitative methodology, 16.0% the qualitative and 4.7% associated the two methodologies. The objects of investigation were varied, with a predominance of those in the *Health Conditions* category, and which totaled 136 (or 34.3%), followed by *Health Services and Supplies* (n = 48 or 12.1%), *Violence/Suicide* (n = 42 or 10.6%) and *Functional Capacity* (n = 26 or 6.6%). A more detailed description of this information can be seen in Table 1.

Of the total of published articles, 377 (95.2%) were Brazilian, that is, the first author was linked to a Brazilian research / teaching institution. Publications of international origin are from Colombia, Cuba, Spain, United States, Mexico, Portugal, Switzerland, Turkey and Uruguay, with 19 (4.8%) of the total number of publications in health of the older adults. Among the articles published in another language, 143 were published in English and five in Spanish. Considering the distribution of institutions by geographic region, three quarters of the publications are from the Southeast and South (56.8% and 19.6%, respectively), followed by the Northeast (15.1%), Midwest (6.9%) and North (1.6%). Almost all articles (n = 342 or 96.6%) have the main author linked to an educational and/or research institution; the rest are for public services (federal agencies, municipal or state health departments). Of the institutions to which the first author of the article is linked, 85.8% (n = 326) are public (federal or state). Among these, the Oswaldo Cruz Foundation (Fiocruz) (n = 50) and the State University of Campina (UNICAMP) (n = 30) stand out, which together account for approximately a quarter (24.3%) of publications. Table 2 presents a detailed description of these results, highlighting the ten public research institutions with the highest number of publications.



Graph 1. Evolution of the number of articles published in the *Journal Ciência & Saúde Coletiva* (total number and percentage in relation to the overall total of articles), 1996 to 2019.

Discussion

The present study showed a consistent increase in publications about the health of the older adults in *Ciência & Saúde Coletiva*, in absolute terms (number of articles published), and relative (proportion of the total articles published in the journal). In the articles, the quantitative approach predominated, mainly focused on the investigation of issues related to health conditions and the use of health services and supplies. In addition, in most of them, the first author was linked to a public teaching / research institution, located in the Southeast region.

The growing trend in the number of publications on the health of the older adults has increased in this decade, practically quadrupling in the years 2011-2019, compared to the previous decade (2002-2010). This growth occurs concomitantly with the increase in the volume of articles published by the journal in the same decade (3,386 published between 2011-2019 versus 1,444 published between 2001-2010), however, at a greater speed. The result was a greater participation of this area of knowledge in the journal's set of publications (at the end of the decade, practically one in 10 articles addressed the health of the older adults).

There is a lack of scientific articles with objectives similar to ours in national journals, in

the area of public health. We identified two review studies, both of bibliometric nature, that addressed the evolution of scientific production on the health of the older adults. In the first one⁷ the authors investigated the scientific workforce (research groups) dedicated to the topic, having diagnosed a reduced capacity for reproduction of this workforce, due to the heterogeneity of the research groups and the low insertion in postgraduate programs. At the time of publication, they anticipated a long path for the scientific consolidation of research groups focused specifically on the study of aging population. The second⁸, of a more recent publication, argued that the emergence and consolidation of a scientific journal focused on studies in the field of geriatrics and gerontology was evidence of the growth of scientific production on the health of the older adults.

The growth of research on the health of the older adults seems to reflect the same trend of Brazilian scientific production in the area of public health in this century, fueled by a government policy for funding science and technology, which started in 2000⁹, based on an priorities agenda defined by the Ministry of Health in a broad consultation process¹⁰. Certainly, the National Policy for the Older Adults and the National Health Policy for the Older Adults in the 1990s, which focus on active aging¹¹ contributed to this growth. Finally, it is worth mentioning that the

Table 1. Distribution of publications from the *Journal Ciência & Saúde Coletiva*, according to the methodology used and central theme, 2002-2019.

Variables	N	%
Methodology used (n=338) ^a		
Quantitative	268	79.3
Qualitative	54	16.0
Qualitative and quantitative	16	4.7
Main theme (n=396)		
Health conditions	136	34.3
Health Services and Supplies	48	12.1
Violence/Suicide	42	10.6
Funcional Capacity	26	6.6
Quality of Life	23	5.8
Care for the Older Adult	20	5.1
Frailty	13	3.3
Socioeconomic Aspects	9	2.3
Gender	9	2.3
Health Promotion/Education	7	1.8
Others ^b	63	15.9

^aQuantitative restricted to empirical articles. ^bOther categories belong to: Death / grief; Life habits; Professional qualification; Health promotion; Health assessment; Social differences; Epistemology, Cross-cultural adaptation, application, evaluation and validation of instruments; Open University of the Third Age; Demography; Population-ageing; Longevity; Sexuality; Urban mobility; Nutritional screening; Nutritional intervention; Cognitive screening; Public policy; Environment and health; Intervention effectiveness; Intergenerational relations; Resilience; Home care; Healthy life expectancy; Vestibular rehabilitation; Job; Biology of aging; Profile of restricted older adult at home; Psychological (methodological) autopsy; Posture; Body image.

Table 2. Distribution of publications of the *Journal Ciência & Saúde Coletiva*, according to the first author's institutional affiliation, 2002-2019.

Variables	N	%
Institution location (n=377) ^a		
Southeast	214	56.8
South	74	19.6
Northeast	57	15.1
Center-West	26	6.9
North	6	1.6
Type of institution (n=377)		
Teaching and Research (Public)	326	82.3
Education (Private)	54	13.6
Public Agency	16	4.0
Public Institution of Education and Research (n=326)		
Fundação Oswaldo Cruz (Fiocruz)	50	15.3
State University of Campinas (UNICAMP)	30	9.2
University of São Paulo (USP)	17	5.2
Univ. Federal Minas Gerais (UFMG)	16	4.9
State Univ. of Rio de Janeiro (UERJ)	15	4.6
Univ. Federal Santa Catarina (UFSC)	13	4.0
Univ. Est. De Montes Claros (UNIMONTES)	13	4.0
Univ. Federal Pelotas (UFPEL)	12	3.7
Univ. Federal Triângulo Mineiro (UFTM)	11	3.4
Univ. Federal Pernambuco (UFPE)	10	3.1
Other	139	42.6

^aQuantitative restricted to articles whose first author is Brazilian.

increase in scientific and technological development in the field of health is one of the competences of SUS, and this is inscribed in the Brazilian Constitution (article 200, item V). However, the political transformations in recent years have imposed important restrictions on the financing of Education and Health, and in the event that this situation is not reversed, it will not come as a surprise that the growth in scientific production of public health (including health of the older adults) will be reduced in the coming years.

The quantitative approach was present in more than 80% of studies related to the health of the older adults published in the journal. This predominance is consistent with that observed in different lines of research in the field of public health, which demonstrates the predominance of epidemiological studies^{8,11-13}. Epidemiology is a scientific discipline with a quantitative basis,

and in its definition, it is committed to promoting the health of human populations, producing knowledge about the behavior of health events and their determinants at the population level¹⁴. Historically, Epidemiology has been one of the pillars of collective health, formulating health diagnoses and recognizing changes in the health status of populations over time, identifying causes, risk factors and determinants of health problems, assessing individual and collective risk for illness and verifying the needs of health services. By studying social aspects of the disease, it helps to provide a complete picture of diseases and health problems, answering questions that the clinic alone does not always answer¹⁵.

Thus, the knowledge produced by it becomes of fundamental importance for the performance of health services and their evaluation. In Brazil, epidemiological studies and public health

gained momentum in the 1970s, when the first postgraduate course in public health (beginning of the decade) and the Brazilian Association of Public Health (Abrasco) (at the end of the decade) were created. The commitment of the community of Brazilian epidemiologists to the health of the population and to the development and improvement of SUS is responsible for the consolidation of epidemiological research in the country, and for the strength of its scientific production in the last decade, which has grown at a speed as fast as from other scientific fields in the area of health sciences¹⁶. This important growth is, therefore, represented in the production about health of the older adults from *Ciência & Saúde Coletiva*, as described in the results of this article.

The minority presence of qualitative studies may be a consequence of the fact that the recognition of their scientificity is recent: these studies were considered reports governed by subjectivity or, at most, heuristic or pre-scientific studies¹⁷. In qualitative investigations, the object of study is not the health event itself, but its individual and collective meaning, and the researcher's objective is not to explain the behavior of the health event, but to interpret and understand what it means for whoever experiences it. This differentiates the qualitative from the quantitative approach because the scientist interprets the event from the perspective of the interviewee, and not from the theoretical assumptions that the former carries. For collective health, qualitative research gains importance because it is about the meaning of the event and its cultural sharing that individuals and social groups organize their lives¹⁶. Therefore, the actions implemented by individuals in the face of the health problem will occur in the way they perceive and value them and need to be considered by health services in meeting the health needs of the population.

In this perspective, several health events have merited an investigation under a qualitative perspective, as is the case with self-evaluation of health¹⁸, functional capacity¹⁹, use of medicines^{20,21}, violence against the older adults²² and health professional-patient relationship²³ to name a few. These are studies that exemplify the possibilities of the qualitative method in addressing events whose internal complexity limits the scope of methodological approaches based on objectivity and quantification, making it possible to know them in greater depth. The meaning given to natural phenomena (including health events) and real situations defines their consequences, thus motivating human actions.

Qualitative research works with subjectivity, intentionality and meaning, from the interaction with the concrete and the morphological. Thus, in investigations in the field of public health, the quantitative and qualitative methods should not be seen as an opposition, but as complementary approaches²⁴.

The thematic diversity observed in the publications reflects the complexity of the concept of health and how multifaceted it is, especially in relation to the older adults. Among the topics covered, health problems, the use of health services and supplies, and violence were the most frequent, indicating that the negative consequences to the health of the older adults (diseases and injuries, present alone or concurrently) and the demand they represent for health services, these were the questions that most instigated researchers. As an example, in 2000, chronic non-transmissible diseases constituted the most frequent line of research among Brazilian research groups whose investigations were related, in some way, to human aging⁷.

In the *Health Conditions* category, attention is drawn to the space reserved for oral health. The publication of indexed articles focused on the oral health of the older adults (and the general population) has increased, especially since 2006. This increase has been characterized by a decentralization of traditional public health journals, indicating a thematic renewal and methodological approaches, with emphasis on C&SC in the beginning of this decade (2011)²⁵. Oral health is a component of general health, reflecting on the individual's physical, psychological and social well-being. The need for additional, multidisciplinary research in the field of geriatric dentistry is still perceived²⁶. In Latin America, for example, there are few studies on the oral health situation of the older adults, and they show that it is a characteristic shared by the older adults in the region. The planning of public policies for oral health is hampered by the lack of epidemiological information, and it is necessary to include geriatric dentistry in the curriculum of dental schools²⁷.

Regarding the category *Use of Health Services/Supplies*, there was a predominance of studies aimed at investigating the use of medicines. It would not be an exaggeration to affirm that the medicine is an omnipresent input in the health care scenario, given its effectiveness in the management of the most diverse health problems. Comorbidity is common among the older adults²⁸, which makes the older adults more likely to use medication. Among the older adults, poly-

pharmacy (simultaneous use of medications)²⁹ is frequent^{30,31}, and with it, the probability of adverse drug reactions and the use of potentially inappropriate drugs (MPI) increases³². In a context in which the use of the medication (often necessary) can carry as much or more risks^{33,34} than benefits, it is natural that the researchers' attention is focused on understanding the phenomenon and its implications for public health, especially among the older adults. We identified a single study³⁵ that sought to systematize publications on the use of medicines in Brazil and Latin America. This review, which analyzed the studies published until 2004 and restricted to the Scielo and Lilacs databases, detected a predominance of quantitative studies, with a focus on the prevalence and profile of medication use, and a lack of studies developed with the older adult population. There are also few longitudinal studies on this topic, which can make an important contribution to the detection of risk situations in the use of medications by the older adults^{33,36,37}.

Violence is a multifaceted phenomenon, defined by acts perpetrated individually or institutionally with the intention of causing physical, moral, sexual or psychological harm to others. A literature review⁴ published at the end of the past decade showed that Brazilian scientific production on violence against the older adults had increased in the first ten years of this century, compared to that observed in the previous decade. Falls (their circumstances and consequences) and external causes and violence in general (investigated from an epidemiological perspective) were the types of violence most addressed in the studies identified. Despite the observed growth, the authors warn of the little attention given to some aspects of violence against the older adults, such as prevention, the perception of the phenomenon among caregivers and health professionals and domestic violence, which need to be investigated more frequently. The lack of studies on sexual violence against the older adults and their intersections with domestic violence is also noticed in the international literature. Although existing studies identify women (with physical and cognitive disabilities, especially) as the most frequent victims, few studies have addressed the impacts (physical and psychological) of violence, the characteristics of the aggressor, the needs of the victims (which are different from young victims) and the experience of survivors³⁸. Our results indicate that the growing trend of publications on violence against the older adults observed in the past decade is present in *C&SC*.

Although articles in Portuguese predominated, more than a third of them (36.1%) were published in English (the majority corresponding to bilingual publication), resulting from the journal's internationalization effort. Most of the published articles are linked to public teaching/research institutions and located in the Southeast region, with emphasis on FIOCRUZ, UNICAMP and USP. The predominance of the Southeast region is observed in other lines of investigation of public health, such as nutrition¹². In our study, among the ten institutions that published the most, only two (UFPEL and UFPE) are not located in the Southeast region. The prominent institutions are home to research groups with important projects focusing on the health and well-being of the older adults, such as the Bambuí³⁹ and ELSI-Brazil (from Fiocruz) Projects⁹, the SABE project (USP)⁴⁰ and the FIBRA Project (UNICAMP)⁴¹. A consultation of the list of CNPq research groups in the area of collective health and which had the words "older adults", "aging", "best age", "gerontology/geriatrics" in the name of the group revealed that, out of a total of 32 groups registered, 12 are from the Southeast region (five in São Paulo, four in Rio de Janeiro and three in Minas Gerais)⁴². These findings demonstrate the inequality in Brazilian scientific production on the health of the older adults, concentrated in the most economically developed states and with the largest number of public teaching/research institutions. These regional asymmetries, although they have reduced over time, still remain, with supremacy of the Southeast Region. The analysis of the 2007-2009 triennium shows that 54.3% of all Brazilian scientific production was concentrated in this Region, which also accounted for 63.2% of the total produced in the area of Health Sciences⁴³.

The present study has limits that make it difficult to compare its results with the content published in other national and international collective health journals. We had difficulties in identifying studies similar to ours, in terms of design and objective in the main bibliographic databases, such as BIREME and PUBMED. The objective of this study was not to survey national and international production along the lines of what was done in relation to C&SC, and therefore, the mapping of this production was based on review articles that included, in some aspect, objects related to older adults health. In addition, the accuracy of some specific results was impaired, as is the case with the institutional link of the research. The option to consider, in the study, only the first

author in the evaluation of institutional production, certainly underestimates the participation of other institutions to which the co-authors of the articles are linked. On the other hand, the consultation of all the numbers published by the magazine and the careful categorization of the information contained in these works contributes to the reflection on the production on the health of the older adults in this journal, possibly in line with the growth of this area of knowledge in the country, and in the world.

Final considerations

The growth (absolute and relative) of the space occupied by scientific production about the health of the older adults at C&SC is good news, as it points to greater visibility given to this issue in the field of public health. Positive findings are also the space reserved for qualitative methodology (although minority) and thematic plurality. The qualitative approach is of great importance to achieve a more in-depth view of issues related to the health of the older adults, and the thematic diversity reflects how complex this field of research is, revealing the difficulty of being covered without multidisciplinary.

On the other hand, the analysis of the publications showed that some themes still await a

closer look from the collective health researchers, and that the inequality in Brazilian scientific production is present in studies on the health of the older adults. In the first case, issues such as care, social safety nets and social capital, sexuality, the environment and religiosity need further investigation with the older adults population; in the second case, it is observed that research on aging remains concentrated in the Southeast region.

Science has a commitment to society, in producing answers to its demands and solutions to its problems. Thus, it can support the adoption of policies and practices based on scientific evidence, which result in health actions of better cost-effectiveness⁴⁴. But the knowledge produced needs dissemination tools, so that it can be appropriated, initially by the scientific community, and in the end, by society as a whole. In this respect, this journal has been a privileged space for the dissemination of knowledge produced by the field of public health and aims to contribute to the construction and consolidation of the National Unified Health System (SUS, *Sistema Único de Saúde*). Studies published in the journal that contemplate the health of the older adults will certainly instigate researchers and managers to deepen the reflection on the need for health services (especially SUS), as well as the dialogue with managers, in the search for solutions to the demands presented by this growing age segment.

Collaborations

JOA Firmo, SV Peixoto, GA Souza and AI Loyola Filho, participated in the conception, planning, data collection, analysis and interpretation of the data; contributed to the elaboration, revision and approval of the final version of the article.

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