





Literature review on sexuality in the elderly: What is being taught and with what technologies?

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ABSTRACT

Chile is facing an increasingly aging population and, with it, changes in its demographic, epidemiological, and healthcare structure. As a result, the sexual health of the elderly is an emerging area at the social level and in healthcare systems. This research aims to identify general aspects of sexuality in the elderly and learn about educational content delivered to this group using digital technologies. To do this, we proposed a review of scientific literature on the subject between January 1st, 2018, and December 31st, 2022, in the databases Web of Science, MEDLINE/PubMed, LILACS, Cochrane, Scopus, and Google Scholar. The articles found, and the emerging information was analyzed. A total of 1573 articles were found, of which 21 papers were finally included, 11 with qualitative methodology, six quantitative, and four mixed. In addition, nine addressed the area of sexuality, and 12 focused on technological innovations for the elderly. Sexuality is a growing topic worldwide, carrying with it sociocultural beliefs associated with dogmatic opinions and myths, with discrimination against this age group, especially if they belong to sexual minorities. This group also has better access to new digital technologies that facilitate access to training, social integration, and timely healthcare. Scientific evidence shows that the sexuality of the elderly is a topic of global interest, invisibilized, with low education and training of healthcare workers. The latter are neither informed nor able to solve the reasons for consultation in the traditional way or with new digital health technologies.

KEYWORDS Sexuality, aged, educational technology, quality of life

INTRODUCTION

Population aging is a demographic phenomenon of the 21st century, and Latin America and the Caribbean are no exception. Currently, 13.4% (88.6 million) of the region's population is made up of people aged 60 and over. It is estimated that this could increase to 16.5% by 2030, which poses challenges and opportunities in terms of public policies [1].

The World Health Organization (WHO) has proposed policies that encourage aging, the increase of healthy life expectancy, and the reduction of health inequity factors [2]. It is expected that between 2015 and 2030, the population over 60 years of age worldwide will increase from 900 million to more than 1400 million people, with an increase of 64% in just 15 years for this age group [3].

Chile is facing a similar aging population phenomenon, in addition to a decrease in mortality and fertility rates, a drop in the birth rate, an increase in life expectancy, and the gross number of the general population. However, negative vegetative growth changes are projected for those under 15 and 15 to 60 years of age towards the end of this century, so that by 2050, those over 60 are expected to outnumber those under 15 years of age for the first time [4,5].

Aging is a natural and universal process that is not uniform since social, geographical and environmental relationships determine it. Aging depends on sociocultural, family, and personal characteristics connected to the space where one is born and grows up, sexual identity, and ethnicity, among others [6]. Aging impacts sexuality throughout their life. Sexuality is understood as a central element of intimacy, companionship, and well-being, encompassing notions of sex, gender identity, roles, sexual orientation, eroticism, pleasure, intimacy, and reproduction. Furthermore, it depends on the interaction with biological, social, psychological, economic, political, social, cultural, legal, historical, and religious factors [7,8].

Sexual health, according to the Pan American Health Organization (PAHO), is understood as a state of physical,

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MAIN MESSAGES

- The sexuality of the elderly is an emerging and novel global phenomenon of the 21st century, highlighted by the World Health Organization, the scientific world, and, above all, by the elderly.
- The study's limitations are that it gathers mainly qualitative literature, with databases that are not always open access, in a more limited study period, not allowing an accurate generalization of the results.
- Older people state that sexuality is important to them and that they have an active sexual life, but despite this, it is an ignored subject and the object of discrimination.
- There are gaps in the education and continuous training of healthcare personnel to educate and care for the sexuality of the elderly at primary health care, associated with a shortage of digital technologies to educate, prevent, and promote health in this stage of life.

mental, and social well-being in relation to sexuality and is not the absence of disease, dysfunction, or disability [9]. This conception requires a positive and respectful approach to sexuality and sexual relations, the possibility of having pleasurable and safe sexual experiences free from coercion, discrimination, and violence. In other words, the sexual rights of all people must be respected, protected, and fully exercised [9]. Although the media and culture conceive sexual intercourse as the gold standard of sexual activity, in older people, kissing, hugging, flirting, caressing, masturbation, and bodily or emotional acts of intimacy are added [10].

In Chile, according to the fifth national survey on quality of life in old age, about 60% of older people aged 60 years and over consider that sex life is important, where 50.1% of men and 22.5% of women reported having an active sex life, especially those living with a partner (54.8%) [11]. These results coexist with social complexity and the innovations of communication and information technologies.

Access to information and communication technologies (henceforth, "technologies") among older people in Chile shows an increase of close to 40% from 2013 to date, where 50% are located between 60 and 69 years old, with high school and university education [11]. Other factors that influence the use and access to health information (age, gender, income, employment status, level of education, country or place of residence) are described. Facilitating aspects (existence of online communities, privacy, real-time interaction, or archived health information) and barriers to use (low health literacy, lack of interest, limited access, difficulty in retrieving information, unreliable health information, and distrust due to privacy concerns) are mentioned [12].

The above shows the research gap that exists in the sexuality of older people, related to the delivery of formative and informative content by healthcare workers or teams through digital media, as there is a growing need to make sexuality visible in this particular group. Accordingly, the research question is: Are technological innovations in information and communication used efficiently in older people to deliver educational content on sexuality at social, community, and healthcare centers, compared to traditional forms for the prevention and promotion of sexual health in the period

considered in the research? To answer this question, this work proposes to identify general aspects of sexuality in the elderly and to know the educational content delivered to this group using digital technologies.

METHODS

The present research reviews scientific literature, considering key studies in its search. The research plan included searching quantitative, qualitative, and mixed articles. The research planning included searching quantitative, qualitative, and mixed articles. Developing the selected method, we excluded papers outside the studied period or not meeting the inclusion criteria. The research question was approached through the PICO (Patients, Intervention, Comparison, Outcomes) method [13], which defined the research question.

The inclusion criteria selected for the study were persons aged 60 years and older, healthy (physically and mentally), systematic reviews and primary studies, and research conducted in Spanish, English, and Portuguese in the defined period. The exclusion criteria were participants under 60 years of age, with a severe physical disability, moderate to severe cognitive impairment, Alzheimer's disease, protocols or unfinished research related to the subject under investigation, and studies outside the selected period.

Since this was an investigation that used secondary data, it did not consider the submission of a protocol to the ethics committee.

The search strategy contemplated a review of scientific literature from January 1st, 2018, to December 31st, 2022, by searching the Web of Science, MEDLINE/PubMed, LILACS, Cochrane, Scopus, and Google Scholar databases. The strategy aimed to find the most updated scientific publications related to the sexuality of the elderly, who were provided with educational content using innovative digital technologies in the field since digital technological innovations are scarce but recent in this age group.

The search used terms or keywords indexed according to the DeCS thesaurus for Spanish and Portuguese and MeSH for words in English, oriented to the population under study and educational interventions carried out in this group with digital technologies.

The words "older adult", "sexuality", "education", and "educational technologies" were used. For this purpose, the Boolean operators "AND" and "OR" were used for a more specific search, such as: "sexuality and older adults", "sexuality and aging", "sexuality and older adults and technologies" "education and older adults", "older adults or education and educational technologies", "sexuality and education and aging or technologies" "sexuality and older adults", "sexuality and elderly", "sexuality and aging" "sexuality and older adults and technology", "education and older adults or elderly", "sexuality and elderly or education technology", "sexuality and aging and education or technology".

The review and search were carried out by two independent investigators, and the selection and extraction of data by two other independent investigators. This was done to avoid the risk of selection bias. These tasks were carried out under the guidance of the main investigator; the latter also settled some discrepancies that arose during both stages of the process between May and December 2022.

Likewise, research with positive and negative results was included to avoid risks of publication bias. No studies were selected from the references of the selected articles to avoid reference bias. Prior to the search, a pre-testing exercise of the planned method was performed.

The articles were saved in a database in Excel 2.0, which included forms for data collection. The first selection included the title and abstract of the articles. The pre-selected articles were analyzed in their full version for inclusion or rejection.

The final articles included were verified and entered into a form created with the following data: title, author(s), year of publication, country, scientific database, journal, objective, method, inclusion and exclusion criteria, intervention strategies, delivery of educational content, use of technologies, orientation and/or professional care, research quality, research results.

For the review and analysis of the qualitative studies, some general methodological recommendations of the ENTREQ (Enhancing transparency in reporting the synthesis of qualitative research) statement were considered. In addition, the CASP (Critical Appraisal Skills Programme) methodology was applied to validate the quality of some studies [14–16].

Results and evidence synthesis

Of the 21 selected articles [17–37], 43% were written in English, 38% in Spanish and 19% in Portuguese. Regarding the study method, 52% were qualitative, 29% were quantitative, and 19% were mixed. Regarding the year of publication, 19% were published in 2018, 14% in 2019, 19% in 2020, 19% in 2021 and 29% in 2022. The predominant geographic location was Europe with 43%, Latin America with 38%, and Asia with 19%.

Regarding the initial database, 37% corresponded to Web of Science, 21% to Google Scholar, 20.7% to MEDLINE/PunMed, 12.6% to Cochrane, 6.2% to LILACS, and 2.5% to Scopus.

The analysis and processing of the data found 11 qualitative, six quantitative, and four mixed studies, which were analyzed

descriptively to evaluate the content of the information in accordance with the defined literature review.

A total of 1572 research studies were obtained from all the analyzed databases. A total of 409 duplicate articles were eliminated. A total of 1163 articles were reviewed according to titles and abstracts, and 1072 articles that did not meet the research criteria were excluded. Ninety-one studies were read in full, from which 70 articles were discarded to select 21 that formed the final sample (Figure 1).

We constructed two tables summarizing the main characteristics of the included articles. Table 1 shows the articles related to sexuality in the elderly, and Table 2 shows the studies on the use of digital communication and information technologies in the same study group. In both cases, we considered whether educational content was delivered and whether healthcare workers or other related establishments developed an active role.

The quality of the reviewed studies, according to the CASP methodological recommendation [17–20,22,25–29,33,34,37], is high, and its main weaknesses lie in the author's reflections on the nature of the studied subject and the depth of the ethical aspects dealt with. Seven studies were excluded for being quantitative research (Table 3).

Sexuality and elderly people

In general, sexuality is an important issue for the elderly since there is an association between an active sexual life and a better quality of life and satisfaction with one's partner [17–25,38].

Lopez Ramos et al. [18] observed that sexuality is present in 60 to 79% of elderly people, more frequently in men than in women, which is in agreement with Sousa JEV et al. [21]. However, Wang V et al. [39] found the prevalence of sexual activity to be around 60%, but with no differences between sexes.

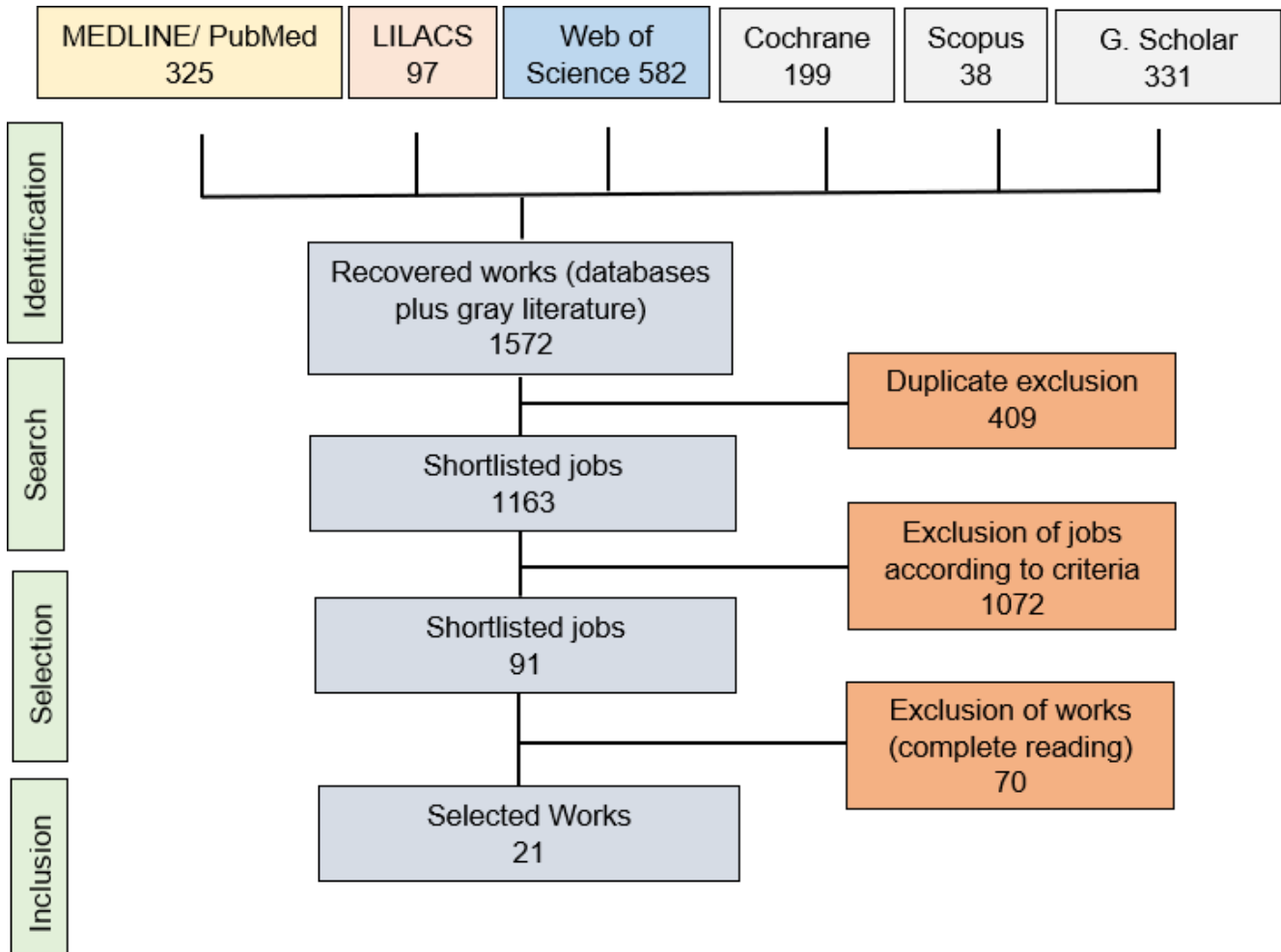
Regarding interest in sexual life, Torres and Rodriguez [19] found that more than 50% of the elderly people studied had an interest in sexual activity, expressed as optimal when there was a better state of health. However, Souza et al. mentioned that sexual interest persists despite anxiety, depression, or other mental health symptoms found [21,23,24].

Torres and Rodriguez analyzed facts that influence the sexuality of older people, such as the lack of support to enjoy sexuality in intimacy or the end of sexual life in institutionalized groups. This is consistent with the thinking of conservative Catholic older women who put an end to sexual life with widowhood, for whom the purpose of sexual relations is procreation, as a duty only for married women [19].

Physical and psychosocial conditions that influence the sexuality of elderly people

There is an association between sexuality and sexual quality of life, influenced by different biopsychosocial factors. López Ramos et al. [18] found several investigations in which they link better sexuality with better cognitive capacity, memory,

Figure 1. Review search scheme.



Source: Prepared by the authors.

and intelligence and that the quality of sexual life depends on better physical and mental capacities, which is consistent with the results of Souza et al. related to anxious and mental health disorders [21,23,24,40].

At the same time, evidence shows the relationship between quality of sexual life and comorbidities as a cause of sexual dissatisfaction. These include depression, diabetes mellitus, hypertension, osteoarticular, bladder, gastrointestinal problems, chronic pain and injuries, decreased vision, bladder pathologies, major surgeries, less energy and mobility, cognitive impairment or dementia; conditions such as decreased libido, inadequate lubrication, dyspareunia, erectile dysfunction, ejaculation difficulties, use of hormones and medications, menopause and its changes, among others [18,20].

Different research has shown that a good quality of sexual life in older adulthood depends on optimal physical and mental health, higher education and better economic income, a stable partner, preserved cognitive function, good body image perception, healthy habits, being in a stable relationship for less than five years [18,21,23,24].

Myths and beliefs about sexuality in elderly people

Several studies have mentioned the existence of myths associated with sexuality in old age [19–22,26,27]. Ricoy-Cano et al. [20] analyzed the impact on the image and sexual desire in older people as a result of maintaining active sexual relations and practicing masturbation while they were considered asexual people.

Ricoy-Cano et al. also found that women with low education and reduced economic income were educated and forced to sexually satisfy their spouses, exacerbated by the influence and stigmatization of religious ideas or gender stereotypes. Among these older people, diseases were associated with frailty [41], anxiety, marital discord, isolation, altered sexual relationships, dissatisfaction, and loss of sexual health.

Bortolozzi and Ramos [26] confirmed the social view of "asexuality" during this stage of life, which is the result of a history regulated by socio-normative codes and standards and by myths or beliefs that affect sexual health. This matches Gonzalez and Guerrero [25] regarding the stereotypes they

Table 1..Research on sexuality in the elderly.

Authors, Country, year	Type of study	Objectives	Inclusion and exclusion criteria	Outcomes	Education	Counseling or participation of healthcare professionals
Gewirtz-Meydan et al., Israel, 2018	Systematic review of qualitative studies.	To review and synthesize qualitative studies on the sexuality of elderly adults from the perspectives, attitudes, perceptions, and personal experiences.	Inclusion: 1) Articles written in English, German, or Hebrew 2) Qualitative designs with empirical data 3) 60 years and older 4) Based on the perspectives or attitudes towards the sexuality of elderly people. Exclusion: 1) Exclusive on sexual behaviors or practices 2) Under 60 years 3) Quantitative methods 4) Other languages 5) Incomplete texts.	<ul style="list-style-type: none"> There is no single way to get elderly people to discuss their sexuality. They find it difficult to give data and talk about it. The main themes were the social legitimacy of the sexuality of elderly people, health problems that affect sexuality, and the hegemony of penetrative sex that minimizes the meaning of sexuality for elderly people. 	Lack of education on how elderly people's health problems affect sexuality.	Not mentioned.
López-Ramos et al., Colombia, 2019	Systematic review (mixed).	To identify the most frequent sexual activities and problems in this field in elderly adults.	Inclusion: adults aged 65 and over, healthy or with comorbidities that do not affect their lives or that do not affect their sexual sphere.	<ul style="list-style-type: none"> Sexuality is important in the quality of life of the older adult. It is affected by cancer, diabetes, depression, lack of desire, erectile dysfunction in men, and menopause in women. The most frequent sexual behaviors are kissing, genital intercourse, oral sex, and masturbation. 	Emphasis on educating elderly people, family members, and healthcare personnel on sexuality.	Difficulties for physicians to address sexuality in older adults.
Torres et al., Spain, 2019	Systematic review of qualitative studies.	To analyze studies that inquire into the perceptions of sexuality of institutionalized	Inclusion: 1) Qualitative studies that investigate sexuality 2) Elderly people over 60 years of age in	<ul style="list-style-type: none"> Elderly people manifest active sexuality. 	Healthcare personnel should be more involved in education strategies.	More attention to elderly people expressing sexual needs. There is a need to improve sexual education

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Authors, Country, year	Type of study	Objectives	Inclusion and exclusion criteria	Outcomes	Education	Counseling or participation of healthcare professionals
		and community-dwelling elderly people.	community or long-term care institutions 3) Articles in English or Spanish. Exclusion: 1) Elderly people with cognitive impairment 2) Studies with low methodological quality.			strategies for these groups.
Ricoy-Cano et al., Spain, 2020	Qualitative systematic review.	To present the main qualitative studies that analyze how physiological and psychosocial factors influence sexual behavior in elderly people.	Inclusion: 1) Qualitative studies in elderly people on factors affecting sexual behavior 2) Studies on the potential to have sex. Exclusion: 1) Qualitative studies in younger people or that do not report data on the topic studied 2) Quantitative studies.	<ul style="list-style-type: none"> Diseases affect the sexuality of elderly people (e.g., erectile dysfunction). Also, menopause, sexual stereotypes, false beliefs (asexuality), gender roles, religion, sexual satisfaction, and autoerotic behaviors. 	Elderly people receive little education on sexuality, sexual pleasure, sexual health, and safety. Oriental women with low culture, education, and income are educated to fulfill the sexual needs of their husbands; religion stigmatizes sexuality and sex.	It is necessary to develop educational and assistance strategies to improve the sexuality and sexual health of elderly people.
Bortolozzi et al., Brazil, 2020	Qualitative systematic review.	To investigate what the literature says about sexual health and aging.	Criteria are not explicitly mentioned. Articles in scielo.org on sexual health and aging, prioritizing Brazilian studies found between 2001 and 2018.	<ul style="list-style-type: none"> Sexual health in older adulthood is valued as a relevant topic. Intervention proposals aimed at HIV/AIDS prevention are mentioned. There was a need for more sexual health 	There is scarce information on HIV/AIDS for elderly people, with a lack of public policies on the subject. There is also a lack of group work and problems of adherence to prevention.	Healthcare professionals should consider active sexuality in old age and vulnerability to STI infection. The diagnosis should consider sexuality and actions that have an impact on late HIV/AIDS diagnosis.

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Authors, Country, year	Type of study	Objectives	Inclusion and exclusion criteria	Outcomes	Education	Counseling or participation of healthcare professionals
de Souza et al, Brazil, 2021	Estudio cuantitativo, transversal, descriptivo y analítico basado en guías de verificación STROBE.	Analizar la asociación de la sexualidad con variables biosociodemográficas y síntomas depresivos en ancianos.	Inclusion: 1) Being 60 years of age or older 2) Being married or having a permanent partner 3) Residing in the Brazilian Northeast.	<ul style="list-style-type: none"> Males predominated (52.1%). The prevalence of severe depressive symptoms (8.6%) was associated with worse sexual intercourse and worse affective relationships. There is better sexual experience in stable union ($p = 0.023$) and in couples of ≤ 5 years, compared to more than 20 years ($p = 0.001$). There was a negative and inversely proportional correlation between sexual intercourse and severe depressive symptoms ($r = -0.442$; $p = 0.027$). 	Sexuality education is a key strategy for elderly people, valuing beliefs and knowledge as active agents of the educational process.	In general, there is no support from healthcare professionals; the study shows that 76% of elderly people had never received sexual counseling.
Navarro E, Spain, 2021	Qualitative bibliographic review.	To know the interventions aimed at improving the sexuality of elderly adults and their effectiveness.	Inclusion: 1) Original articles published between 2010 and 2021 2) Spanish and English languages. Exclusion: 1) Articles related to sexually transmitted	<ul style="list-style-type: none"> Group educational sessions explaining sexuality and sex were well-rated. 	There is a high appraisal of educational interventions on sexuality in elderly people.	There is little participation of health teams. Directed education or psychoeducation in sexuality is recommended for some pathologies.

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Authors, Country, year	Type of study	Objectives	Inclusion and exclusion criteria	Outcomes	Education	Counseling or participation of healthcare professionals
de Souza et al., Brazil, 2022	Estudio transversal y analítico.	To analyze the effects of experiences in sexuality on anxiety and quality of life of elderly people.	diseases 2) institutionalized elderly people 3) Other languages, other years. Inclusion: 1) Elderly people over 60 years old, both sexes, married, in union, or with a stable partner 2) Have internet access and an active Facebook account. Exclusion: 1) Hospitalized elderly, residents in long-stay institutions or similar 2) Self-reported dependence 3) Neurodegenerative pathologies.	<ul style="list-style-type: none"> Anxiety disorders are related to loss of quality of life and detriment of sexuality. Sexual intercourse is associated with better quality of life. Affective relationships improve the detriment of sexual intercourse. Intimacy had the highest correlation coefficient for the sexual act dimension ($p = 0.546$; $p < 0.001$) and affective relationships ($p = 0.592$; $p < 0.001$). 	76.7% of the participants never received guidance on sexuality from healthcare professionals.	Healthcare services should address sexuality care for elderly people. Healthcare professionals should orient, educate, and create strategies on sexuality for a better quality of life.
de Souza et al., Brazil, 2022	Cross-sectional, descriptive, and analytical study.	To analyze the association between experiences in sexuality with biosocial-demographic and mental health variables in old age.	Inclusion: 1) Age older than or equal to 60 years 2) According to Brazilian norms 3) Married or have a permanent partner 4) Both sexes (male and female)	<ul style="list-style-type: none"> There was a statistical correlation between sexual relations and age group ($p = 0.039$). All dimensions of sexuality were 	Elderly people never received sexual counseling from healthcare professionals.	Education, research, and policies on sexuality for the elderly should be improved, as they improve care and understanding of

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Authors, Country, year	Type of study	Objectives	Inclusion and exclusion criteria	Outcomes	Education	Counseling or participation of healthcare professionals
			5) Living in northeastern Brazil. Exclusion: 1) elderly residing in long-stay institutions and similar 2) Hospitalized during data collection.			sexuality problems in old age.

HIV: human immunodeficiency virus. STI: sexually transmitted infection. STROBE: Strengthening the Reporting of Observational studies in Epidemiology.
 Source: Prepared by the authors.

Table 2. Research on educational methods and the use of communication and information technologies in elderly people.

Authors, Country, year	Type of study	Objectives	Inclusion and exclusion criterio	Outcomes	Education	Counseling or participation of healthcare professionals
Hunsaker <i>et al.</i> , Switzerland, 2018	Quantitative literature review.	To examine studies on Internet use in elderly people, including the impact on social inequities in those who use it.	Inclusion: articles with quantitative results from surveys of elderly people using a large, representative sample.	<ul style="list-style-type: none"> Elderly people use the internet less than younger people. Various access, use, and skills are related to age, income, education, health status, and social inequality. The main use of the internet is social networking and searching for health information. 	Some interventions teach how to perform health searches on the internet. Older people with higher education and income have more access to digital health information.	Researchers should use standardized measures to assess health and well-being as the history and outcomes of Internet use in elderly people.
Casado Muñoz <i>et al.</i> , Spain, 2018	Mixed methods study.	<ul style="list-style-type: none"> To know the use of social networks by elderly people over 55 years of age enrolled in university programs. To identify the social networks of greatest use. To detect participants' perceptions. 	<ul style="list-style-type: none"> Inclusion: People aged 50 years and over enrolled in an inter-university program at the University of Burgos in the capital city in the 2017/18 academic year. 	<ul style="list-style-type: none"> 84.2% reported daily use of social networks. The most used social network was WhatsApp. Five types of attitude were identified: absolutely positive, positive, critical, positive, negative, and disinterested. Excessive use and misuse are questioned. Access to information, power of communication, and interest in improving internet use are valued. 	<ul style="list-style-type: none"> Programs should be inclusive and adapted in pedagogy to the reality, learning style, and needs of elderly people, but with respect for privacy. These educational programs have a good academic, social, and psychological impact. 	These programs are needed since there is a demand for training on technology-related content for elderly people.

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Authors, Country, year	Type of study	Objectives	Inclusion and exclusion criterio	Outcomes	Education	Counseling or participation of healthcare professionals
Reychav <i>et al.</i> , Israel, 2018	Quantitative study.	<ul style="list-style-type: none"> To examine the relationship between media and medical information (digital or print) and patients' desire to participate in SDM or ISDM format. To discover the social and personal factors that explain participation in SDM or ISDM. 	<p>Inclusion: elderly people aged 65 and over in assisted living facilities in Israel.</p>	<ul style="list-style-type: none"> There is an association between the level of understanding of medical information and the tendency to choose a decision process based on SDM (physician and patient decide) or ISDM (ultimately, the patient decides). Some factors predict the patient's tendency to choose the SDM or ISDM model. There is a correlation between media type and perceived ease of use in seeking and understanding medical information. 	<p>Digital and non-digital (print) media provide medical information to elderly people to participate in health decisions, incentivizing shared decision-making and further empowering the patient using digital resources.</p>	<p>Healthcare professionals should consider the transition to digital information sources as the norm for elderly people and encourage the use of communication and information technologies in older adulthood.</p>
de Moura <i>et al.</i> , Brazil, 2019	Systematic review of qualitative studies.	<p>To identify in the scientific literature the technologies developed for health education of the elderly in the community.</p>	<p>Inclusion: 1) Primary articles, in any language, published until August 2018, that showed educational technologies aimed at people aged 60 and older. Exclusion: 1) Editorials, theses, dissertations, literature reviews, and other searches not applicable.</p>	<ul style="list-style-type: none"> The technologies found (programs, videos, printed materials, mock-ups, phone calls) are feasible for health education and show positive effects on elderly people. Printed material, programs, and videos predominated. The most appropriate method should be chosen according to the social reality of the elderly people in the community. 	<p>Technology is contributing to health education because of its visual, tactile, and auditory stimuli, which exercise memory and information retention. Health education is a necessary tool to promote the health of elderly people.</p>	<p>Social participation and autonomy should be promoted. Healthcare professionals should decide on the optimal technology for relationships and dialogue, humanizing care and promoting the health of elderly people.</p>

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Authors, Country, year	Type of study	Objectives	Inclusion and exclusion criterio	Outcomes	Education	Counseling or participation of healthcare professionals
Cardozo <i>et al.</i> , Argentina, 2020	Action research (mixed).	To improve the interaction experience and, therefore, to promote the virtual social integration of elderly people.	Inclusion: elderly people participating in computer training units.	There are good results when using digital devices, preferably tablets.	It is possible to deliver educational content to elderly people on social networks.	Designers should consider interfaces, types of platforms, web designs, and using tablets by elderly people as users.
García <i>et al.</i> , Spain, 2020	Literature review (mixed).	To conduct a literature review of published works on the use of technologies used in elderly people in rural settings.	Inclusion: 1) Articles between 2014 and 2020, with abstract 2) People aged 60 and over 3) Technology as a support or technical aid in daily life. Exclusion: 1) Other ages 2) Technologies aimed at caregivers 3) Studies do not indicate technological support or assistance 4) Presence of pathologies, disability.	<ul style="list-style-type: none"> There are several technologies in use. However, the application in occupational areas was limited, with minimal research in rural settings. There was a good evaluation of technologies that promote and improve communication aspects in elderly people and reduce social withdrawal. 	The different technologies are important to have communication and educational links and to improve the quality of life, promote active aging, and train memory, among others.	Occupational therapists are important in promoting tools for social and healthcare independence in daily life and other problems in older adulthood.
Airola <i>E.</i> , Finland, 2021	Systematic review of qualitative studies.	To evaluate the literature on eHealth learning and use in older adults aged 60 and over in domestic settings and remote rural areas, focusing on social and cultural contexts.	Inclusion: 1) Academic papers published in peer-reviewed scientific journals 2) Written in English 3) Empirical study designs aimed at supporting eHealth use 4) Published between 2010 and 2020 5) Elderly people aged 60 and over. Exclusion: 1) Studies in other age groups 2) Not conducted in real home settings 3) No experience with eHealth 4) Biomedical reviews or theoretical studies.	<ul style="list-style-type: none"> Health problems are the most common barrier to learning and using eHealth. Another barrier is a lack of connectivity (e.g., no wifi connection). The support provided and social networks are key to learning and using eHealth. eHealth technology is needed to facilitate access and reduce logistical barriers to healthcare services in rural and remote areas. 	Peers and healthcare officials have a relevant role in learning and using eHealth.	Technical skills are necessary for using technologies such as eHealth, and healthcare professionals' participation is fundamental.

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Authors, Country, year	Type of study	Objectives	Inclusion and exclusion criterio	Outcomes	Education	Counseling or participation of healthcare professionals
Horne et al., United Kingdom, 2021	Scoping Review.	Identify and examine what education and training exist to assist nursing staff and workers in meeting the sexual needs of older residents.	Yes, but not specified.	We found mixed content and methodologies (workshops, lectures, discussions, handouts, etc., and DVD and online courses) to educate healthcare staff on sexuality and support for elderly people in the USA, Australia, South Africa, and the UK.	Educational interventions and resources in sexuality focused on healthcare staff to support older adults in care.	Sexuality training in intimate spaces is highlighted; however, few educational interventions and training resources were identified in the review.
González-Soto et al., Mexico, 2022	Systematic review of qualitative studies.	To analyze the scientific production on sexuality in older adults in the last five years, as well as the level of evidence.	Inclusion: 1) Spanish, English, and Portuguese language 2) From 2015 to 2019 3) 60 years or older. Exclusion: 1) Studies exploring sexuality from the spouse's perspective, 2) Under 60 years of age, and 3) Healthcare professionals and students.	The sexuality of older adults is finding a channel of expression through the media and digital networks. The importance of orientation in sexuality by healthcare professionals is recognized.	There is a need for sexuality approaches by healthcare professionals.	There is a need for further research on sexuality in the elderly.

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Authors, Country, year	Type of study	Objectives	Inclusion and exclusion criterio	Outcomes	Education	Counseling or participation of healthcare professionals
Li et al., China, 2022	Cross-sectional study.	<ul style="list-style-type: none"> To assess the understanding/opinion of elderly people scheduling online appointments during the pandemic by COVID-19. To analyze social factors that may influence satisfaction. To explore personal demands regarding online scheduling. 	<p>Inclusion: 1) Age 60 and older 2) Ability to answer the survey and informed consent 3) Previous use of online scheduling systems at East Shanghai Hospital.</p> <p>Exclusion: 1) Patients with any physician dispute or patients with serious emergencies.</p>	<ul style="list-style-type: none"> Satisfaction was higher in those using online scheduling systems compare to face-to-face scheduling (old and new users) after the pandemic, due to greater distance from the hospital, greater number of visits, accompanied living, low difficulty of operation, and correct choice of specialists. For new users, online scheduling was better than face-to-face because of the convenience, time saved, preventing infectious diseases, precision in medicine, and privacy. 	<p>Designers have simplified online operations, adjusting the interface for elderly people. Training has been conducted to make online payments. These actions lower the threshold for this age group to access medical services using the internet.</p>	<p>Medical institutions and designers should develop quality digital public services, adjusting font, text, and audio-visual input for elderly people.</p>
Zhao et al., China, 2022	Exploratory systematic review.	<p>Understanding OHIS in elderly people.</p>	<p>Inclusion: 1) Recent health-related articles 2) Articles describing OHIS 3) Age 60 or 65 years and older 4) Based on empirical data in peer-reviewed journals 5) Written in English.</p> <p>Exclusion: 1) Non-health related articles 2) Not describing OHIS. 3) Other ages 4) Non-empirical data 5) Not peer-reviewed 6) Incomplete articles 7) Written in another language.</p>	<ul style="list-style-type: none"> Elderly people seek information on health (specific diseases, medications, and treatment etc.) in digital sources (web pages, search engines such as Google, social networks, etc). There are individual, social (social stigma of sexual health problems), and digital technology barriers. 	<p>Eleven education interventions are mentioned to carry out OHIS. There are face-to-face and online training workshops, with several sessions of two to three hours, for one to four months. All programs reported at least one positive effect on OHIS support.</p>	<p>Age-friendly technology design is recommended. It is also recommended to conduct OHIS interventions with programs using digital technology, workshops, and online tutorials. Distance education using immersive technologies should be used.</p>

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Authors, Country, year	Type of study	Objectives	Inclusion and exclusion criterio	Outcomes	Education	Counseling or participation of healthcare professionals
Lindberg et al, Sweden, 2022	Qualitative study.	To explore how affective notions of space and age construct elderly people's response to digital health care technologies in rural communities.	Inclusion: 1) People 60 and older 2) Who have used digital healthcare technologies in community healthcare centers.	<ul style="list-style-type: none"> Positive aspects of using digital technologies are mentioned: use of eHealth, increased access to health, security and flexibility of digital media, losing fear of use, and fear of giving out private information. There are four negative emotions: <ol style="list-style-type: none"> Resignation to using eHealth, 2) That there is no other option than eHealth, 3) Lack of entitlement, 2. Opposition. 	In some rural communities in Sweden, face-to-face healthcare has been replaced by digital technologies: smart watch with self-monitoring, sending data to nurses, virtual health rooms, and video calls to physicians using cameras and advanced equipment.	Not everyone prefers digital health technologies; geographic and demographic factors shape patient preferences. Digital technologies are not always empowering.

ISDM: Informed Shared Decision Making. OHIS: Online Health Information Seeking.SDM: Shared Decision Making.
Source: Prepared by the authors.

Table 3. Research quality assessment under the CASP methodology.

Study	Questions										Outcome	Quality	
	1	2	3	4	5	6	7	8	9	10			
Gewirtz-Meydan <i>et al.</i> , 2018	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	10	High
González and Guerrero, 2018.	YES	YES	YES	YES	YES	YES	NO	YES	YES	YES	YES	9	High
Casado R, Lezcano F., 2018	YES	YES	YES	YES	YES	YES	NO	YES	YES	YES	YES	9	High
López-Ramos <i>et al.</i> , 2019	YES	YES	YES	YES	YES	NO	YES	YES	YES	YES	YES	9	High
Torres and Rodríguez-Martín, 2019	YES	YES	YES	YES	YES	NO	YES	YES	YES	YES	YES	9	High
Bortolozzi, and Ramos Netto, 2019.	YES	YES	NO	YES	NO	NO	NO	YES	YES	YES	YES	6	Medium
De Mourá Sa <i>et al.</i> , 2019.	YES	YES	YES	YES	YES	NO	NO	YES	YES	YES	YES	8	High
Ricoy-Cano <i>et al.</i> , 2020	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	10	High
Cardozo <i>et al.</i> , 2020	YES	YES	YES	YES	YES	NO	NO	YES	YES	YES	YES	8	High
Navarro, 2021	YES	YES	YES	YES	YES	YES	NO	YES	YES	YES	YES	9	High
Airola, 2021	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	10	High
Zhao YC, Zhao M, Song S., 2022	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	10	High
Lindberg J, Lundgren AS., 2022	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	NO	9	High

CASP: Critical Appraisal Skills Programme..

Question 1 = Clear statement of purpose; Question 2 = Appropriate qualitative methodology; Question 3 = Appropriate research design; Question 4 = Sampling; Question 5 = Data collection; Question 6 = Researcher reflexivity; Question 7 = Ethical consideration; Question 8 = Appropriate data analysis; Question 9 = Clear statement of findings; Question 10 = Value and application of results.

Source: Prepared by the authors.

are subjected to, and although the importance of this issue is recognized, it is invisibilized by society and blood relations.

Torres and Rodríguez [19] studied institutionalized elderly people and analyzed the causes of the loss of freedom and sexual expression and the termination of sexual life in order to avoid judgment (family and staff of the centers). In older women who followed the doctrine of the Catholic Church, the purpose of sexual relations was conception and not pleasure. The latter was associated with wifely duty rather than personal and couple enjoyment.

Elderly people, positive HIV/AIDS, and sexual minorities

In general, HIV-positive elderly people acquired the infection before this life stage and acknowledge having had little preventive education by healthcare personnel, where sexual desire is undermined by the perceived stigmatization of this disease [19].

Similarly, according to Bortolozzi and Ramos [26], the mean age of elderly people with HIV/AIDS was between 60 and 69 years. These people acquired the infection before this age, with equal frequency among men and women, with late diagnosis, psychosocial stigmatization aggravated by socioeconomic and educational risk factors, fear of lack of confidentiality, and uncertainty about their own sexuality.

Bortolozzi and Ramos analyzed the high vulnerability of elderly people to sexually transmitted infections such as HIV/AIDS, who had little information and loss of adherence to preventive practices. Healthcare professionals made sex life in old age invisible, with a lack of public policies aimed at preventive and assistance programs to minimize isolation, loneliness, fear, and shame in the face of prejudice.

De Moura Sa *et al.* [28] analyzed the importance of health education in older adulthood. In the case of HIV/AIDS, other authors described effective results with the validation

of educational booklets for the prevention of this disease, preservation of privacy, clarification of doubts, and strengthening knowledge [42].

Healthcare personnel and sexuality education for elderly people

There is consensus in different investigations regarding healthcare personnel’s lack of preparation and delivery of educational content. Ricoy Cano *et al.* [20] show data regarding the low level of education in sexuality, pleasure, health, and sexual safety during aging in elderly people. Such educational deficits, according to de Souza *et al.*, influence accelerated aging and deterioration of mental and sexual health [21,23,24].

For Bortolozzi *et al.*, the lack of education, the discomfort of seeking healthcare, and the erroneous beliefs of health professionals increase the likelihood of risky sexual behaviors. This corroborates that elderly people think that healthcare personnel are not involved in sexual health, do not educate them nor attend to their sexual concerns or needs, and that they require preventive actions in sexual health [26].

On the other hand, Torres and Rodríguez [19] analyzed the lack of education of medical workers in sexual life during postmenopause, who need to be trained in communication skills to respond to such concerns in primary health care. Training should include social, economic, and psychological aspects, gender issues, health quality, and educational conditions, needs that Bortolozzi *et al.* [26] also recognized.

Similarly, Navarro [22] analyzed what was found by Moana *et al.* [43] about a group of nurses who, despite clinical experience, were not prepared to face a conversation on sexuality with elderly people. This topic made them uncomfortable since the training on sexual education issues referred to contraception and human reproduction in younger patients; this is consistent

with Horne et al. regarding the poor training of nursing staff and care of elderly people in medical residencies [31].

Information and communication technologies for elderly people

According to Navarro [22], there is interest in using new information and communication technologies aimed at educating elderly people and encouraging innovation in teaching-learning processes. At this point, it is important not to ignore transcultural and multidimensional aspects of these people, complementing the development of competencies of those who train, together with the delivery of content in simple language to elderly people, along with the use of various technologies (computer, DVD, brochures) that strive to stimulate and motivate [27,28,30,31].

For Cardozo et al. [27], designing prototypes with an interface adapted to the needs of elderly people improved interaction with social networks through tablets. For Airola et al. [29], social networks are an important tool for learning and using technologies such as eHealth, where peers and health officials play a vital role. For their part, Lindberg and Lundgren [37] state that they are safe, flexible, and useful for scheduling hours, teaching, delivering information, and making video calls and video consultations.

However, barriers to the use of technologies have been identified that are related to the educational level of elderly people and to the ability to learn new technologies. Some frequent barriers to learning and using health technologies were cognitive and hearing difficulties, lack of connectivity, lack of simple interfaces, lack of signal or wifi, lack of prior training, lack of empowerment, and disengaged healthcare professionals [27–29,36,37].

Evidence also showed the importance and effectiveness of technologies in rural settings. However, it also presents limitations specific to the health of elderly people, such as obstacles to access, complexity in the use and incorporation into daily life, the design and functionality of technologies that do not always respond to the needs of people, and the lack of autonomy, among others [29,30,37].

There is a deficit in research and scientific production in matters of technology for elderly education, with a lack of investment in innovation and evaluation of technological solutions. For example, there are demonstrated gaps in access to educational technologies for these groups of interest that have sexual health demands [29].

Few interventions in elderly people promote active and healthy aging with new technologies, in addition to enabling learning, memorization, and building specific skills. In this line, there is sexual education to targeted groups to spread information and reflect on the importance of HIV prevention, with delivery of brochures used as pedagogical material on the same subject [26].

Telephone support is a useful technology that improves population coverage, reduces geographic and economic

access barriers, provides proximity, and supports professional relationships with elderly people [28].

In rural settings, access to technology improves daily life and promotes social activities, physical activity, and positive aging. In addition, they allow for the informing of different programmed activities, delivering news or spreading information about the networks in which elderly people participate, and making healthcare decisions [29,30,37].

DISCUSSION

The research shows that sexuality in elderly people is a socially invisible topic, with low participation from public health policies and a lack of preparation among healthcare workers. The study's limitations are not having contemplated a longer period of time, applied to other databases of scientific literature, and not having found quantitative studies, which would have allowed us to analyze the heterogeneity and sensitivity of the studies, especially because there is research that is not open access. This prevents us from generalizing our findings.

Despite these limitations, the results found show an updated reality of sexuality in older adulthood, related to quality of sexual life, discrimination, relationship with healthcare personnel, access to technologies, and delivery of educational content, in line with the question and objectives answered by the research.

Several studies and authors corroborate the importance of sexuality in this study group since it is part of the quality of sexual life, understood as intimate relationships with a partner, with or without intercourse, where emotional aspects, caresses, support, masturbation, among others, also stand out [17–28,38,39].

Although the sexuality of this study group is an unveiled need, it is no less true that there are social stigmatizations against it [18,26,44]. The WHO has emphasized the global report of "ageism", understood as stereotypes, prejudices, and discrimination directed against others or self-inflicted based on age. In this case, they are directed at elderly people and exacerbated by mental health problems, progressive cognitive impairment [40], or intersectional discrimination [45].

Ageism is observed in public and private institutions, which creates and perpetuates disparities between social groups, where individual changes alone do not address ageism. This has economic and health effects on individuals [44,46].

Society and organizations are becoming more aware today of minimizing the effects of ageism or different health conditions [19,26]. However, there is discrimination against elderly people by healthcare professionals [47] or against sexual minorities such as lesbians, gays, bisexuals, and transgender people (LGBT+), so public policies of inclusion are urgently needed based on this scientific information [48,49].

The existence of myths and beliefs about the sexuality of elderly people is a reality, and these are related to sociocultural, economic, ethnographic, educational, and religious differences, among others. All this coexists with poorly trained healthcare

personnel, with preventive and care gaps in this area [18–22,26,27].

Healthcare personnel often avoid sexual health problems and sometimes deal with them in a general way from other health consultations, with deficits in the orientation and delivery of educational content [18–22]. This is consistent with a lack of preparation or training [43,50] or with negative attitudes that generate significant barriers in the approach to sexuality or sexual health of elderly people [18–22,51].

In addition, programs should be generated to improve the sexual well-being and social impact on the health of elderly people through intermediate social determinants. For example, this can be achieved through social enterprises [52] or with smart cities that improve quality of life, sustainability, opportunities, access, mobility, and connectivity in different countries around the world [53].

Innovations in digital technologies are useful when connectivity problems are surpassed, improving social, community, and family relationships through social networks and innovations with robotic technology and artificial intelligence. These technologies are used in smartphones, tablets, personal computers, and/or smart homes [25,32–35,37,50,54] and were of great utility during the COVID-19 pandemic [36,51].

The challenges of the 21st century that relate to elderly people are gaining momentum in the midst of increasing societal complexity. In this context, universities and healthcare systems of the countries have the challenge of generating public policies in line with the increased life expectancy of elderly people. This is in order to improve the quality of life, biopsychosocial well-being, and sexual health, which must be taken into account, as it is a human right to be considered in this age group. Consequently, an important bioethical dilemma is placed as a subject for reflection.

Therefore, it is necessary to put the issue of the sexuality of elderly people on the social agenda as part of active and healthy aging policies. This should be done with an intersectional perspective [55,56] to address it from different approaches, disciplines, and integrality.

When confronting the results found with the objectives and research question, it was possible to know research with updated evidence regarding different aspects of the sexuality of elderly people. However, the educational and preventive actions confronted with digital technologies on the subject are of low effectiveness since, in general, the few studies found in the analyzed period show that they reach a low population coverage of elderly people according to the objectives set out in the research.

CONCLUSIONS

Sexuality in older adulthood is an emerging issue worldwide, which should be part of public health policies, as it is related to the well-being and quality of the sexual life of elderly people. This segment of the population deserves humanized treatment, with less ageism and more inclusiveness of sexual

and ethnocultural minorities who wish to live free sexuality, with greater recognition of intimacy and sexual practices.

Technological innovations are now part of the daily lives of elderly people. Access to technologies improves the connection with the socio-environmental and ecosystemic environment and strengthens social networks where they engage in health issues; sexual health should not be an exception.

The research shows that there is limited information on educational practices on sexuality in old age on behalf of healthcare personnel. This gap increases with the low technological development of the area. This leads us to reflect on the training of healthcare personnel in this matter since the need exists and challenges us to innovate in care, education, prevention, and promotion concerning traditional forms, with a leading role in the inter and transdisciplinary.

The practice of healthcare professionals must improve at the first level of care. This is imperative based on optimal attention to the sexual health needs of elderly people from a biopsychosocial perspective and centered on the elderly person.

Research is needed to deepen this search. The delivery of knowledge on the sexuality of elderly people should be done in undergraduate health sciences careers and in postgraduate specializations, such as sexology programs, gynecology-obstetrics, gerontology, family medicine, and related scientific societies.

More evidence is needed at the national level on the level of access and resolution of the demand for sexual care for elderly people in primary health care since international evidence shows barriers at this level.

It is suggested that the scientific community deepen research on the sexuality of elderly people in the context of university medical education, at the level of health systems, with emphasis on the first level of care and in the territorial-community space.

Finally, it is necessary to join research, cooperation, and linkage efforts between institutions that produce strategies and results in the territory for a better approach to the sexuality of elderly people in education, care, and social and community inclusion.

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Revisión de literatura sobre sexualidad en las personas mayores: qué se educa y con qué tecnologías

RESUMEN

Chile es un país que enfrenta un envejecimiento poblacional acelerado, y con ello cambios en la estructura demográfica, epidemiológica y asistencial, donde la salud sexual de las personas mayores es un área emergente a nivel social y en los sistemas de salud. Esta investigación tiene por objetivos identificar aspectos generales de la sexualidad en las personas mayores, y conocer contenidos educativos entregados a este grupo con tecnologías digitales. Para ello, se propuso una revisión de literatura científica que buscó investigaciones en la materia entre el 1 de enero de 2018 y el 31 diciembre de 2022, en las bases de datos *Web of Science*, *MEDLINE/PubMed*, *LILACS*, *Cochrane*, *Scopus* y *Google Scholar*. A partir de ello se analizaron los artículos encontrados y la información emergente. Se encontraron 1573 artículos de los cuales se incluyeron 21 trabajos, 11 con metodología cualitativa, 6 cuantitativa y 4 mixta. Además, 9 trataron el área de sexualidad y 12 respecto de innovaciones tecnológicas en personas mayores. Se aprecia que la sexualidad es un tema creciente a nivel mundial, que arrastra idearios socioculturales asociados a visiones dogmáticas y a mitos, con discriminación hacia este grupo de edad, sobre todo si pertenecen a minorías sexuales. También se observa en este grupo de interés un mejor acceso a nuevas tecnologías digitales para acceder a capacitación, integración social y atención oportuna en salud. La evidencia científica demuestra que la sexualidad de las personas mayores es un tema de interés mundial, invisibilizado, con baja formación y capacitación del personal sanitario. Este personal no educa ni resuelve estos motivos de consulta en forma tradicional o con nuevas tecnologías digitales en salud.



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