Jornal de Assistência Farmacêutica e Farmacoeconomia
v.10, n.4, 2025.
Original Article

Prevalence of polypharmacy in octogenarians attended at an outpatient clinic in the interior of Espírito Santo

Prevalência de polifarmácia em octogenários atendidos em um ambulatório no interior do Espírito Santo

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Received in: 10/31/2024

Accepted for publication in: 08/06/2025

ABSTRACT

Objective: To evaluate the prevalence of polypharmacy and drug-related problems (DRP) in octogenarians treated at a SUS outpatient clinic in the interior of Espírito Santo. **Methods:** Exploratory, descriptive study with a qualitative-quantitative approach. The study included elderly people (IP) aged 80 years or over treated at the SUS specialty outpatient clinic located in the interior of the Espírito Santo. After the geriatric medical consultation, the patient was referred to pharmaceutical care, where sociodemographic information, health history and medication use were collected. **Results:** 41 octogenarians were treated, whose average age was 86 years, with the majority being women (61%) with chronic disease such as hypertension (82,9%), dyslipidemia (56,1%), diabetes (41, 46%) and pain (63,4%). The average number of medications used by octogenarians was 7,6, with antihypertensives, antidepressants and analgesics being common. Although 68.3% reported knowing their treatments, 53.7% had DRP, with non-adherence (32%) being the most prevalent condition. **Conclusion**: The data show that the octogenarians treated have low education and many chronic diseases. With regard to the use of medications, polypharmacy is accompanied by DRP, especially non-adherence. Therefore, it is necessary to expand strategies to promote health care suited to the needs and understanding of octogenarians. The pharmacist must develop practices aimed at this group to promote the rational use of medicines, contributing to the quality of life of octogenarians.

Keywords: Elderly; Aging; Rational use of medicines; Polypharmacy; Pharmaceutical care.

RESUMO

Objetivo: Avaliar a prevalência de polifarmácia e problemas relacionados a medicamentos (PRM) em octogenários atendidos em um ambulatório do SUS no interior do Espírito Santo. **Métodos:** Trata-se de um estudo exploratório, descritivo com abordagem quali-quantitativa. Foram incluídos no estudo pessoas idosas (PI) com 80 anos ou mais atendidos no ambulatório de especialidades do SUS localizado no interior do Espírito Santo. Após a consulta médica geriátrica, o paciente foi encaminhado para o atendimento farmacêutico, onde foram coletadas informações sociodemográficas, histórico de saúde e de utilização de medicamentos. **Resultados**: Foram atendidos 41 octogenários, cuja média de idade foi de 86 anos, sendo que a maioria era de mulheres (61%) com condições crônicas como hipertensão (82,9%), dislipidemia (56,1%), diabetes (41,46%) e dor (63,4%). A média de medicamentos utilizados por octogenários foi de 7,6, sendo comuns anti-hipertensivos, antidepressivos e analgésicos. Embora 68,3% relatassem conhecer seus tratamentos, 53,7% apresentaram PRM, sendo a não adesão (32%) a condição mais prevalente. **Conclusão:** Observou-se que os octogenários atendidos possuem baixa escolaridade e muitas condições crônicas. No que diz respeito ao uso de medicamentos, a polifarmácia é acompanhada de PRM, principalmente a não adesão. Desta forma, torna-se necessário ampliar estratégias para promover assistência à saúde adequada às necessidades e compreensão de octogenários. O farmacêutico deve desenvolver práticas direcionadas a este grupo para a promoção de uso racional de medicamentos, contribuindo com a qualidade de vida dos octogenários.

Palavras-chave: Pessoa idosa; Envelhecimento; Uso racional de medicamentos; Polifarmácia; Cuidado farmacêutico.

Introduction

Population aging is a progressive and irreversible phenomenon, reflecting improvements in health conditions, control of infectious diseases, and a reduction in fertility rates.[1,2] The United Nations considers that, since 1975, we have been living in the era of aging, during which there has been a 123% increase in the elderly population in developing countries and 54% in developed countries[3]. In Brazil, the same global trend is observed, since between 1950 and 1955, life expectancy was 33.7 years,[3] whereas according to the Brazilian Institute of Geography and Statistics, in 2023, the average life expectancy of Brazilians reached 76.3 years. In this context, the population aged 80 years or older, the octogenarians, has shown significant growth.

Population aging is one of humanity's greatest triumphs, as it reflects the extension of life expectancy; however, it also brings challenges, particularly for healthcare professionals and services, as it will increase social and economic demands worldwide.[4] Although a physiological process, aging reflects the accumulation of various types of damage that occur in the body over the years, leading to a gradual loss of physiological reserves and an increased risk of developing chronic diseases.[5,6,7] These chronic conditions tend to be especially prevalent among the elderly and are usually associated with other diseases, amplifying complications and their potential harms. Comorbidities may contribute to a disabling process, affecting the functionality of older adults, that is, hindering or preventing them from performing daily activities autonomously.[8] Mental, cognitive, and physical changes inherent to aging, combined with the increase in comorbidities, result in a greater prevalence of Noncommunicable Diseases (NCDs) and in the use of medications to treat most of the health problems in this population[1,9,10].

It is estimated that for the treatment of NCDs, the majority of older adults (over 80%) use at least one medication per day, and polypharmacy, defined as the use of five or more medications simultaneously, is a reality for most of the elderly population, making this the most medicalized age group in society.[1,11] Considering the burden of disease that affects older individuals, the number of medications used increases as complications arise or new diagnoses are made.[12] In this scenario, polypharmacy is indeed a reality for most older adults.

In addition to the high burden of disease, polypharmacy can contribute to negative health outcomes, such as adverse drug events, falls, hospitalization, prolonged hospital stays, and death[1,2]. The use of medications by older adults should be rational and safe so that therapeutic results are achieved without medications becoming an additional health risk. Advanced age and polypharmacy are directly associated with an increase in medical consultations and a higher incidence of Adverse Drug Events (ADEs). Therefore, adopting strategies to avoid the use of medications considered inappropriate or unnecessary is an effective and relatively simple measure to minimize problems related to pharmacological treatment, being especially important in the elderly population.[12]

In the context of healthcare, pharmacists must work in partnership with patients and other professionals in the healthcare team, aiming to optimize pharmacotherapy outcomes.[3,11,13] Their objective is to ensure that prescribed medications are appropriately indicated, effective, safe, and convenient for the patient. In addition, follow-up aims to prevent, identify, and resolve Drug-Related Problems (DRPs) before they contribute to morbidity and mortality associated with drug therapy.[14]

DRPs are considered undesirable events experienced by patients that involve, or are suspected to involve, pharmacotherapy, interfering with the expected therapeutic outcome and requiring professional intervention for resolution. Adverse effects, drug interactions, and even misuse or non-adherence to treatment are considered DRPs, which can contribute to decreased quality of life and increased morbidity and mortality. Pharmaceutical care includes clinical interventions focused on promoting the rational use of medicines, aiming to reduce DRPs.[14,15] This model of care, recommended by organizations such as the World Health Organization (WHO), values the integration of pharmacists into

the healthcare team, expanding access to treatment and promoting medication safety and adherence to improve clinical outcomes, especially in older adults who require greater attention in the healthcare process.[1,13]

Objective

The objective of this study was to evaluate the prevalence of polypharmacy and drug-related problems (DRPs) in octogenarians treated at a specialty outpatient clinic of the Brazilian Unified Health System (SUS).

Methodology

This is an exploratory, descriptive study with a quali-quantitative approach, conducted between May 2023 and May 2024. The target population consisted of older adults aged 80 years or more, the octogenarians, referred for geriatric medical care at a specialty outpatient clinic of the Unified Health System (SUS), located in the interior of Espírito Santo.

As inclusion criteria, users aged 80 years or older referred for pharmaceutical consultation after geriatric medical care were considered. Caregivers were also regarded as sources of information when they were responsible for or assisted older patients in performing daily activities and health care. Octogenarians for whom it was not possible, during the consultations, to obtain a complete survey of the information necessary to provide guidance on prescribed medications and subsequent data analysis were excluded from the study.

After the geriatric medical consultation, the octogenarians were referred to pharmaceutical care. During the pharmaceutical consultation, sociodemographic information such as gender, age, education level, presence of a caregiver, and health history was collected. Regarding the medications used, the drugs taken and their respective indications were evaluated. Based on these data, a comparison with the medical prescription was conducted to verify the degree of knowledge about therapy and adherence to treatment for the identification of possible DRPs (Drug-Related Problems). The medications used by patients were classified according to the Anatomical Therapeutic Chemical Classification System (ATC). Polypharmacy was defined as the simultaneous use or prescription of five or more medications for the same patient. Information was documented in a form adapted from the Dáder Method for pharmacotherapeutic follow-up.[16]

Data analysis was carried out using descriptive statistics, with absolute and relative frequencies of variables presented in tables. The project was approved by the Research Ethics Committee of CEUNES/UFES, under Opinion No. 6.071.609.

Results

Data obtained from pharmaceutical consultations with 107 older adults were analyzed, with a mean age of 76.8 years. Of these, 38.3% were aged 80 years or older, the majority being female (n=25; 61%). The mean age of the octogenarians was 86.3 years, with the youngest being 80 and the oldest 103 years.

Regarding education level, most respondents declared themselves illiterate (n=15; 36.6%), while 12 octogenarians (29.7%) reported only knowing how to read, and 14 (34.1%) did not respond or did not provide the information (Table 1).

With regard to caregiver support in carrying out daily activities, most octogenarians interviewed required caregivers (n=32; 78%) and did not live alone (n=33; 80.5%). Conversely, 14.6% (n=6) of the octogenarians lived alone, most of whom were female (n=5; 12.2%). It was observed that in most consultations, the companion played an important role in providing information about health history and medication use, being responsible for answering the questions in almost half of the consultations (n=19; 46.3%) or assisting the patient when they were able to provide accurate information (n=19; 46.3%). Only 3 octogenarians (7.3%) were solely responsible for providing information about their health and medication use independently (Table 1).

Table 1. Sociodemographic characteristics of octogenarians participating in the study

VARIABLES	Female		Male		Total	
	N	%	N	%	N	%
Sex	25	61	16	39.0	41	100
Age	**N**	**%**	**N**	**%**	**N**	**%**
80-84	13	52	4	25	17	41.5
85-89	8	32	8	50	16	39
90-94	1	4	4	25	5	12.2
95-99	2	8	0	0	2	4.9
>100	1	4	0	0	1	2.4
	25	100	16	100	41	100
Education	**N**	**%**	**N**	**%**	**N**	**%**
Illiterate	13	52	2	12.5	15	36.6
Literate	5	20	7	43.8	12	29.3
Not reported	7	28	7	43.8	14	34.1
TOTAL	25	100.0	16	100.0	41	100.00
Need for caregiver	**N**	**%**	**N**	**%**	**N**	**%**
Yes	18	72.0	14	87.5	32	78.05
No	7	28.0	2	12.5	9	21.95
TOTAL	25	100.0	16	100.0	41	100.0
Lives Alone	**N**	**%**	**N**	**%**	**N**	**%**
Yes	5	20.0	1	6.3	6	14.63
No	19	76.0	14	87.5	33	80.49
Not reported	1	4.0	1	6.3	2	4.88
TOTAL	25	100.0	16	93.8	41	95.1
Responsible for providing information	**N**	**%**	**N**	**%**	**N**	**%**
Patient only	3	12.0	0	0.0	3	7.32
Caregiver	11	44.0	8	50.0	19	46.34
Patient and caregiver	11	44.0	8	50.0	19	46.34
TOTAL	25	100.0	16	100.0	41	100.00

Source: Prepared by the authors

Among the most prevalent chronic conditions observed during the pharmaceutical consultations, cardiovascular diseases such as systemic arterial hypertension (SAH; n=34; 83%) and dyslipidemia (n=23; 56.1%) were the most common. Diabetes mellitus (DM) and chronic pain were also NCDs with high prevalence among the octogenarians participating in the study (Table 2). Most of the older adults evaluated (n=14; 34.1%) had at least two cardiovascular and/or metabolic diseases (DM), and chronic pain was reported by 63.4% (n=26) of the octogenarians. Neurodegenerative diseases such as Alzheimer's disease (n=12; 29.3%), Parkinson's disease (n=2; 4.9%), and mood disorders such as depression and anxiety were also observed in 24.4% (n=10) (Table 2).

Table 2. Most prevalent chronic conditions among octogenarians attended during the pharmaceutical consultation.

Chronic diseases	N	%
Systemic arterial hypertension	34	83
Dyslipidemia	23	56.1
Diabetes mellitus	17	41.5
Chronic pain	26	63.4
Alzheimer's disease	12	29.3
Mood disorders	10	24.4
Parkinson's disease	2	4.9

Source: Prepared by the authors

The treatment of chronic conditions frequently involves the use of medications, and in this context, nearly all octogenarians attended had prescriptions for at least three medications (n=40; 97.6%), with an average of 7.6 medications per patient. Among the participants, 9.8% (n=4) received up to four medications. Polypharmacy, defined as the use or prescription of five or more medications for the same individual, was observed in 87.7% (n=36) of the octogenarians. Among these, 13 patients (31.7%) were using more than 10 medications (Table 3).

Table 3. Distribution of the number of medications used by octogenarians attended during pharmaceutical consultation.

Number of medications prescribed per patient	N	%
0	1	2.4
3	1	2.4
4	3	7.3
5	7	17.0
6	5	12.2
7	3	7.3
8	5	12.2
9	3	7.3
10	6	14.6
11	3	7.3
12	1	2.4
13	1	2.4
>14	2	4.9
TOTAL	**41**	**100**

Source: Prepared by the authors

The most commonly used groups of medications among the elderly in this study, according to the Anatomical Therapeutic Chemical (ATC) Classification, were those indicated for the cardiovascular system (n=71; 23.3%), alimentary tract and metabolism (n=40; 13.11%), and central nervous system (n=63; 20.7%). Table 4 presents the ten most frequently used medications, according to the ATC Classification, 5th level, where the specific drugs are listed (Table 4).

Table 4. Most commonly used medications among octogenarians attended during pharmaceutical consultation, according to the Anatomical Therapeutic Chemical Classification.

Medication	Classificação ATC	N	%
Losartan	C09CA01	19	46.34
Paracetamol	N02BE01	17	41.46
Sertraline	N06AB06	15	36.59
Hydrochlorothiazide	C03AA03	14	34.15
Metamizole (Dipyrone)	N02BB02	11	26.83
Escitalopram	N06AB10	10	24.39
Simvastatin	C10AA01	10	24.39
Metformin	A10BA02	10	24.39
Omeprazole	A02BC01	9	21.95
Aspirin 100 mg	B01AC06	9	21.95

Source: Prepared by the authors

When asked about their knowledge regarding drug therapy and its indications, 68.3% (n=28) stated they were aware of their prescribed therapy, 24.4% (n=10) had partial knowledge, and 7.3% (n=3) were unaware of the medications they used and their purposes. Although most respondents reported being familiar with their prescribed pharmacotherapy, 53.7% (n=22) were found to present some DRP. The main causes of the identified DRPs were: non-adherence (n=9; 32%), administration errors (n=8; 28.7%), self-medication (n=6; 21.4%), and other causes (n=5; 17.9%).

Discussion

Population aging has generated demands at different levels of healthcare delivery, with the health system aiming to promote health and quality of

life. In this sense, the analysis of these data reveals important aspects about the profile and needs of the elderly population, especially individuals aged 80 years or older who underwent pharmaceutical consultations. Among the study participants, the majority were women, with low educational attainment, chronic diseases, and were in polypharmacy.

The data from this study showed a high prevalence of women among the longest-living population compared to men, a condition known as the feminization of aging.[1,7,17] Earlier mortality among men is associated with higher death rates from cardiovascular diseases, smoking-related conditions, alcohol use, and external causes.[18] Moreover, it is necessary to consider the influence of cultural factors that reinforce the idea that men should be strong and thus not in need of self-care or adherence to healthcare professionals' recommendations, as well as preventive measures for chronic diseases and their complications.[18,19]

In general, women live longer with nonfatal chronic conditions and more frequently follow the recommendations provided by healthcare professionals, due to greater awareness of their own health.[1,20] Another contributing factor is the higher concentration of policies directed toward women in an attempt to balance inequalities, considering that the social and biological impact of women's health directly influences both family and community health.[21] Nevertheless, women bear a heavier burden from household routines and family care, even when they are elderly individuals with chronic diseases, being more ill and more dependent than men of the same age. According to Neri et al. (2023),[19] these are common phenomena related to gender differences and reflect accumulated disadvantages and structural inequalities in society.

Illiteracy and low educational attainment are also associated with impairments in quality of life. Low schooling is linked to worse health conditions and reduced access to healthcare services.[7,22] Considering the low educational levels among the octogenarians in this study, it is assumed that this may affect their autonomy and understanding of health care, in addition to hindering adherence to health-related guidance and medication use. This highlights the need for individualized and qualified pharmaceutical care, fostering more effective communication with these individuals.

With population aging and the increasing longevity of individuals, the number of people requiring assistance with daily activities is also rising. In this study, it was observed that most octogenarians did not live alone (80.3%) and required the support of a caregiver (78%), either professional or family, for daily activities. Similarly, the study by Billet et al. (2019)[7] conducted in São Paulo/SP aimed to assess the ability to perform daily living activities and correlate functional capacity with quality of life among hospitalized octogenarians. It was observed that 82% of the octogenarians required caregivers to perform daily activities, which was related to the presence of comorbidities and dependence. Thus, caregivers must also be considered part of the treatment strategy and receive proper guidance on therapies.

The mental, cognitive, and physical changes typical of aging, combined with the difficulty of maintaining homeostasis, contribute to the occurrence of NCDs.[9,23] The risk of chronic diseases is significantly higher among octogenarians due to physiological aging, making the body more susceptible to NCDs and their complications. In this study, a high prevalence of NCDs such as hypertension (83%), dyslipidemia (56.1%), and diabetes mellitus (41.46%) was observed among octogenarians, even at higher proportions compared to other published studies. According to Francisco et al. (2022),[6] based on data from the National Health Survey (PNS, 2019), 61.7% of interviewed octogenarians were hypertensive, 30% had dyslipidemia, and 22% were diabetic. The possible difference in NCD prevalence among octogenarians may be attributed to the setting in which the studies were conducted. The PNS is based on household interviews, whereas in this study, consultations were conducted in a secondary care outpatient clinic, meaning individuals were actively seeking healthcare at the time. Nevertheless, regardless of NCD prevalence, their occurrence in itself generates greater demand for health services and expanded care.[6] Furthermore, according to Figueiredo et al. (2021),[24] healthcare professionals are poorly prepared to meet the needs of this group, since few undergraduate health sciences programs in the Americas address geriatrics and aging.

The treatment of NCDs mostly involves lifestyle changes; however, medication use must be considered to manage disease and prevent further health complications. Individuals with comorbidities generally require continuous care and the use of multiple medications.[2]

Considering the high prevalence of cardiovascular diseases and diabetes mellitus, it is consistent that medications such as losartan, hydrochlorothiazide, metformin, and simvastatin appear among the ten most commonly used by octogenarians. However, as observed in other studies, omeprazole also figures prominently among the medications most widely used in this population.[12,23] Indicated for the treatment of gastric disorders, it is often used prophylactically to reduce gastric acidity. Nonetheless, its unnecessary use may lead to adverse drug reactions, which can be misinterpreted as a new health condition and treated with additional medication, thereby triggering an iatrogenic cascade.[12]

During the pharmaceutical consultations carried out in this study, most octogenarians were prescribed at least seven medications for the treatment of their conditions. Polypharmacy among older adults, especially octogenarians, lies on a delicate balance between rational use for the treatment of multiple comorbidities and the risk of adverse events.

The optimized combination of medications, based on scientific evidence, can contribute to better disease control, prevent complications, and improve quality of life.[12] Studies have shown that medication use among older adults is associated with increased life expectancy, greater availability of drugs in the market, and the publication of guidelines recommending drug combinations for disease control, particularly cardiovascular conditions. According to Pereira et al. (2017),[1] another factor to consider is the repeated renewal of prescriptions without adequate evaluation, due to failures in elderly healthcare. In this sense, long-lived individuals with chronic conditions are candidates for polypharmacy and are also the most vulnerable to the risks associated with this practice.

Changes in nutritional status, pharmacokinetics, and pharmacodynamics are common in aging and contribute to the risks associated with polypharmacy in older adults.[1,12,23] Polypharmacy can result in negative drug interactions, adverse reactions, non-adherence to therapy, self-medication, hospitalizations, increased costs, and even death due to inappropriate medication use.[25] Polypharmacy requires patients to be attentive, have good memory, and be organized to properly manage their medications. The greater the number of medications to be administered, the higher the chance of problems such as non-adherence, administration errors, omissions, or even dose duplication.

Adherence to drug therapy is therefore a complex issue that reflects the degree of patient commitment to correctly following prescribed timing, dosage, and mode of administration[2]. In fact, most octogenarians in this study reported being familiar with their prescribed treatment, as well as its indication and use. However, among the most prevalent DRPs identified was non-adherence. Polypharmacy and low education are factors closely linked to non-adherence and administration errors, another DRP observed.

Thus, continuous therapy review should be performed, and, whenever possible, deprescription should be considered to ensure drug therapy meets the real clinical needs of patients.[12] In addition to prescribers, other healthcare professionals involved in patient care should monitor older adults, particularly the oldest old, who are more vulnerable to adverse events and complications.

The provision of pharmaceutical services for octogenarians can help develop care plans, prevent and resolve drug-related problems, support the care delivered by other professionals involved in patient management, and improve adherence to drug therapy and, consequently, clinical outcomes.[12,26] In this sense, pharmacists should enhance their technical, clinical, and humanistic skills to provide care tailored to the patient's needs.

The small number of participants and the lack of evaluation of octogenarians' functional capacity represent limitations of this study. Although it sheds light on the topic, further research is needed to better understand the population served by our clinic, aiming to provide more efficient healthcare that meets this population's demands. It is also important to highlight the specificity of the sample, consisting of octogenarians treated at a specialty outpatient clinic serving as a referral center for the northern region

of Espírito Santo. These patients were referred from primary care because they required geriatric care for conditions not resolved at the initial level of care. Therefore, more studies must be conducted in different settings to provide additional data on the octogenarian population and its specificities.

Conclusion

There is a high prevalence of polypharmacy and DRPs among the participating octogenarians. It was observed that most patients were female, had low educational attainment, and required a caregiver to assist with daily activities. In this context, the guidance provided during consultations should consider both the patient's and caregiver's level of understanding in planning home care. Furthermore, collectively, the data from this study reinforce the need for greater inclusion of pharmacists in multidisciplinary teams, as these professionals can contribute significantly to improving adherence to drug therapy, preventing adverse events, and resolving identified DRPs. Within this framework, the role of the clinical pharmacist is particularly relevant in promoting the rational use of medicines, contributing to both the safety and effectiveness of treatment.

Given the marked aging of the population and the increasing demand for healthcare, the findings of this study highlight the need to expand the provision of clinical pharmaceutical services aimed at older adults across the different levels of healthcare. Thus, additional studies, in different contexts, are necessary to deepen the understanding of octogenarians in order to support qualified care practices directed at the oldest-old within the SUS.

Authorship Statement and Author Contributions
AADCL: project coordinator, article writing. JP: project collaborator, data analysis and interpretation; critical review of content. JPH: deputy project coordinator, critical review of content.

Conflicts of interest
We declare that there are no conflicts of interest.

Funding
This work was carried out without funding from research support agencies.

Data Declaration and Availability
The underlying content of the research text is contained in the manuscript.

Editor-in-Chief
Lindemberg Assunção Costa

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