

ORIGINAL ARTICLE

Behavior of polypharmacy in older adults

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ABSTRACT

Introduction: polypharmacy, defined as the concurrent use of five or more medications, represents a growing challenge in the clinical management of older adults, particularly in primary care settings.

Objective: to describe the behavior of polypharmacy in older adults and its associated variables.

Methods: an observational, descriptive, cross-sectional study was conducted in a sample of 215 patients aged over 60 years from the "Dr. Modesto Gómez Rubio" Polyclinic in San Juan y Martínez during 2023. Document review and the application of instruments allowed the collection of information for the analyzed variables.

Results: adults aged ≥ 80 years (39,6 %) and females (56,6 %) predominated in the sample, both showing significant associations with polypharmacy ($p<0,030$). Although 58,0 % lived with others, those living alone presented a higher frequency of polypharmacy (50,6 %). Hypertension (66,0 %) and osteoarthritis (37,7 %) were the most common chronic diseases, while antihypertensives (66,0 %), analgesics (48,1 %), and anxiolytics (32,1 %) were the most frequently used drugs. Individuals with low medication-related knowledge predominated (42,0 %), showing a significant association with polypharmacy ($p=0,044$).

Conclusions: polypharmacy in older adults is associated with advanced age, female sex, chronic diseases, and low pharmacological knowledge, underscoring the need for educational strategies to promote safer medication use.

Keywords: Aged; Chronic Disease; Polypharmacy; Health of the Elderly.

INTRODUCTION

Population aging constitutes one of the most significant demographic and social phenomena in recent times. It entails physiological changes and deterioration in the bodily systems of older adults, rendering them more susceptible to drug use and adverse effects. This susceptibility leads to increased hospital admissions, falls, urinary incontinence, cognitive impairment, and even death, resulting in loss of functionality for performing activities of daily living and a progressive decline in quality of life. Furthermore, pluripathologies create a health scenario that demands prolonged and varied treatments, leading older adults to polypharmacy.⁽¹⁾

Polypharmacy, defined as the concurrent use of multiple medications by a patient, is an increasingly prevalent phenomenon in the older adult population. This trend has intensified due to the increase in life expectancy and the growing prevalence of chronic diseases that require complex pharmacological treatments. According to the World Health Organization (WHO),⁽²⁾ it is estimated that approximately 50 % of older adults take five or more medications simultaneously, posing serious risks to their health and well-being.⁽³⁾ As explained by Maher and Hajjar,⁽⁴⁾ historically, the medical treatment approach in older adults has been marked by a tendency to prescribe multiple drugs to address various comorbidities. However, this practice has been criticized due to its potentially negative implications, such as adverse drug interactions, unwanted side effects, and a general deterioration in quality of life.

According to Sánchez et al.,⁽⁵⁾ polypharmacy is a common phenomenon among older adults who usually suffer from multiple chronic diseases or comorbidities, leading to the simultaneous prescription of several treatments with the aim of managing the most relevant disease without allowing other comorbidities to progress or cause complications to the patient's overall health status. Recent research has demonstrated that polypharmacy can contribute to an increase in hospitalizations and a greater economic burden for both patients and health systems. Moreover, it may be closely related to the development of neurodegenerative diseases.⁽⁶⁾ Given that polypharmacy is one of the health issues with the greatest reach and prevalence as the global population ages and life expectancy increases, the objective of this research was to describe the behavior of polypharmacy in older adults and its associated variables.

METHODS

An observational, descriptive, cross-sectional study was carried out in a group of older adults belonging to medical offices 37 and 45 of the "Dr. Modesto Gómez Rubio" Polyclinic in San Juan y Martínez, during 2023.

The population consisted of 422 older adults from both medical offices. A simple random probabilistic sample of 212 individuals was selected, all of whom signed an informed consent form. Those with terminal illnesses or presenting dementia or cognitive impairment were excluded.

Review of family and individual clinical health records, as well as the application of instruments, allowed for the collection of information that yielded the studied variables (age, sex, marital status, cohabitation, presence of non-communicable diseases, presence of polypharmacy, medications consumed, and level of knowledge regarding medication use).

The CPM-ES-ES is a brief, practical, and validated questionnaire that reliably measures the patient's knowledge about their medications, enabling the detection of educational deficiencies and risks associated with inappropriate use of pharmacotherapy, especially relevant in patients with polypharmacy.⁽⁷⁾

To describe univariate behavior, frequencies and percentages were calculated for qualitative variables. For quantitative variables, distribution was initially assessed using the Kolmogorov-Smirnov test; the arithmetic mean was used as a measure of central tendency and standard deviation as a measure of dispersion. For bivariate analysis, Pearson's chi-square (χ^2) and Student's *t*-tests were employed, with a *p*-value < 0,05 considered statistically significant. Results were presented through graphs and tables. The research was approved by the scientific council and ethics committee and followed the ethical principles of the Declaration of Helsinki.

RESULTS

In the sample characterization (Table 1), the age group ≥ 80 years predominated (39,6 %) and was also the group with the highest prevalence of polypharmacy (56,0 %), a difference that was statistically significant (*p* = 0,033). Regarding sex, the female population predominated (56,6 %), showing the highest proportion of polypharmacy (54,2 %), with a statistically significant relationship between the two variables (*p* = 0,030). With respect to marital status, the most frequent category was married (42,9 %); however, widowed participants showed higher polypharmacy (55,0 %), although this relationship did not reach statistical significance (*p* = 0,139). Concerning cohabitation, 58,0 % of the sample lived with others, but older adults living alone presented a slightly higher percentage of polypharmacy (50,6 %), a difference that was not statistically significant (*p* = 0,462).

Table 1. Sociodemographic profile according to presence of polypharmacy.

Variable	Polypharmacy presence				Total		p Valor	
	Yes		No		No.	%		
	No.	%	No.	%				
Age	60-69	27	45,8	32	54,2	59	27,8	
	70-79	28	40,6	41	59,4	69	32,5	
	≥ 80	47	56,0	37	44,0	84	39,6	
Sex	Male	37	40,2	55	59,8	92	43,4	
	Female	65	54,2	55	45,8	120	56,6	
Marital Status	Married	41	45,1	50	54,9	91	42,9	
	Widowed	33	55,0	27	45,0	60	28,3	
	Divorced	18	45,0	22	55,0	40	18,9	
	Single	10	47,6	11	52,4	21	9,9	
Cohabitation	Alone	45	50,6	44	49,4	89	42,0	
	With Other	57	46,3	66	53,7	123	58,0	

* Statistically significant (*p* < 0.05); Student's *t*-test ** Pearson's chi-square test

Figure 1 reveals that arterial hypertension is the most prevalent chronic condition, affecting 66,0 % of the analyzed population (140 cases), followed by osteoarthritis (37,7 %, 80 cases), type 2 diabetes mellitus (33,0 %, 70 cases), and dyslipidemia (28,3 %, 60 cases)—all conditions linked to metabolic and cardiovascular profiles.

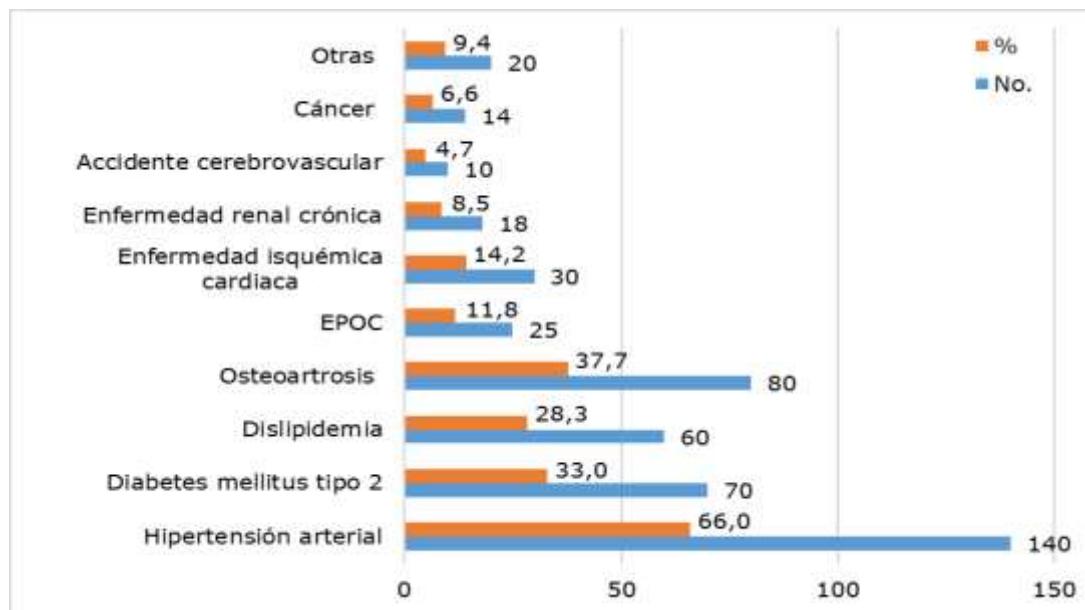


Fig. 1. Distribution of the sample according to the presence of non-communicable diseases.

Figure 2 shows the medications consumed, with antihypertensives (66,0 %), analgesics (48,1 %), and anxiolytics (32,1 %) being the most frequently used drug classes.

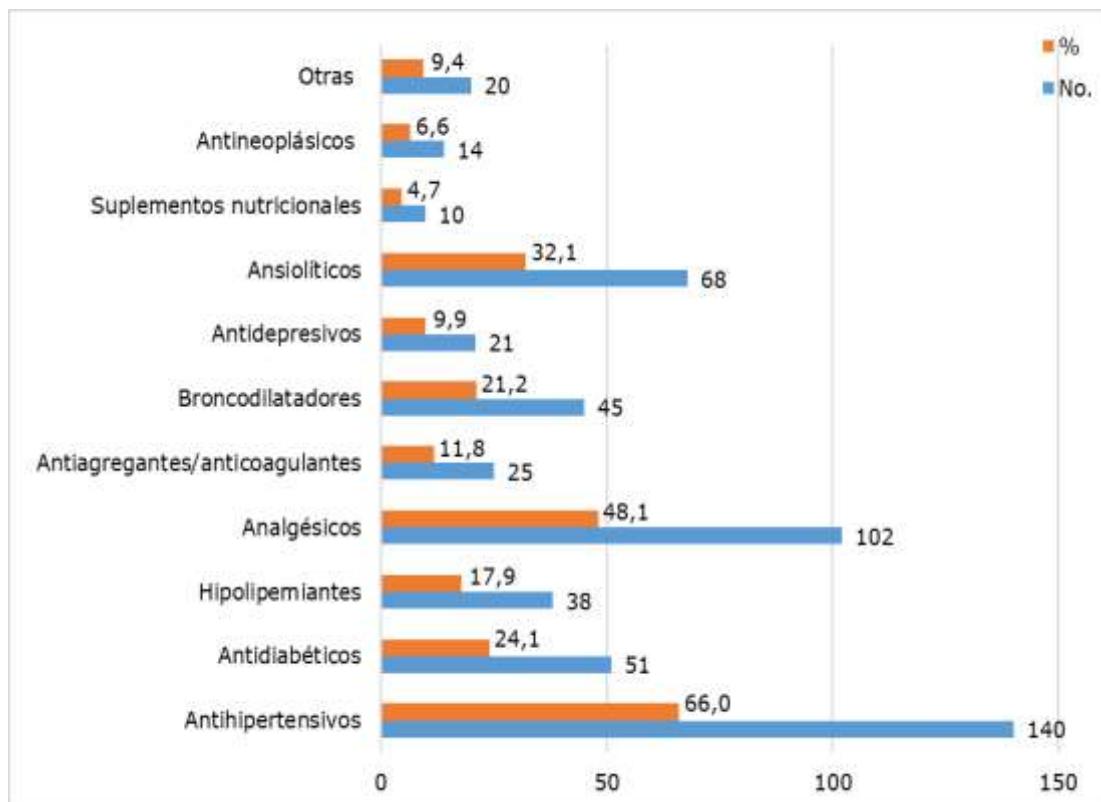


Fig. 2 Distribution of the sample according to medications consumed.

Table 2 presents the association between the level of knowledge regarding medication use and the presence of polypharmacy. Individuals with low (42,0 %) and medium (34,0 %) knowledge levels predominated. Among those with low knowledge, the highest proportion of polypharmacy was observed (64,0 %), and a statistically significant association was found between these variables ($p = 0,044$).

Table 2. Presence of polypharmacy according to level of knowledge about medication use.

Level of knowledge	Polypharmacy Presence				Total	
	Yes		No		No.	%
	No.	%	No.	%		
Low	57	64,0	32	36,0	89	42,0
Middle	31	43,1	41	56,9	72	34,0
High	14	27,5	37	72,5	51	24,1
Total	102	48,1	110	51,9	212	100

Note: * Student's *t*-test

DISCUSSION

The present study demonstrated that polypharmacy is a highly prevalent phenomenon among older adults, with a global prevalence approaching 48 %, confirming its significance as a public health issue in this age group. The finding that polypharmacy increases with age—particularly in the ≥ 80 years group, which showed the highest proportion of polypharmacy—is consistent with recent literature indicating a clear rise in polypharmacy associated with aging and multimorbidity.⁽⁸⁾

Longitudinal studies in primary care settings have documented increasing pharmacological burden among the oldest-old, identifying the accumulation of comorbidities as the main driver of this trend. Moreover, multicenter reviews and studies have shown that the prevalence of polypharmacy rises progressively with each decade after age 65.^(9,10) These comparisons support the validity of our results and suggest that, in similar contexts (community-dwelling older adults), periodic medication reviews are critical.

The higher proportion of polypharmacy observed among women is also reported in numerous recent series. Some studies associate greater medication use in older women with a higher prevalence of chronic conditions—such as chronic pain and anxiety disorders—and distinct healthcare utilization patterns (e.g., more frequent contact with health services). However, nuances exist: certain multicenter studies report slightly higher risks of adverse outcomes among women with polypharmacy, while others note that although prevalence is higher in women, long-term impacts (e.g., mortality) may vary by sex. Overall, our findings align with the published literature and underscore the need for gender-sensitive pharmacotherapeutic review approaches.^(11,12)

Our results also indicate higher polypharmacy rates among widowed individuals and those living alone. The literature on this association is heterogeneous: some studies report links between lack of a partner/social isolation and increased medication use—potentially due to poorer health status, reduced social support, or unequal access to care—while others find no independent association after adjusting for multimorbidity and health service use.⁽¹³⁾ Recent observational studies suggest that the impact of living alone or being widowed on polypharmacy is often mediated by comorbidities and functional dependence, which may explain the lack of statistical significance in our bivariate analysis. Therefore, our non-significant findings are consistent with

the literature and suggest that future analyses should explore mediating factors such as functional status, support networks, and access to pharmacotherapeutic follow-up.^(14,15,16)

The morbidity profile observed in this study reflects a predominance of cardiovascular and metabolic diseases, along with a high prevalence of osteoarthritis—patterns that align with recent population-based studies identifying hypertension as the most common chronic condition among older adults, followed by diabetes, dyslipidemia, and musculoskeletal disorders. These conditions directly explain the high use of antihypertensives, antidiabetics, statins, and analgesics in older adults' medication regimens and highlight the close relationship between cardiometabolic multimorbidity and polypharmacy risk. Our figures are well aligned with contemporary data from community-dwelling populations and primary care users.^(17,18,19)

A particularly relevant finding is the higher prevalence of polypharmacy among participants with low knowledge about their own medications. This result is consistent with recent studies examining "medication literacy" and its association with safer, more appropriate medication use. For example, in a cohort of older adults with multimorbidity, higher medication literacy was linked to better treatment adherence.^(20,21)

Conversely, insufficient knowledge increases the risk of inappropriate use, self-medication, drug duplications, interactions, or the continued use of unnecessary medications—factors that may explain the greater number of drugs observed in our sample. This pattern has also been reported in studies assessing self-management of treatment in geriatric settings: reduced ability to organize, interpret, and make decisions about medications is associated with more frequent polypharmacy.^(22,23)

These findings strongly reinforce the urgent need to implement educational and supportive strategies targeted at older patients—and their caregivers—to improve their understanding and management of pharmacotherapy. Interventions such as personalized education, clear-language pamphlets, pictograms, dose organizers, visual or digital reminders, and structured medication reviews can promote more conscious and safer medication use. Moreover, such strategies not only have the potential to improve adherence but also to facilitate appropriate deprescribing when indicated, minimize risks of interactions or adverse effects, and ultimately enhance the quality of life of older adults. Recent evidence suggests that this approach—by strengthening patients' health literacy—represents a highly impactful, modifiable intervention in polypharmacy contexts.^(24,25)

CONCLUSIONS

The study findings allow us to conclude that polypharmacy represents a significant issue among the older adult population, influenced by demographic, clinical, and educational factors. Advanced age and female sex were associated with an increased number of medications used, while highly prevalent chronic conditions substantially contributed to this pattern of medication consumption. Although social variables such as marital status and cohabitation did not show statistically significant associations, they revealed trends suggestive of potential vulnerability. Furthermore, a low level of knowledge regarding medication use was linked to a higher prevalence of polypharmacy, underscoring the need to strengthen educational strategies to promote safer and more rational pharmacotherapy use in this population group.

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