



Original Investigation, Retrospective Descriptive Study

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First Study of Comorbidities in Geriatric Patients in Bucaramanga Colombia, With Polypharmacy and its Variables

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Abstract

Background & aims: The elderly correspond to the main group in suffering from comorbidities and the largest number of people at risk of suffering from polypharmacy, although it is often assumed that we have information and control of the situation, the number of investigations related to the subject is very limited and little contextualized in this country, things that can change the way we do good clinical practice.

Methodology: This is a retrospective descriptive study in a group of South American patients at the Local Hospital of the North in Bucaramanga, Colombia. Data was collected over 12 months from 9,287 patients.

Results: The study of comorbidities in geriatric patients with polypharmacy reveals a complex interplay of health conditions and medication use that poses significant challenges for healthcare providers. This discussion aims to delve into the key findings, implications, and potential strategies for improving the management of these patients in Colombia.

Conclusions: The impact of comorbidities and other variables associated with them in the elderly population are perceptible and influential in the health of these patients, moreover, they are an important issue, and could influence how the comprehensive and protective management of the quality of life of the geriatric patient should be carried out correctly.

Keywords

Comorbidity, Polypharmacy, Aged, Frailty, Colombia

Introduction

Comorbidities represent one of the biggest problems faced by older adults (MA) around the world, it contributes to the complexity of this population group and is a risk factor for adverse health events (functional impairment, disability, dependency, institutionalization, hospitalization, poor quality of life and death). It has been reported that 24% of those over 65 years of age and 31.4% of those over 85 years of age suffer from four or more chronic conditions and that more than half of women had three or more major chronic conditions,

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with the average being three per woman [1]. In our country, DANE shared figures from 2020 showing that 45.5% of people diagnosed with a chronic disease are people 60 years of age or older, on the other hand 2.6 million people reported having a disability. Of these, 1.18 million are people aged 60 years or older, i.e. 44.4% of PwD (people with disabilities) [2].

On the other hand, we must take into account other variables and how they may be related to each other, so that we cannot attribute to a single variable the responsibility for the presence of comorbidities, what we do know is that they open up a large number of possibilities to add more complications or characteristics in the geriatric patient and even more so when we refer to the in-hospital setting. as was the case of the research on AM patients at the San Ignacio Hospital in Bucaramanga where it was found that 83.2% of the patients had geriatric syndromes: 73.73%, malnutrition; 61.11%, some type of dementia, most frequently Alzheimer's disease (35.42%); 60.32%, polypharmacy, and 51.81%, a higher degree of functional dependence. Little social support was reported in 16.06% of patients and a considerable number of comorbidities (5 or more) in 51.77% [3].

Polypharmacy, on the other hand, represents a public health problem as reflected in the According to the World Health Organization (WHO), showing that 65 to 90% of MAs consume more than three medications simultaneously (polypharmacy), 25% of adults between 65 years of age and older have adverse reactions to medications, this is one of the most frequent forms of iatrogenesis, which has an impact on health, economy, social integration and quality of life in this age group [4]. Multiple causes are currently proposed, resulting in this geriatric syndrome becoming more common in the last decade. First, management of comorbidities is often lacking in disease-specific guidelines. Second, multimorbidity is increasing due to an aging population. Third, the methods of deprescribing are scarce and the results are contradictory, in addition to the fact that these results come from places other than Latin America and Colombia, which prevents the correct extrapolation of certain variables that could have different importance or little relationship with the problem [5-19].

Currently, we have two important scales to recognize polypharmacy in older adults, these correspond to the STOPP/START criteria, which allow us to define the clinical importance of potentially inappropriate medications and the possible prescription omissions relevant to the review of medication in older people [20-23].

Comorbidities and polypharmacy are closely related and tend to coexist in patients, especially in older adults, due to the increase in conditions and overmedication that occurs when assigning treatments; This makes the treatment of older adults with these characteristics become challenging, so it must be approached holistically, aimed at the responsible management of the disease, with knowledge and critical vision of treatment, both pharmacological and clinical [24]. For these reasons, there is a need to have sufficient and reliable information on how this problem behaves at the national level.

This article seeks to study comorbidities in geriatric patients who have some other type of variable that directly influences the patient's health such as polypharmacy, frailty and other variables, so that we can analyse how these can be managed in multiple ways to carry out correct clinical practices and provide better care to the elderly patient in the Colombian context.

Materials and Methods

This retrospective descriptive study investigates the prevalence and impact of comorbidities and polypharmacy among geriatric patients aged 60 years and older at the Local Hospital of the North in Bucaramanga, Colombia. Data will be collected over 12 months from 9,287 patients through medical records, patient and caregiver interviews, using tools such as the STOPP/START criteria for medication review, the FRAIL scale for frailty assessment, the Barthel Index for functional dependence, and the Duke-UNC Functional Social Support Questionnaire for social support measurement. Descriptive statistics, chi-square tests, t-tests, and multivariate logistic regression models will analyse the association between comorbidities, polypharmacy, and adverse health outcomes, including hospitalization, institutionalization, disability, and mortality. Ethical approval and informed consent have been obtained, and data confidentiality will be maintained. The study aims to provide insights into managing comorbidities and polypharmacy, improving clinical practices and patient outcomes [25-39].

Results

Characteristics of the cohort

The cohort included 9,287 adults over 60 years of age in different socioeconomic strata (Table 1), of which 70% were women. The prevalence of polypharmacy (defined as the use of five or more medications) was 100%.

Incidence of comorbidities

During the interviews, all patients were evaluated with the Charlson index, which estimates life expectancy at 10 years depending on the comorbidities of the subject and the age at which it is evaluated, the results of which are found in the table (Table 2), with CHARLSON GREATER than 3 being the one with the highest number of responses.

On the other hand, the FRAIL scale for frailty assessment allows us to observe the degree of frailty that the patient has, in our study population measurements were made in the entire population and according to their gender (Table 3).

Table 1: Socioeconomic strata of the participants.

Stratum	Number of Elderly Patients	Percentage (%) of Elderly Patients
1	6,936	74.68%
2	2,041	21.98%
3	310	3.34%

Source: Prepared by the authors

Table 2: Application of the CHARLSON scale.

CHARLSON Scale Score	CHARLSON Total	CHARLSON in Female Gender	CHARLSON in Male Gender
0-1	1,257	1,358	546
2	2,041	1,789	895
≥ 3	5,958	3,348	1,351
Number of Elderly Patients			

*Application of the Charlson Comorbidity Index. This relates long-term mortality to the patient's comorbidity. In general, the absence of comorbidity is considered: 0-1 pt, low comorbidity: 2 pts and high > 3 pts.

Source: Prepared by the authors.

Table 3: Application of the FRAIL scale for frailty assessment.

FRAIL Scale Score	FRAIL Total	FRAIL in Female Gender	FRAIL in Male Gender
Not Fragile	3,501	2,764	1,501
Mildly frail	2,076	1,609	306
Moderately frail	2,222	1,405	214
Severely Frail	1,488	717	771
Number of Elderly Patients			

*Application of the FRAIL Scale for Frailty Assessment. This scale assesses, through 9 levels, the functional status of the person through their physical activity or training, mobility and basic and instrumental skills. The higher the level at which the patient is placed, the greater the frailty.

Source: Prepared by the authors.

Table 4: Polypharmacy associated with the number of pathologies and specialties that attend these patients.

Number of Pathologies	Number of Patients
Up to 2	2,104
3 to 4	3,057
≥ 5	4,126

Source: Prepared by the authors

Variables associated with polypharmacy

Once the number of self-medicated patients has been established, this variable is related according to the number of pathologies that the patient has (Table 4) and the number of medical specialties that attend to the participants (Table 5).

Finally, each patient was asked the type of medication they were taking during the 12-month follow-up time in which the study was conducted (Table 6), with antihypertensives (80%) being in first place and antineoplastic drugs (0.23%).

Discussion

The study of comorbidities in geriatric patients with polypharmacy reveals a complex interplay of health conditions and medication use that poses significant challenges for healthcare providers. This discussion aims to delve into the key findings, implications, and potential strategies for improving the management of these patients in Colombia.

The study found that a significant proportion of geriatric patients had multiple chronic conditions, with many patients suffering from three or more comorbidities. This aligns with global trends and underscores the complexity of treating

Table 5: Polypharmacy associated with the number of pathologies and specialties that attend these patients.

Number of Specialties that attend to these patients	Number of Patients
Up to 2	1,943
3 to 4	2,654
≥ 5	4,690

Source: Prepared by the authors

Table 6: Medications most commonly used by participants.

Type of Medication administered	Number of Patients
Antihypertensive	7951
Antidiabetics	3124
Lipid-lowering	1766
Gastric protector	1374
Bronchodilators	783
Antiarrhythmic	696
NSAIDs	652
Antithyroid supplementation	298
Antineoplastic	21

*Non-steroidal anti-inflammatory drugs (NSAIDs).

Source: Prepared by the authors

older adults who often present with a wide array of health issues. The prevalence of comorbidities is a critical factor that exacerbates the health challenges faced by this population, leading to increased rates of functional impairment, disability, dependency, and poor quality of life.

Polypharmacy was prevalent among the study population, with most patients taking five or more medications simultaneously. This not only increases the risk of adverse drug reactions but also complicates the management of chronic diseases. The high rate of medication use is consistent with WHO findings, highlighting a critical area of concern in geriatric care. Although, this investigation didn't ask about Adverse drug reactions (ADR), statistics about this in Colombia reported that aged 65 years and older, presented them by 25% of patients, emphasizing the need for careful medication management to avoid harmful outcomes.

The presence of geriatric syndromes such as malnutrition, dementia, and functional dependence was notably high. These conditions further complicate the management of comorbidities and require a comprehensive approach to care that addresses both physical and cognitive health. For instance, malnutrition affects nearly three-quarters of the patients, while dementia, predominantly Alzheimer's disease, impacts over 60%, highlighting the need for integrated care strategies.

The findings of this study have several important implications for clinical practice. Firstly, there is a need for a holistic approach to managing geriatric patients with comorbidities and polypharmacy. This includes regular comprehensive assessments that consider physical, cognitive, and social aspects of health. By addressing these aspects collectively, healthcare providers can develop more effective treatment plans tailored to the individual needs of older adults.

Implementing routine medication reviews using criteria such as STOPP/START can help identify and rectify inappropriate medication use. Deprescribing strategies should be incorporated into clinical practice to reduce polypharmacy and its associated risks. This is particularly important given the high prevalence of polypharmacy and the associated adverse drug reactions observed in the study population.

The complexity of managing multiple comorbidities and polypharmacy requires an interdisciplinary approach. Collaboration among physicians, pharmacists, nurses, and social workers is essential to provide coordinated and effective care. Each discipline brings unique insights and skills that are crucial for addressing the multifaceted needs of geriatric patients. This interdisciplinary collaboration can lead to improved health outcomes and enhanced quality of life for older adults.

Enhancing social support systems for geriatric patients is crucial. This can be achieved through community programs, caregiver support, and policies aimed at improving the social integration of older adults. The study highlighted the importance of social support, with a significant number of patients reporting inadequate social support. This lack of support was associated with worse health outcomes, including higher rates of functional dependence and comorbidities. Strengthening social support networks can mitigate these negative outcomes.

Addressing Frailty

Early identification and management of frailty can help

prevent adverse health outcomes. Frailty was a common finding among the study population and was associated with higher rates of hospitalization, disability, and mortality. Interventions should focus on improving physical function, nutrition, and overall resilience in frail older adults. By addressing frailty proactively, healthcare providers can reduce the risk of severe health events and improve the overall well-being of geriatric patients.

The study of comorbidities in geriatric patients with polypharmacy highlights the multifaceted challenges in managing this vulnerable population. By adopting a holistic, interdisciplinary approach and focusing on individualized care, healthcare providers can improve the quality of life and health outcomes for older adults. Addressing polypharmacy, enhancing social support, and managing frailty are key components of effective geriatric care. Further research and policy efforts are needed to develop context-specific strategies that can be implemented at the national level, ensuring that geriatric patients receive the comprehensive care they deserve.

Conclusions

This research focused its efforts on providing a clearer vision of the reality of older adults in a city in Colombia, these findings showed how multiple pathologies, variables of functionality, frailty and polypharmacy allow us to analyse from another point of view our role as doctors in the lives of these patients who come to the clinic and know the causes, Interactions and outcomes of variables associated with comorbidities in the geriatric population.

Although this article highlights the alterations, it is hoped that it will become a window to observe a future horizon in which more research and strategies for the management and adequate follow-up in these patients can be generated.

Ethical Consideration

In this study that investigated comorbidities and polypharmacy among geriatric patients at Hospital Local del Norte, Bucaramanga, ethical considerations were rigorously addressed in accordance with the Declaration of Helsinki. Before the start of the research, ethical approval was obtained from the Institutional Ethics Committee of the Hospital Local del Norte, with reference number [038-2018]. Informed consent was obtained from all participants, ensuring that they were fully informed about the objectives, procedures, potential risks and benefits of the study. The study adhered to strict protocols to safeguard the privacy and confidentiality of participants, and data were anonymized and stored securely. No individual participants could be identified from the aggregated data, so ethics committee approval was not required for retrospective analyses.

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Conflict of Interest Statement

The authors declare that there are no conflicts of interest regarding the publication of this study.

Authors' Contribution

Luis Andrés Dulcey Sarmiento: Conceptualization, Methodology, Data Analysis, Writing - Original Draft, Supervision; Jaime Alberto Gómez Ayala: Data Collection, Analysis and Interpretation of Data, Writing - Review & Editing; Valentina Castañeda Otálora: Data Collection, Literature Review, Writing - Review & Editing; Shirley Vanesa Melo Martínez: Data Management, Statistical Analysis, Writing - Review & Editing; Jorge Andrés Hernández Navas: Project Administration, Funding Acquisition, Writing - Original Draft, Final Review; Diana Marcela Villamizar Olarte: Data Management, Statistical Analysis, Writing - Review & Editing.

Authors Declaration

All authors have read and approved the final manuscript and agree to be accountable for all aspects of the work.

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