FACTORS ASSOCIATED WITH POLYMEDICATION IN ELDERLY CARE IN PRIMARY HEALTH CARE

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ABSTRACT

Objectives: to identify the factors associated with polypharmacy in elderly people treated in Primary Health Care. Method: integrative literature review conducted in October 2021. The inclusion criteria were articles published in the last 10 years, in the language Portuguese and available in full. Repeated, off-the-topic and review articles were excluded. Results: 18 articles were part of this review. It was evidenced that polypharmacy is a reality among the Elderly Brazilians assisted in the scope of Primary Health Care. There was an association with multimorbidity, female gender, negative self-perception of health, poorer economic class, overweight, factors related to chronic diseases and frailty, not being able to read and write. Conclusion: knowledge of the factors associated with polypharmacy in the elderly is important for the reflection of health professionals regarding the importance of identifying and monitoring the most vulnerable groups of elderly. DESCRIPTORS: Polypharmacy; Aged; Primary health care.

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INTRODUCTION

The ageing of the population, caused by the demographic and epidemiological changes of the twentieth century, is becoming more and more prevalent in Brazil, requiring public policies and specific care for the elderly. With the physiological changes associated with ageing and the development of chronic diseases, there is a need for continued use of drugs. However, the ageing process alters pharmacokinetic and pharmacodynamic responses to drugs, and effects and side effects may be increased.

The population is ageing rapidly. There is evidence of an association between increasing age and the number of prescription drugs taken, leading to polypharmacy. In addition, because of their higher risk of developing chronic degenerative diseases, the elderly account for approximately 50% of drug users. According to the World Health Organization (WHO), polypharmacy, defined as the routine or concomitant use of four or more medicines, is one of the most important patient safety issues.

Studies have found an association between polypharmacy and several factors, including age and health status. Polypharmacy is problematic when multiple medications are prescribed inappropriately, or when the patient does not receive the expected benefit from one medication. Thus, primary health care (PHC) is essential for monitoring long-term drug treatment in older people, enabling and influencing access to health care, as well as for health promotion and the prevention of polypharmacy.

Elderly people, because of their age, require differentiated care by PHC practitioners, with a view of selecting a most appropriate and safe drug therapy, considering indications, dosage, interactions and contra-indications of each drug. In addition, pre-defined criteria for polypharmacy should be considered, beyond the best available evidence.

The nurse, in the context of PHC, should promote the rational use of medicines by the elderly population, providing health advice and education on the inappropriate use of non-prescribed medicines, explaining the importance of obtaining a doctor’s consent for any introduction, change or substitution of medicines, and ensuring that the patient takes the medicines as prescribed, avoiding drug interactions and minimizing the risk of adverse reactions.

The study of polypharmacy and its associated factors is of paramount importance for nurses, together with the multidisciplinary team of PHC, to develop guidelines for the management of chronic diseases in the elderly, with the aim of avoiding polypharmacy, achieving better health outcomes and ensuring the safety of elderly patients. It is noteworthy that the study will contribute to the reflection of care professionals on the factors associated with polypharmacy, with the aim of evidence-based practice. Therefore, the objective of this research is to identify the factors associated with polypharmacy in elderly people treated in PHC.
METHOD

This is an Integrative Literature Review that looks for similarities and differences between articles found in the scientific literature, resulting in a synthesis of knowledge based on the collection of information on a particular topic. This method is related to evidence-based practice, which combines research methods from different knowledge bodies that provide beneficial results for nursing care.\textsuperscript{13}

The methodological process for constructing the review included the following steps: selecting hypotheses to test; choosing selection criteria; collecting data using a tool to ensure the relevance of the information; synthesizing the produced knowledge; analyzing the data and results; and interpreting the results.\textsuperscript{14}

In this sense, the present study was carried out by the following guiding question: What are the factors associated with polypharmacy in elderly people treated at PHC in Brazil between 2011 and 2021, according to the scientific literature?

The following health science descriptors (DECs) and combined Boolean operators were used as search methods: “medication use” OR “medication” OR “polypharmacy” AND “elderly” AND “primary health care” OR “family health strategy”. The searches were performed in the following databases: bibliographic database specialized in the field of nursing (BDENF), Latin American and Caribbean literature in health sciences (LILACS) and online system for search and analysis of medical literature (MEDLINE). Data collection was conducted from October to November 2021.

To carry this review, we used the following criteria for inclusion of articles: publication period between 2011 and 2021, conducted in Brazil, in any language, respond to the objective and availability of full visualization. The following criteria were used to exclude articles: repeated articles, articles not available in their entirety, articles on topics outside the scope of PHC, integrative, narrative and bibliographical reviews or editorial letters, dissertations, theses and monographs.

To assess the results obtained, a classification of the level of evidence was used to determine the reliability for the use of the results.\textsuperscript{15,16} For the analysis of the articles, a careful reading of the titles and abstracts of all publications found by the search method was performed, applying the inclusion and exclusion criteria, followed by a full reading of the selected articles.

RESULTS

The searches in the databases initially yielded 3,971 results, of which 115 remained after the inclusion filters were applied (full text and publication period from 2011 to 2021). Of these, 97 were excluded, namely 56 were off topic; 38 did not address the objective; nine were not in the PHC framework; one was a letter to the editor; three were integrative revisions and six were repeated in the databases.

At the end of this review, 18 articles were included in this study, which were read in full, highlighting its journal title, database, publication year, authors, title of article, location, level of evidence\textsuperscript{16} and main results.

DISCUSSION

In a cross-sectional study of 227 older people in two Basic Health Units (BHU) in Belo Horizonte, Minas Gerais, polypharmacy was positively associated with age below 70 years and with more than three diseases. The authors emphasize the importance of care in PHC as an indicator to seek the safe and effective use of medicines, with the aim of minimizing the risk of health problems in the elderly.\textsuperscript{17}

In parallel, an analytical study of 100 elderly people in Santa Catarina showed that among the elderly with multimorbidity and polypharmacy, 78% were female. The average age was 69.3 years, 42% had less than four years of schooling and 76% belonged to economic class C. The data from this study indicate that polypharmacy in the elderly should be carefully monitored under the supervision of health professionals.\textsuperscript{18}

In a study of 153 older people registered with a Family Health Strategy (FHS) in Mato Grosso do Sul, having suffered at least one fall in the past year, being a smoker and rating their health as fair, poor or very poor were associated factors. In line with the studies described above, the average age of the elderly in polypharmacy was 69.8 years.\textsuperscript{19}

Alcohol consumption is inversely related to polypharmacy, according to a study carried out in Brasília, Federal District. Only 7.32% of older people on polypharmacy consumed al-
<table>
<thead>
<tr>
<th>Journal/ Database</th>
<th>Year</th>
<th>Authors</th>
<th>Title</th>
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<th>Evidence Level</th>
<th>Results</th>
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<tbody>
<tr>
<td>Science &amp; Collective Health / MEDLINE</td>
<td>2021</td>
<td>Oliveira PCD, Silveira MR, Cecotto MDGB, Reis AMM, Pinto IVL, Reis EA</td>
<td>Prevalence and Factors Associated with Polymedication in Elderly: Attended in Primary Health Care in Belo Horizonte-MG, Brazil</td>
<td>Belo Horizonte</td>
<td>IV</td>
<td>Age ≤ 70 years, schooling &gt; 8 years, presence of more than three diseases and symptoms of depression</td>
</tr>
<tr>
<td>Research Journal (Federal University of the State of Rio de Janeiro)/LILACS</td>
<td>2021</td>
<td>Bongiovani LFLA, Miotto N, Restelatto MTR, Celotin SF, Beltrame V</td>
<td>Multimorbidity and polypharmacy in elderly residents in the community</td>
<td>Joaçaba, Santa Catarina, Brazil</td>
<td>IV</td>
<td>Women and lower economic class</td>
</tr>
<tr>
<td>Brazilian Journal of Family and Community Medicine / LILACS</td>
<td>2020</td>
<td>Andrade NO, Alves AM, Luchesi BM, Martins TCR</td>
<td>Polymedication in adults and the elderly enrolled in the Family Health Strategy: association with sociodemographic factors, lifestyle, social support network and health</td>
<td>Triês Lagoas, Mato Grosso do Sul, Brazil</td>
<td>IV</td>
<td>Have suffered at least one fall in the last year, is a smoker, evaluate health as fair/bad/very bad.</td>
</tr>
<tr>
<td>Journal of Scientific Dissemination S/ LILACS</td>
<td>2019</td>
<td>Melo DAD, Pereira LC, Karnikowski MGDO, Garcia KR, Melo GFD, Chiarello MD</td>
<td>The use of polypharmacy and alcohol consumption in the elderly population of a neighborhood of Brasilia</td>
<td>Campinas (São Paulo); Belém (Pará); Poços de Caldas (Minas Gerais); Ermelino Matarazzo (São Paulo); Campina Grande (Paraíba); Parnaíba (Piauí) and Ivoi (Rio Grande do Sul), Brazil</td>
<td>IV</td>
<td>Alcohol consumption was inversely associated with polypharmacy in the elderly</td>
</tr>
<tr>
<td>Brazilian journal of geriatrics and gerontology/LILACS</td>
<td>2019</td>
<td>Marques PDP, Assumpção DD, Rezende R, Neri AL, Francisco PMSB</td>
<td>Polymedication in community elderly: results of the Fiber study</td>
<td>Campinas (São Paulo); Belém (Pará); Poços de Caldas (Minas Gerais); Ermelino Matarazzo (São Paulo); Campina Grande (Paraíba); Parnaíba (Piauí) and Ivoi (Rio Grande do Sul), Brazil</td>
<td>IV</td>
<td>Obesity, increased waist circumference, and the presence of two, three, or more chronic diseases.</td>
</tr>
<tr>
<td>Medicine (Ribeirão Preto Online)/LILACS</td>
<td>2018</td>
<td>Carneiro JA, Ramos GCF, Barbosa AT, Medeiros SM, Lima CDA, Costa FM et al</td>
<td>Prevalence and factors associated with polypharmacy in community-based elderly: a population-based epidemiological study</td>
<td>Minas Gerais, Brazil</td>
<td>IV</td>
<td>High blood pressure, diabetes mellitus, heart problem, osteoporosis, stroke, frailty and not knowing how to read</td>
</tr>
<tr>
<td>Science &amp; Collective Health / MEDLINE</td>
<td>2018</td>
<td>Silva MRR, Diniz LM, Santos JBR, Reis EA, Mata AR, Araújo VE et al</td>
<td>Use of medications and factors associated with polypharmacy in individuals with diabetes mellitus in Minas Gerais, Brazil</td>
<td>Minas Gerais, Brazil</td>
<td>IV</td>
<td>Aging, presence of comorbidities and greater access to health services.</td>
</tr>
<tr>
<td>Journal of Public Health / MEDLINE</td>
<td>2018</td>
<td>Córrolo VS, Binotto VM, Bohnen LC, Santos GAG, De-Sá CA</td>
<td>Polymedication and associated factors in diabetic elderly</td>
<td>Frederick Westphalen,Rio Grande do Sul, Brazil</td>
<td>IV</td>
<td>Retirement</td>
</tr>
<tr>
<td>Journal of Public Health / MEDLINE</td>
<td>2017</td>
<td>Nascimento OCRM, Álvaro J, Guerra Junior AA, Gomes IC, Silveira MR, Costa EA et al</td>
<td>Polymedication: a reality in the primary care of the Unified Health System</td>
<td>Five regions of Brazil</td>
<td>IV</td>
<td>Age group over 45 years, low self-perception of health, presence of chronic diseases, having health insurance, emergency service care and region of the country</td>
</tr>
<tr>
<td>Brazilian Journal of Epidemiology / MEDLINE</td>
<td>2017</td>
<td>Pereira KG, Peres MA, Iop D, Boing AC, Boing AF, Aziz M et al</td>
<td>Polymedication in the elderly: a population-based study</td>
<td>Santa Catarina, Brazil</td>
<td>IV</td>
<td>Female gender, increased age, negative self-rated health and medical consultation in the last 3 months</td>
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cohort, showing that they avoid risky habits such as excessive alcohol consumption.20

A study of older adults living in urban areas of seven Brazilian cities found that older adults who rated their health as poorer and who were multimorbid were more likely to use polypharmacy, as were Caucasians, who were overweight and who had a higher waist circumference.21

In addition, a cross-sectional cohort of 676 older people living in small communities in Rio Grande do Sul concluded that multimorbidity may negatively affect older people’s self-perception of health and contribute to increased medication use.22

In parallel, another study surveyed 686 elderly people in Minas Gerais and found the following factors associated with polypharmacy: arterial hypertension, diabetes mellitus, heart problems, osteoporosis, stroke, frailty and inability to read. There are important associations with factors related to chronic diseases and frailty.23

Another study of six frail elderly people in Minas Gerais also found a link between polypharmacy and frailty. In frail older people, the presence of different health problems can lead to the use of multiple medicines. This condition requires joint action by the state, the health care team, especially the nurse, the family and the elderly themselves.24

A study aimed at assessing the practice of polypharmacy and related factors in elderly people living in rural and urban areas was carried out in Santa Catarina, involving 242 elderly people. However, no significant association was found with the place of residence of the elderly (urban or rural environment) but with sex, single marital status, not being able to read and write, and a female sex, single marital status, not being able to read and write, and a female sex, single marital status, not being able to read and write, and a female sex, single marital status, not being able to read and write, and a negative self-perception of health. Based on the results, the authors show that promoting the rational use of medicines by health professionals should reduce complications related to the use of multiple medicines.25

Accordingly, a cross-sectional population-based study of a sample of 1,705 older people living in the urban area of Florianópolis, Santa Catarina, identified the following associations: female sex, negative self-rated health, medical consultation in the 3 months before the interview and increasing age. The groups of medicines most used by the elderly were those for the cardiovascular system, the digestive tract, the metabolism and the nervous system.26

A nationwide study of polypharmacy among health service users surveyed 8,803 users of PHC units in 272 Brazilian mu-
municipalities from the five regions of Brazil. An association was found between polypharmacy and low self-perceived health and the presence of chronic diseases, which is consistent with other studies analyzed. There was also an association with emergency care and with the region of the country, with users in the South region having the highest likelihood of polypharmacy. The most used drugs were those for the cardiovascular system.\textsuperscript{27}

In line with this, another cross-sectional population-based study with a national probability sample (n = 9,019) found that polypharmacy was higher among the elderly (20.0%), in the southern region (25.0%), among those who rated their own health as poor (35.0%), among the obese (26.0%), among those who reported hospitalisation in the last year (31.0%) and among those who reported chronic diseases, mainly diabetes mellitus (36.0%) and heart disease (43.0%).\textsuperscript{28}

A cross-sectional study assessing the health and nutritional status of 418 older people in Goiás found a significant association with the age group 75-79 years. It was also associated with being female, obesity, nutritional status, use of dietary supplements, poor health perception and the presence of multimorbidity.\textsuperscript{29}

In addition, a study conducted in São Paulo with a sample of 1,115 elderly people also showed that age equal to or greater than 75 years, female sex, regular or poor self-rated health and chronic diseases such as hypertension, diabetes, rheumatic diseases and heart problems showed a positive association with polypharmacy.\textsuperscript{30}

A sample of 211 elderly people were followed by an FHS team in a cross-sectional study conducted in Brazíliândia, Federal District. Of the sample, 29.4% were receiving polypharmacootherapy, and the majority (26.5%) were using three different classes of drugs, with antihypertensive drugs being the most used. Diabetes mellitus, cardiovascular complications and the use of antihypertensive drugs were the factors associated with polypharmacy, which is a worrying reality and requires new attitudes on the part of health professionals to avoid harm and iatrogenic disease in the elderly.\textsuperscript{31}

A cross-sectional study of 2619 people with diabetes mellitus in Minas Gerais. The authors showed that factors such as age, presence of multimorbidity and better access to health services were associated with polypharmacy.\textsuperscript{32} Another study of 127 elderly people diagnosed with type 2 diabetes mellitus in Rio Grande do Sul found that retirement made a statistically significant association with polypharmacy.\textsuperscript{25}

A cross-sectional population-based study assessed the self-reported health status of elderly people living in the municipality of Cuiabá, Mato Grosso do Sul. Elderly people who lived together, who reported financial difficulties in obtaining medication and who had some comorbidities were associated with polypharmacy, demonstrating that some social and health status aspects play an important role in the use of multiple medications among the elderly.\textsuperscript{33} The effective use of medicines requires the coordinated work of a team of professionals who provide direct support to the user.\textsuperscript{34}

Therefore, the nurse, as a member of the PHC team, should be aware of the ageing process and the strategies that contribute to better care for the elderly, including in this care the appropriate interventions regarding the rational use of medications. This professional can be a protagonist in the study of the use of polypharmacy in the elderly, with the aim of seeking alternatives that can minimize this practice.\textsuperscript{24}

The limitation of this study relates to the paucity of articles on the topic, especially from the perspective of nursing care of elderly patients with polypharmacy, which provides opportunities for further investigation. Further studies are needed to identify interventions to manage polypharmacy in the elderly in PHC, especially those carried out by the nursing team.

The discussions in this study can contribute to the consideration of measures related to the training of professionals to identify the factors associated with polypharmacy in the elderly in PHC, with the aim of providing comprehensive care. The study provides relevant data for the differentiation of groups in a state of greater vulnerability, thus contributing to the optimization of care for the elderly with polypharmacy, reinforcing the need for health education actions and the search for rational use of medicines.

**CONCLUSION**

The results of this RIL made it possible to identify the factors associated with polypharmacy among elderly people treated in PHC. It was demonstrated that the use of five or more medications is a reality among Brazilian elderly people treated in PHC. In most of the articles analyzed, a significant association was found between polypharmacy and multimorbidity, female sex, negative self-perception of health, low economic class, overweight, factors related to chronic diseases and frailty, and illiteracy.

The need for specific health care for aged people, taking into account the factors identified, is highlighted, and polypharmacy increases the risk of adverse effects, cumulative toxicity and drug interactions. The number of medications prescribed should consider the real needs of each individual and the analysis of potential benefits and risks. Therefore, nurses, together with the PHC team, should regularly evaluate the therapeutic regimens of older people, focusing on adherence and risk identification, to minimize harm and maximize benefit.

**REFERENCES**


Factors associated with polymedication in elderly care in primary health care


