proceedings

Proceeding Paper

Prevalence of Potentially Inappropriate Medication Use in Older Adults with Chronic Diseases †

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† Presented at the VII Poster Sunset Session—ESSUAlg 2024, Faro, Portugal, 30 January 2024.

Abstract: Older adults often consume high amounts of medicines, some of which may not be suitable for their age. A cross-sectional descriptive study was carried out on elderly people (>60 years) diagnosed with chronic diseases and taking at least one medication. The consumption of potentially inappropriate medication (PIM) was analyzed using the EU(7)-PIM List. Of the 65 elderly included, the majority were women (83.1%), diagnosed with hypertension (60.0%), and took 4.09 ± 2.104 medicines. More than 58% consumed at least one PIM. Nervous system PIMs were the most prevalent (29.2%, n = 19). There is a high prevalence of PIM use among the elderly, necessitating regular evaluation for safer medication use.

Keywords: chronic diseases; elderly; potentially inappropriate medication

Citation: Nascimento, T.; Andrade, A.; Cabrita, C.; Pais, S.; De la Puerta, R. Prevalence of Potentially Inappropriate Medication Use in Older Adults with Chronic Diseases. *Proceedings* **2024**, *99*, 7. https://doi.org/10.3390/proceedings2024099007

Academic Editors: Ana Luísa De Sousa-Coelho, Mónica T. Fernandes, M. Dulce Estêvão, Margarida Espírito-Santo and Luis Braz

Published: 11 April 2024

1. Introduction

Europe is currently the oldest continent, with around 25% of the world's population aged over 60 [1]. In Portugal, data from 2022 show that 29.70% of the population was aged 60 or over, and this percentage is projected to increase to 40.30% by 2050 [2]. The aging process is a risk factor for the development of chronic diseases, as well as leading to anatomophysiological and metabolic changes that must be considered in the pharmacological treatment and medical care of patients [3]. Many elderly people suffer from chronic diseases that result in the prescription of various medicines and, consequently, in polymedication, increasing the risk of potentially inappropriate medication (PIM) consumption [4]. PIMs are medicines that should be avoided in older people because the risk of adverse effects outweighs the expected benefit, especially when more or safer alternatives are available for the same condition. Indeed, PIMs are associated with preventable drug-related events and negative health outcomes, such as hospitalizations [5]. It is therefore important to know the prevalence of the use of potentially inappropriate medicines in the elderly population with chronic diseases.

2. Methods

A cross-sectional descriptive study was carried out, which included elderly people (≥60 years old) who are autonomous in managing their health and medication, diagnosed with chronic diseases, and taking at least one medication.

Data were collected through a face-to-face interview: sociodemographic data (age, gender, marital status, and educational level), clinical data (diagnosis of chronic pathologies), and pharmacotherapeutic data (medicines used, including non-prescription medicines).

All the medicines were organized according to the Anatomical Therapeutic Chemical (ATC) Code, level 3 [6]. The PIMs were considered in accordance with the European EU(7)-PIM List, which is operationalized for Portugal [7].

The collected data were analyzed using IBM SPSS Statistics, version 29.0. Descriptive measures were calculated, including absolute frequencies, means, standard deviations (SD), maximums, and minimums were calculated whenever necessary.

3. Results

3.1. Sociodemographic and Clinical Characterization

A total of 65 elderly were included, with an average age of 71.48 ± 6.096 years (range 60–82), mostly women (83.1%, *n* = 54), married (55.4%, *n* = 36), and with four years of schooling (60%, *n* = 39). The most prevalent chronic diseases were hypertension (60.0%, *n* = 39), osteoarthritis and/or osteoporosis (55.4%, *n* = 36), dyslipidemia (44.9%, *n* = 29), diabetes mellitus (32.3%, *n* = 21), and depression and/or anxiety (32.3%, *n* = 21).

Regarding the pharmacotherapeutic profile, it was found that, on average, they consumed 4.09 ± 2.104 medicines (range 1–11). About 40% (*n* = 26) were polymedicated (five or more medicines). The most consumed medicines belonged to ATC C (cardiovascular system), with 78.1% (*n* = 51) of the elderly consuming at least one medicine, followed by ATC N (nervous system) with 56.9% (*n* = 37). On average, the elderly consumed 1.53 ± 1.284 medicines from ATC C and 1.00 ± 1.186 medicines from ATC N. Around 39% (*n* = 25) consumed at least one medicine from ATC M (musculoskeletal system), 32.4% (*n* = 21) consumed medicines from ATC A (Alimentary tract and metabolism), and 18.7% (*n* = 13) consumed medicines from ATC B (blood and blood-forming organs). The other ATC classifications had less significant consumption.

3.2. Characterization of the Use of Potentially Inappropriate Medicines

A total of 68 PIMs were identified out of a total of 266 medicines analyzed, i.e., around 26% of the medicines consumed by the elderly were classified as potentially inappropriate. On average, the elderly consumed 1.05 ± 1.124 PIMs (range 0–4). More than 58% of the sample (*n* = 38) consumed at least one PIM, with 30.8% (*n* = 20) consuming two or more PIMs.

The most prevalent ATC group was ATC N, in which 29.2% (*n* = 19) of the elderly consumed at least one PIM (Figure 1), mainly related to the consumption of ATC N05 (psycholeptics), (25%, *n* = 16). The use of at least one benzodiazepine (ATC N05B) was verified in 20% (*n* = 13) of the elderly.

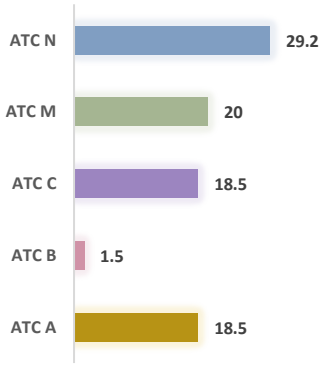

Figure 1. Most consumed PIMs (%) by ATC group. ATC A: alimentary tract and metabolism; ATC B: blood and blood-forming organs; ATC C: cardiovascular system; ATC M: musculoskeletal system; ATC N: nervous system.

Among the PIMs belonging to ATC A (18.5%, *n* = 12), the elderly mainly used medicines for the treatment of peptic ulcers (ATC A02B), such as proton pump inhibitors (15.4%, *n* = 10).

Of the drugs belonging to ATC C (18.5%, *n* = 12), the consumption of calcium channel blockers (ATC C08), classified as PIMs in the elderly, namely nifedipine (ATC C08C), verapamil, or diltiazem (ATC C08D), was the most prevalent (9.2%, *n* = 6).

All the medicines identified as potentially inappropriate in the ATC M group (20.0%, *n* = 13) belonged to the non-steroidal anti-inflammatory drugs (NSAID).

4. Discussion

The prevalence of PIM use is high all over the world. A systematic review and meta-analysis showed a global prevalence of PIM use of 36.7% [8], which is lower than that found in this study (58.5%). However, other studies show prevalence rates closer to those found [9,10]. A study carried out in Portugal showed that 79.7% of elderly people admitted to an internal medicine service used at least one PIM [11]. The diversity of PIM assessment instruments may explain the discrepant results. In the same study, the prevalence according to the Beers criteria was 92.0%, and, according to the STOPP criteria, it was 76.5% [11].

As in this study, there is a high prevalence of PIMs belonging to the nervous system class (ATC N), namely benzodiazepines. In fact, the consumption of these drugs in Portugal is high [12]. The high rate of prescription of benzodiazepines may be due to the high prevalence of insomnia in the elderly [13]. However, organic and functional deterioration in the geriatric population means that the use of these drugs increases the risk of falls, fractures, and cognitive impairment [14,15].

In addition to benzodiazepines, proton pump inhibitors also had a high rate of consumption (15.4%). In a recent study, Fialho and colleagues [16] found an even higher prevalence (>40%) in elderly people treated in primary healthcare.

The use of PIMs belonging to ATC C does not seem to be very prevalent, contrary to the results of this study. However, attention should be paid to their use in the elderly, particularly selective calcium channel blockers as they can increase the risk of hypotension, acute myocardial infarction, and the risk of mortality (nifedipine), or increase the risk of constipation or bradycardia (diltiazem, verapamil) [17].

5. Conclusions

The rate of consumption of PIMs in the elderly was high, particularly of benzodiazepines, NSAIDs, and proton pump inhibitors. It is important to evaluate the use of PIMs in clinical practice, allowing for improved prescribing and greater safety in the use of medicines by the geriatric population.

Author Contributions: Conceptualization, T.N.; methodology, T.N., S.P. and R.D.l.P.; formal analysis, T.N., A.A. and C.C.; resources, T.N. and S.P.; data curation, T.N. and S.P.; writing—original draft preparation, T.N., A.A. and C.C.; writing—review and editing, T.N., S.P. and R.D.l.P.; supervision, S.P. and R.D.l.P.; project administration, S.P. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: This study was conducted in accordance with the Declaration of Helsinki and approved by the Ethics Committee of the University of Algarve (CEUAlgPnº6a)/2021, 15 June 2021).

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: Due to de privacy restrictions, data presented in this study are available upon request to the corresponding author.

Conflicts of Interest: The authors declare no conflicts of interest.

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