Evaluation of Polypharmacy in Individuals over 65 Years of Age in Balçova District of Izmir

Özden Gokdemir[1], Dilek Ersil Soysal [1], Halil Pak[2], Melis Kartal Yandım[1], Ilgi Semin[1]

[1]Department of Family Medicine, Izmir University of Economics, Faculty of Medicine, İzmir, Turkey
[2]Independent researcher, Turkey

ABSTRACT

Objectives: The morbidities and long-term multiple medication use among elderly.

Methods: The study was conducted by the 2nd grade medical students from Izmir University of Economics under the supervision of instructors. In this descriptive cohort, the study sample included 45 individuals over 65 years of age among the identified 150 residents in Balcova. The response rate was 26.4% for men and 73.3% for women. A questionnaire was defined for a face-to-face interview, which included sociodemographic variables, medical history, lifestyle, systems inquiry, and a detailed list of all medications.

Results: Mean age of the elderly was 78.5 ± 7.2 years. Women, widows, and primary school graduates constituted the majority. Hypertension, osteoarthritis, and osteoporosis were the leading morbidities by 71.1, 46.7 and 31.1% respectively. Stroke, kidney disease and migraine were the least morbidities by 3%. 66.7% were using five or more than five medications, 93.3% were using medications prescribed by the doctor, none complained of adverse effects, 4.4% were non-compliant to treatment and 28.9% were using vitamin supplements and herbal remedies.

Conclusion: Increase in the prevalence of age-related chronic diseases is accompanied by an increase in polypharmacy,

Key words: Polypharmacy, elderly, community-based health practice

Prescriptions are the second most expensive component of health-care expenditures in developed countries. [1-3] The use of pharmaceuticals to treat chronic diseases and ailments (such as heart disease, high cholesterol, hypertension, diabetes, and depression) is becoming more common. [4-5]

According to World Health Organization (WHO) data, the global population of elderly is increasing every year due to increased life expectancy. While there were 580 million people over the age of 65 in 1998, this number is anticipated to rise to 1.97 billion by 2050. [6] As people live longer, managing many chronic diseases becomes more critical. [7] Prescription medications are used to treat both physical and mental ailments. [8] As life expectancy increases, so do health issues, particularly cardiovascular diseases and musculoskeletal disorders. [9, 8]

Multiple drug usage (polypharmacy) is defined as the use of more than one drug at the same time and is a common concern in old age. Although there are many pharmaco-epidemiological studies on this topic in developed countries, there are quite few in our country.

[7] Antibiotics, antihypertensives, and analgesics are among the pharmacological categories that have been linked to adverse effects when combined with other medications. [11, 12]

The American Geriatrics Society (AGS) maintains a list of unsuitable drugs for people 65 and older based on the regularly updated AGS Beers Criteria®, which is related to safe drug use in the elderly. Since the last update, a professional panel of 13 members has systematically evaluated the evidence and released the update in January 2019. Thirty potentially unsuitable drugs/drug classes are included in the new AGS Beers Criteria for older adults. In addition, there are 40 conditions that should be avoided or used with caution in the elderly. [13, 14] The Beers Criteria®, a management tool. [13, 14] have now been removed because researchers have demonstrated that it causes a rise in the costs. [13, 14]

The aim of this study was to evaluate the prescription and /or usage of medicines among elderly people via face-to-face interview technique during home visits. This study was developed specifically for the senior population, where long-term and multiple drug use is frequent, in order to understand the causes of multiple drug use and to offer sensible drug use advice.

METHODS

In the 2018-19 academic year, medical students (36 second-year students) and nurses (31 third-year students) coordinated the community-based health practice (CBHP), which also included elderly care and physiotherapy (44 first-and second-year students). The students from the nursing-medical and physiotherapy-elder care programs were paired up. Students attended lectures on the biopsychosocial characteristics of the elderly, geriatric risk factors, and communication techniques before the house visits. The neighborhood was identified as the university district, Balçova, within the parameters of the project. With the assistance of the district municipality, about 120 elderly people were shortlisted. Elderly people who had been previously informed about the project were visited at home by faculty members who shared information with them. The final group included 45 elderly people who gave permission for the house visits. The faculty members set up the appointments. Over the course of a six-week period, each student group paid the designated elderly person three visits.

In this study, it was aimed to evaluate multiple medication usage among a community sample over age 65 who are living in their own home in the vicinity of Izmir University of Economics of Balçova district in İzmir. The research was planned in a descriptive-cohort design. All of those who gave consent to the study were included in the research group by face-to-face interview. The records of the health information of the elderly, their sociodemographic characteristics and the questionnaire prepared by the researchers were applied through face-to-face interviews.

The statistical analysis was performed by SPSS (statistical package for social sciences, SPSS Inc., Chicago) package program. Descriptive analysis, the mean and standard deviation was used for continuous variables, the median and interquartile range was used in the absence of a normal distribution in variables, and number and percentage was used for categorical variables.

RESULTS

Mean age of the elderly was 78.5 ± 7.2 years. Women, widows, and primary school education constituted the majority.

Hypertension, osteoarthritis, and osteoporosis were the leading morbidities by 71.1, 46.7 and 31.1% respectively. Stroke, kidney disease and migraine were the least morbidities by 3%. Among elderly population, 28.9% had six or more than six morbidities, 66.7% were using five or more than five medications, 6.7% were without medication, 93.3% were using medication prescribed by the doctor, none complained of adverse effects, 4.4% were noncompliant to treatment and 28.9% were using vitamin supplements and herbal remedies.

This study was a cross-sectional study. Unfortunately target population couldn't be reached. Although the insufficient number of samples, we wanted to present its results and discuss its contribution to the literature.

DISCUSSION

In our study, 28.9% had six or more than six morbidities, 66.7% were using five or more than five medications. According to BEERS criteria, defining polypharmacy through daily drug usage is insufficient. Drug-drug interactions are crucial, too. For example,

"Ciprofloxacin in combination with theophylline increases risk of theophylline toxicity. The concurrent use of a combination of three or more central nervous system (CNS) agents (antidepressants, antipsychotics, benzodiazepines, nonbenzodiazepine benzodiazepine receptor agonist hypnotics, antiepileptics, and opioids) and increased fall risk have been collapsed into one recommendation instead of separate recommendations for each drug class". [13] So these participants were at risk of their chronic conditions and also drug-drug interactions.

Olgun *et. al.* has revealed that *"...following medicines had inappropriate prescribing according to AGS Beers Criteria®: nifedipine (n = 410) 68.8%, amiodarone (n = 43) 44.2%, CNS medicine (n = 506) 21.5%, barbiturate (n = 67) 0%, glimepiride (n = 177) 53.7%, and PPI (n = 2052) 29.2%. While the prevalence of inappropriateness, as determined by Beers Criteria® and similar criteria, ranges from 13 to 35% worldwide, it is 23% in European countries and 33% in our country."* [14] In this study the electronic records of 66136 prescriptions belonging to 13906 different patients and processed in a pharmacy in Istanbul between January 2014 and February 2019 were analyzed. [14] Although our sample is less and the data collection was performed according to the self-information, polypharmacy rate was similar.

Silva et al revealed that "Herbal supplements are popular among the elderly, a society that takes a larger amount of prescription medications when compared to younger populations. Among the issues raised by these studies was a lack of communication between patients and healthcare providers regarding the use of herbal supplements. When making pharmacological treatment decisions, prescribers must consider the use of herbal supplements and consult with their elderly patients." [16] In terms of the most commonly used herbal supplements, gingko biloba and garlic are both known to be beneficial in chronic diseases that are more common in the elderly. Gingko biloba is widely used for its reported effects on memory, concentration, and cognitive dysfunction treatment. However, combining gingko with prescription and over-the-counter medications can result in dangerous drug interactions. The combination of gingko and antiplatelet drugs and/or anticoagulants may increase the risk of bleeding complications because both gingko and these drugs reduce the ability of the blood to clot. [17] In our study 28.9% of the participants were using vitamin supplements and herbal remedies. This was approximately same as the study of Agbabiaka et al. [18] To improve knowledge and skills about polypharmacy, MOOC trainings could be a useful and appropriate tool for the physicians while not only polypharmacy but also chronic conditions are still main problems for elderly. [19, 20, 21]

Medication Use In The Elderly

Physiological effects in the elderly that may alter medication. These changes include drug absorption by tissues, diffusion, use in the body, excretion, and impact, which results in receptor sensitivity in predicted tissues. The elderly are affected differently depending on the changes. [22]

Drugs that depress the central nervous system, antibiotics, analgesics, anticoagulants, and antihypertensives are the most prevalent side effects among the elderly, followed by bronchodilators, diuretics, and oral hypoglycemic medicines. [23, 24]

It's possible that it's a medicine adverse effect. The following findings are required in the elderly: sortable; sadness, confusion, restlessness, falling, memory loss, extrapyramidal system findings (Parkinsonism, tardive dyskinesia), constipation, and incontinence. [25]

There are some dangers associated with increasing compliance with pharmacological therapy and ensuring safe use. It is critical to understand the variables. For example, the elderly individual should be asked what he does when he forgets, whether he knows the side effects of the drugs he uses, which side effects the purpose of use of the recommended drugs and the drug, whether he knows the duration of use, whether he has used these drugs before, and whether he has used aids such as a reminder note, alarm, or medicine box benefit. Similarly, social security status, pharmaceuticals from the budget if he/she can afford them, whether he/she has financial troubles, and ultimately, whether she feels better following drug therapy. [24]

Academic Geriatrics Association, a total of 49 expert (consultant) faculty members from (12 different departments and 5 different Internal Diseases Departments) and 23 working groups participated under the leadership of the Academic Geriatrics Association Rational Medicine Working Group, with the wide participation of faculty members who are experts in their fields and experienced in the clinical practice of elderly patients in Turkey has reported the Turkish Inappropriate Medication Use in the Elderly (TIME) Criteria as "TIME-to STOP and 41 TIME-to START". [26] These tools also could help physicians not to tend to "polypharmacy". Although we couldn't reach the target population, our findings revealed that most of the individuals were not complaining about side-effects.

Follow-up of physicians seems essential for wellness of elderly to prevent them from global risk of "polypharmacy". [27]

CONCLUSION

Increase in the prevalence of age-related chronic diseases is accompanied by an increase in polypharmacy, which carries health risks of noncompliance to treatment. Well-structured patient follow-up for elderly with improved tools could prevent from the negative effects of polypharmacy.

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