ORIGINAL RESEARCH PAPER

Volume-8 | Issue-6 | June-2019 | PRINT ISSN No. 2277 - 8179

INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

AN OBSERVATIONAL CASE STUDY BETWEEN POLYPHARMACY AND UNDERPRISCRIPTION IN ELDERLY POPULATION

General Medicine

Dr. Rahul Kumar* Assistant Professor, Department Of Geriatrics, Patna Medical College, Patna, Bihar
*Corresponding Author

ABSTRACT

Multimorbidity is one of the major problems that arise as populations age. In addition to issues in taking their medication themselves, multimorbid senior patients are more vulnerable to prescription problems. Even in the best case scenarios, using good clinical practice and accepted guidelines for prescribing medication, the physician is obliged to use multiple guidelines for the treatment of various conditions within the same patient. Polypharmacy is to describe multiple, excessive, unnecessary, or unindicated drug consumption, each type of polypharmacy has specific consequences on both the patient and the health system. Underprescription was defined as lack of drug treatment for a present disease, for which drug therapy is indicated normally and for which no contra-indication, therapy failure or relevant adverse effects, for which the drug was stopped, was found.Present study is to observe association between polypharmacy and underprisciption.

KEYWORDS

Polypharmacy, Underpriscription, Aging

INTRODUCTION

Elderly patients often require multiple medications to adequately and appropriately treat their diabetes and associated comorbidities. Careful attention to avoiding drug interactions, limiting unnecessary medications, and choosing drugs most appropriate for elderly patients will lead to optimal outcome

Ageing—along with its associated physiological and pathological changes—places individuals at a higher risk of multimorbidity and treatment-related complications. Today, polypharmacy, a common and important problem related to drug use, occurs subsequent to this multimorbidity in the elderly in all populations. In recent decades, several scientific investigations have studied polypharmacy and its correlates, using different approaches and definitions, and their results have been inconclusive. Differences in definitions and approaches in these studies form a barrier against reaching a conclusion regarding the risk factors and consequences of polypharmacy. It is therefore imperative to establish an appropriate definition of polypharmacy.

Rational medication prescribing dictates that the fewest medications be used to achieve the therapeutic goals as determined by clinician and patient. Multiple medications not only add to the cost and complexity of therapeutic regimens, but also place patients at greater risk for adverse drug reactions and drug-drug interactions. Studies evaluating appropriate prescribing in the elderly consistently find frequent polypharmacy and use of excessive or potentially harmful drugs. To address the problem of inappropriate polypharmacy, efforts have been studied in both inpatient and outpatient settings to decrease use of unnecessary medications, as well as the overall number of medications, both in inpatient and outpatient settings.

DEFINITION OF POLYPHARMACY

Although the term “polypharmacy” is frequently used, it is not clearly defined in the literature. Remarkably, this term is not addressed in several standard textbooks of pharmacology. One simple definition is based on the total number of different medications a patient takes concomitantly. This definition allows for easy identification of patients with polypharmacy issues for organizations that have a unified formulary with pharmacy benefits, such as health maintenance organizations or the Department of Veterans Affairs (VA). The number of medications constituting polypharmacy may be as high as 10,(**2**)but most definitions use five or six medications.**(3–7**)These definitions do not account for as-needed medications or over-thecounter (OTC) medications, including herbal products. It is also not clear how inhaled medications, ophthalmic drops, or topical medications are qualified in these definitions. Thus, while this definition is simple and easy to apply, it uses arbitrary numbers of medications and does not account for appropriate or inappropriate uses of medications. A more clinically useful definition is “the prescription, administration, or use of more medications than are clinically indicated.”(**8**) Inappropriate drug combinations, unnecessary medications, and inappropriate drugs for specific patients (such as the elderly) constitute the problems of polypharmacy. Thus, patients receiving only two medications could have polypharmacy. While intellectually more satisfying, this definition is limited by several factors. Primarily, it generally requires review of patient-specific information and is labor intensive. Of some help are computer programs that review pharmacy profiles to identify inappropriate drug combinations, including those with serious potential interactions. Expert panels have developed consensus-based lists of medications considered to be inappropriate for use in the elderly.(**9**)For the purposes of this article, polypharmacy will be defined using the simpler definition of use of multiple medications for a single patient.

As aforementioned, multimorbidity is one of the major problems that arise as populations age. In addition to issues in taking their medication themselves, multimorbid senior patients are more vulnerable to prescription problems. Even in the best case scenarios, using good clinical practice and accepted guidelines for prescribing medication, the physician is obliged to use multiple guidelines for the treatment of various conditions within the same patient. On the other hand, available guidelines are usually devised with focus on a single disease, and overlook the possibility of comorbidities and the consumption of other medications by the patient. This increases the chances of ADR, drug–drug interaction and drug–disease interaction, and eventually poses greater risks to the patient as a result of a prescription cascade and already deteriorating health. This is a condition described as problematic or inappropriate polypharmacy, as opposed to appropriate polypharmacy, where the use of a combination of medicines has been optimised.

Self-medication is a potential cause of polypharmacy and the availability of diverse over-the-counter drugs, especially potentially inappropriate medications for older people, exacerbate this problem. Other issues related to drug use include low literacy in general or low health literacy in particular. Additional contributing factors include miscommunication or misunderstanding physician orders as a result of cognitive dysfunction, and mistaking drugs because of similarity in shape or colour, both of which can arise more often in older age groups.

Although the concept of 'polypharmacy' is used interchangeably to describe multiple, excessive, unnecessary, or unindicated drug consumption, each type of polypharmacy has specific consequences on both the patient and the health system. Each definition of polypharmacy implies that the patient has been exposed to a different risk, and is therefore subject to a variety of different consequences, including higher costs, higher prevalence of ADR, reduced compliance and adherence, lower quality of life, higher risk of hospitalisation and even death.

Research on polypharmacy is mainly aimed at reducing inappropriate prescription of drugs, drug–drug and drug– disease interactions. However, despite of the use of many medicines, undertreatment is also frequent present in the elderly (1) The objective of this study was to investigate the relationship between polypharmacy and

underprescribing in a geriatric population.

MATERIALS AND METHODS

We collected data from all geriatric patients attending the Geriatric and Medicine OPD .Proper consent was taken beforehand. We collected data concerning past medical history, current medical problems, and medication use to evaluate the applied therapy. The primary endpoint was the frequency of underprescription. Underprescription was defined as lack of drug treatment for a present disease, for which drug therapy is indicated normally and for which no contra-indication, therapy failure or relevant adverse effects, for which the drug was stopped, was found .The patients were questioned about present diseases and examined. The conditions were evaluated using laboratory data and clinical examination. Actual treatment was compared with the pharmacological treatment.

Polypharmacy defined as the concomitant use of five or more drugs. Actual drug prescription was examined and documented for records.

The number of patients with lack of an indicated drug was calculated as a percentage of the total number with an indication for this drug.The percentage of patients with lack of one or more medications was calculated per number of drugs. The relationship between the risk of underprescription and number of drugs used was estimated using logistic regression analysis with adjustment for age and gender. A Chi-square test was used to calculate the relationship between undertreatment and polypharmacy

RESULTS

Of 308 consecutive patients, visiting the out-patient clinic, day-hospital, or geriatric ward, 300 gave informed consent. The mean age (SD) was 79.6 7.3 years (range 65– 100 years) and 64% were women.Mean drug use (SD) was 6 3 (range 0–17) medications.Polypharmacy was present in 61%. Underprescription was found in 47 (31%) patients. Of patients with polypharmacy, 43% were undertreated, in contrast to 13.5% of patients using four or less drugs (adjusted OR 4.8, 95% CI 2.0, 11.2). Of patients who were underprescribed,83% used five drugs or more.They used on average 7.3 medicines. Correction of underprescribing would augment the medicines in the studied population with 0.4 medicines to a mean of 6.4 and in the 47 undertreated patients with 1.4 medicines to a mean of 8.7.Table 1 shows the most frequently underprescribed conditions.We found the highest percentage of underprescription for laxatives to prevent constipation in patients using opoids and for b-adrenoceptor blockers and ACE inhibitors in the treatment of cardiovascular disease. The probability of underprescription increased significantly with the prescribed number of drugs (Figure 1).Of patients with known cognitive disturbances (n = 43), 28% were undertreated in contrast with 33% without cognitive disturbances (NS).

Condition	Missing Drug	Total no. of Patients	%of Underpriscription
OPOID Use	Laxative	26	61.5%
Coronary artery Disease	Beta Blocker	30	60%
Heart Failure	ACE Inhibitor	42	47%
Atrial Fibrillation	Anti arrythmic	36	42%
Osteporosis	Biphosphanates	86	29%
Dyslipidemia	Statin	26	23%
NSAID	Proton Pump Inhibitor	42	21%

DISCUSSION

This study shows a clear relationship between polypharmacy and underprescription. The probability of underprescription increased significantly with the number of medicines. Recently Steinman et al. [10] found medication underuse in 64% of elderly outpatients. In contrast to our study the frequency of underuse was not related to the number of medicines.The difference from our study is that Steinman et al. assessed underuse with the Assessment of Underutilization of Medicine instrument and they only included patients taking five or more medications. Underprescription can be considered to be an important part of inappropriate prescribing [11]. Undertreatment in middle-aged and elderly patients is reported in a high percentage for cardiovasculair diseases, hyperlipidaemia, osteoporosis, COPD, depression and cancer. Kuzuya [12] showed that patients with dementia were less likely to be prescribed multiple medications. In our study we found no statistical difference for undertreatment between patients with or without cognitive disturbances

Our study shows that there is clear significant incidence and relation of underpriscription and poly pharmacy which should be discouraged to avoid Adverse drug Effects and proper pharmacotherapy.

REFERENCES

1. Sloane PD, Gruber-Baldini AL, Zimmerman S, Roth M, Watson L, Boustani M, Magaziner J, Hebel JR. Medication undertreatment in assisted living settings. Arch Intern Med 2004; 164: 2031–7
2. Hamdy RC, Moore SW, Whalen K, Donnelly JP, Comptom R, Testerman F, Haulsee P, Hughes J: Reducing polypharmacy in extended care. Southern Med J 88:534–538, 1995
3. Satish S, Winograd CH, Chavez C, Bloch DA: Geriatric targeting criteria as predictors of survival and health care utilization. J Am Geriatr Soc 44:914–921, 1996
4. Hanlon JT, Weinberger M, Samsa GP, Schmader KE, Uttech KM, Lewis IK, Cowper PA, Landsman PB, Cohen J, Feussner JR: A randomized, controlled trial of a clinical pharmacist intervention to improve prescribing in elderly outpatients with polypharmacy. Am J Med 100:428–443, 1996
5. Jorgensen T, Johansson S, Kennerfalk A, Wallander M, Svardsudd K: Prescription drug use, diagnoses, and healthcare utilization among the elderly. Annal Pharmacother 35:1004–1009, 2001
6. Jameson JP, VanNoord GR: Pharmacotherapy consultation on polypharmacy patients in ambulatory care. Ann Pharmacother 35:835–840, 2001
7. Burns R, Nichols LO, Graney MJ, Cloar T: Impact of continued geriatric outpatient management on health outcomes of older veterans. Arch Intern Med 155:1313–1318, 1995
8. Montamat SC, Cusack B: Overcoming problems with polypharmacy and drug misuse in the elderly. Clin Geriatr Med 8:143–158, 1992
9. Beers MH: Explicit criteria for determining potentially inappropriate medication by the elderly. Arch Intern Med 157:1531–1536, 1997
10. Steinman MA, Landefeld CS, Rosenthal GE, Berthenthal D, Sen S, Kaboli PJ. Polypharmacy and prescribing quality in older people. J Am Geriatr Soc 2006; 54: 1516–23.
11. Aronson JK. A prescription for better prescribing. Editor's view. Br J Clin Pharmacol 2006; 61: 487–91
12. Kuzuya M, Masuda Y, Hirakawa Y, Iwata M, Enoki H, Hesegawa J, Cheng XW, Iguchi A. Underuse of medications for chronic disease in the oldest of community-dwelling older frail Japanese. J Am Geriatr Soc 2006; 54: 598–605