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A STUDY ON POLYPHARMACY AMONG ELDERLY PATIENTS IN MEDICINE WARD OF A TERTIARY CARE TEACHING HOSPITAL OF EASTERN INDIA

Dr. Abhishek Ghosh	Assistant Professor, Dept of Pharmacology, College of Medicine& JNM Hospital, Kalyani, West Bengal
Dr. Shankar Dey	MD P.G. Trainee, Dept of Medicine, IPGMER, Kolkata
Dr. Madhura Banerjee	Intern, College of Medicine& JNM Hospital, Kalyani, West Bengal
Dr. Soham Dutta	Intern, College of Medicine& JNM Hospital, Kalyani, West Bengal

ABSTRACT **Background:** In the modern era, with the increase in the lifespan of individuals with increasing access to health-care facilities, the population of elderly is also increasing with an equal pace. However, on the other hand, with the increasing population of the elderly another important issue of polypharmacy has also emerged. Elderly people usually have more disease conditions for which more of medications are prescribed in older individuals as compared to younger population. Hence, optimizing drug therapy in this aging population is a challenging task for physician. Polypharmacy can also lead to increase in drug interactions, adverse drug reactions, and medication errors. **Materials and Methods:** It was an observational, cross-sectional, prospective study. The study was conducted in patients admitted in general medicine wards at College of Medicine& JNM Hospital, Kalyani, West Bengal. The study involved 320 elderly patients (above 65 years of age) of either sex for 3 months from January to March 2020. The information recorded included the demographic details of the patients, diagnosis, comorbid illnesses, details about medications being, the total number of drugs being used, and the factors associated with polypharmacy. **Results:** A total of 320 geriatric patients were included in the study. Polypharmacy was found (>5 medications/day) in 79.71% of geriatrics. Pantoprazole , antimnicrobials and NSAIDS were most commonly prescribed drugs. **Conclusion:** To counteract the problems associated with polypharmacy, regular follow- ups and proper monitoring of drug regimens of older individuals are the need of the hour.

KEYWORDS : Polypharmacy, elderly, general medicine, comorbidities

INTRODUCTION

There is increase in the life expectancy of individuals due to increased access to health-care facilities. However, on the other hand, with the increasing population of the elderly, the issue of polypharmacy has also emerged. The term polypharmacy is defined as the use of multiple medications by a patient, generally it ranges from 5 to 10.[1] The use of multiple medications by a patient leads to many problems like drug interactions, increase in adverse drug reactions, decrease in the compliance of patients, unnecessary drug expense, and all these factors putting together lead to poor quality of life of patients.[2,3] Polypharmacy is an important issue in elderly people who tend to have more disease conditions for which therapies are prescribed as compared younger individuals.[4]

In India, a sharp increase has been noticed in the population of the elderly between 1991 and 2001, and it has been projected that the number of elderly people would rise to about 324 million by the end of the year 2050.[5] This demographic transition in the elderly population poses a significant challenge worldwide due to increased burden of multiple chronic diseases such as heart disease, diabetes mellitus, hypertension, arthritis, and renal diseases.

Therefore, with the increasing rate of chronic illnesses among the elderly people, the likelihood of taking multiple medications by the elderly is also increasing.[6] In the elderly people, a drug prescription should always be written with utmost care keeping in mind the possibility of adverse drug reactions. Therefore, writing a drug prescription in the elderly should be considered as a serious challenge.

In older adults, due to age-related changes in pharmacodynamics (the effect of drug on the body) and pharmacokinetics (i.e., absorption, distribution, metabolism, and excretion), many medications need to be used with special caution. Apart from these pharmacodynamic and pharmacokinetic changes, numerous other factors also contribute to the increased risk for developing drug-related problems in older individuals. These include coexisting medical illnesses, memory issues, and use of multiple prescribed and non-prescribed drugs by the elderly individuals.[7]

According to National Health and Nutrition Examination Survey (NHANES III) in India, about 74% of the elderly population use prescribed medications. About half of these individuals aged between 65 and 74 years, use two or more prescribed medications and 12% of these individuals use five or more of prescribed drugs.[8] Furthermore, the use of inappropriate medication among elderly patients is very common and is a major public health concern. It is estimated to be the fifth major cause of death. Thus, polypharmacy is a very important health-related issue, especially among the elderly that needs to be addressed urgently as polypharmacy can lead to affect the quality of life of the elderly.[9]

Factors associated with polypharmacy need to be identified, especially when there remains a gap in the knowledge of age-based differentials in the pharmacotherapy by the elderly.[11] Studies in the predictors of polypharmacy among elderly are very scarce. A study was done in Acharya Shri Chander College of Medical Sciences and Hospital (ASCOMS and H), Sidhra, Jammu, Jammu and Kashmir was done but sample size was small. 12

Therefore, the present study was taken to study the factors associated with polypharmacy in elderly population in a medical college at Eastern India.

MATERIALS AND METHODS

It was a cross-sectional, observational study. The study was conducted in medicine in-patients at College of Medicine & JNM hospital, Kalyani, Nadia , West Bengal. The study was carried out on elderly patients (above 65 years of age) of either sex for 3 months from January 2020 to March 2020. Ethical approval was obtained from institutional ethics committee before commencement of the study. A total of 320 in-patients of medicine department were enrolled in the study after evaluating for inclusion and exclusion criteria.[12] The purpose of the study was explained and written informed consent was obtained from all the participants. The patients who were not willing to participate in the study and the patients whose case record files were incomplete or were admitted in the emergency medicine wards were excluded from the study.

For the collection of the data, the case record files of all the patients admitted to the department of medicine were thoroughly reviewed each day during the study period. The case record file of each patient was considered only once for evaluating the data, most preferably on the date of discharge or a day before discharge date. Patients were also interviewed personally about any other concomitant drug intake which was not mentioned by them in the case record file. As there is no standard definition of polypharmacy, we followed definition given by Kaufman and grouped prescribed medications into four groups, lessthan 4 drugs, 5-9 drugs, 10-14 drugs and 15 or more drugs per

day.[13] The information recorded included the demographic details of the patients, diagnosis, comorbid illnesses, details about medications being, the total number of drugs being used, and the factors associated with polypharmacy. The data so obtained were analyzed using simple descriptive statistics.

RESULTS

A total of 320 geriatric patients were included in the study. Of this 320, 145 were male and 175 were female. 32.8% of them were in the age group between 65 and 70 years. 20.3% of them belonged to 71–75 years and 17.2% were >85 years of age .

Polypharmacy was found (>5 medications/day) in 255(79.71%) of geriatrics. In the age group of 65–70 and 71–75 years, average medication/day was 7.42 and 6.64, respectively, whereas, in the age group of 76–80 and 81–85 years, average medication/ day was 6.71 and 5.93, respectively.

Among associated clinical conditions, hypertension was found in 151 (47.18% of study participants). Gastritis was found in 75.31% of patients. Osteoarthritis was found in 21.56% of patients. Diabetes mellitus was found in 127 subjects (39.7% of total participants) and chronic obstructive pulmonary disease was found in 30.4% of patients [Table 1]. GIT drugs were used in 100% of individuals. Among them, H2 blockers like ranitidine were found to be used in 11.8% of individuals and Proton-pump inhibitors such as omeprazole and pantoprazole, and drugs for constipation such as bisacodyl, lactulose were used in 89.1% and 34.68%, respectively. Nonsteroidal anti-inflammatory drugs (NSAIDS) such as paracetamol, diclofenac were used in 62.5% of individuals.

Usage of cardiovascular drugs was seen in 247 patients (77.18% of study participants). Among these calcium channel blockers like amlodipine usage were found in 49.2%. Angiotensin receptor blockers such as losartan and telmisartan and beta blockers such as atenolol and metoprolol usage were found in 25% and 4.7% of individuals, respectively. Antiplatelets such as aspirin and clopidogrel and statins like atorvastatin usage were found in 33.12% and 55%, respectively.

Endocrine system drugs were used in 37.5% individuals. Oral hypoglycemic agents such as metformin and sulfonylureas were used in almost 9.06%. Insulin usage was found in 30.62% of individuals.

Respiratory system drugs such as theophylline and salbutamol were used in 30.6% of individuals, and other drugs such as B. complex and calcium (multivitamins) usage were 64.1%. Sedative like alprazolam was used in 15.31% subjects.

Antimicrobials were used in 80.94% subjects (259 patients). Most commonly prescribed antimicrobial was ceftriaxone (53.75%), followed by amoxicillinj-clavulanate, azithromycin, levvofloxacin, nitrofurantoin, linezolid.

DISCUSSION

In the elderly population, regular monitoring of the drug regimens is required to minimize the problems of polypharmacy. Periodic monitoring of the drug regimens may show the need of any change in the prescribed drug therapy. The changes may include change in the drug dosage, substituting a drug with another safer alternative, and discontinuing the medications for the illnesses from which the patient has been recovered or adding a new medication.[14] A medication review should consider whether a change in patient status (e.g., renal or liver function) might necessitate dosing adjustment, the potential for drug-drug interaction, whether patient symptoms might reflect a drug side effect, or whether the regimen could be simplified.[15]

Elderly people are more prone to develop multiple chronic illnesses due to poor immune status . So the number of prescribed drugs is more in such individuals.

The most common group of drugs used is gastrointestinal system drugs (100%) and the most common drug among gastrointestinal drugs being used is injection pantoprazole 40 mg in 89 % patients. Next commonly used group of drugs is antimicrobials, most commonly due to chest and gastrointestinal infection, followed by urinary tract infection.

3rd most commonly used drug group is NSAIDs (62.5%) and the most common drug among NSAIDs used is Tab. Paraccetamol 650 mg in 135 (42.2%) patients. Among antihypertensive drugs , most commonly prescribed drug is Tab. amlodipine 5 mg , used in 49.2% study subjects. Most of the diabetics have been treated by insulin during in-patient stay. However, the present study had few limitations involving only one specialty. Thus, to make prescriptions more rational, other studies need to be done involving larger elderly population and multiple specialties.

CONCLUSION

In the present study, polypharmacy was found in 79.71% of individuals.Thus, to minimize or to control polypharmacy, more of such studies are needed to be done in this field to address the issue of polypharmacy. Moreover, there is also a need to inculcate a more responsive attitude among healthcare professionals toward the elderly individuals so that at every follow-up visit their drug regimens are thoroughly evaluated to prevent polypharmacy-related problems and to improve the quality of life of elderly individuals.

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