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Research Article

PRESCRIBING PATTERN IN GERIATRIC PATIENTS IN MEDICAL OPD OF A TERTIARY CARE TEACHING HOSPITAL

KANIKA KHAJURIA[1], VIJAY KHAJURIA[2]*

[1]Department of Pharmacology, Government Medical College, Jammu, Jammu and Kashmir. [2]Department of Pharmacology, Government Medical College, Jammu, Jammu and Kashmir. Email: vijayhaj@yahoo.co.in

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ABSTRACT

Objectives: Geriatric population is increasing globally and they suffer from multiple disorders necessitating administration of number of drugs. The objective of the present study was to examine the prescribing pattern in geriatric patients in a medical OPD.

Methods: An observational, cross-sectional study was conducted in medical OPD of Government Medical College, Jammu, over a period of a month after approval of the Institutional Ethics Committee. Patients above 65 years of age who gave consent were included in the study. The prescriptions were analyzed for demographic profile (age and gender), average number of drugs per prescription, drugs by generic or brand names, fixed drug combinations (FDCs), and percentage of potentially inappropriate as per Beers criteria.

Results: A total of 200 patients were included comprised 64% of males and 36% of females. The most of patients were in the age group of 65–69 years (37.5%). A total of 200 prescriptions contained 1128 drugs amounting to average 5.64 number of drugs per prescription. Maximum prescriptions had 1–5 drugs (61%) followed by 6–10 drugs (38.5%). Majority of drugs were prescribed by brand name (93.26%) and only 6.73% of drugs were prescribed by generic name. About 10.46% FDCs were prescribed. Maximum drugs prescribed were from respiratory system (20.3.1%), followed by GIT (18.4%), antimicrobials (17.2%), cardiovascular (10.99%), NSAIDs (9.3%), and vitamins (8.4%). Forty-one drugs (20.5%) in patients were potentially in appropriate drugs based Beers criteria and belonged mostly to anticholinergic, antihistaminic, sedatives, NSAIDs, and H2 blockers.

Conclusions: The present study demonstrates that polypharmacy and potentially inappropriate medication are still present in OPD prescription of geriatric population. Generic prescribing still lacks. Application of Beers criteria and increasing awareness about polypharmacy should be encouraged.

Keywords: Geriatric, Prescribing pattern, Polypharmacy, Beers criteria.

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INTRODUCTION

Treatment of elderly patients constituting above 65 years of age is always a challenge to the attending physician. It stems from the fact that there are multiple comorbidities in this age group warranting management with multiple drug regimens. Polypharmacy exposes them to likelihood of potentially inappropriate medications (PIMs), drug interactions, adverse drug reactions, and poor compliance. The alterations in physiological functions due to aging and inadequate monitoring further make the situation complex.

Due to advances made in medical field coupled with improvement in socioeconomic status, there is increase in life expectancy. The world population is growing and so is the elderly aged group. The world's elderly population which was 550 million in 1996 is expected to approach 1.2 billion by the year 2025 [1]. Although it much evident in developed countries, India is also no exception. It is projected that the proportion of Indians aged 60 and older will rise from 7.5% in 2010 to 11.1% in 2025 [2]. Projected life expectancy in India by 2025 is 69.8 years for males and 72.3 years for females.

With increase in geriatric population, there is always associated risk of polypharmacy [3]. Although the overall elderly population percentage is less than other age groups, still they consume large amount of drugs. According to one estimate, people with age of 65 years or more forms 12% of the U.S. population, but they account for use of 34% of all prescription medication and 30% of all over-the-counter medication [4]. About 44% of men and 57% of women older than 65 years take five or more non-prescription or prescription medications per week, and 12% take 10 or more medications per week [5].

The polypharmacy and inappropriate prescribing are major issues in elderly population. Polypharmacy continues to increase and is a known risk factor for morbidity and mortality [6]. Beers in 1991 to decrease inappropriate prescribing and adverse drug events came out with Beers criteria to identify medications those should be avoided in older adults. After Beer's death, the American Geriatrics Society supervises and revises the criteria and provides updates every 3 years, with latest updates appearing in 2019 [7].

Inappropriate medication if detected early can prevent adverse reactions. Since elderly population is more vulnerable to adverse effects, so it is of utmost importance that they are evaluated for PIM. Therefore, the present study was conducted to analyze the prescribing pattern in elderly patients attending medical outpatient department of a tertiary care teaching hospital.

METHODS

The present prospective, cross-sectional, observational study was conducted in medical OPD of Government Medical College, Jammu, over a period of a month. The permission from the Institutional Ethic Committee (IEC) was obtained before the start of the study vide number IEC/2018/571, dated September 29, 2018. Prescription of 200 patients attending medical OPD was analyzed who full filled following criteria.

Inclusion criteria

Patients of 65 years of age or above and willing to give informed consent were included in the study.

Exclusion criteria

All patients below 65 years of age and unwilling to participate were excluded from the study. The prescriptions were clicked on mobile

and were analyzed for demographic profile (age and gender), average number of drugs per prescription, drugs by generic or brand names, injectable, FDCs, and percentage of drugs inappropriate as per Beers criteria [7].

Statistical analysis

Results are presented as mean number and percentage.

RESULTS

A total of 200 patients prescriptions were included for analysis and most of patients were in the age group of 65–69 years (37.5%). One hundred and twenty-eight patients were male (64%) and 72 patients were female (36%) (Table 1).

A total of 200 prescriptions contained 1128 drugs, amounting to average 5.64 number of drugs per prescription. Maximum prescriptions had 1–5 drugs prescribed (61%) followed by 6–10 drugs (38.5%) (Table 2). Majority of drugs were prescribed by brand name (93.26%) and only 6.73% of drugs were prescribed by generic name. About 10.46% FDCs were prescribed (Table 3). Maximum drugs prescribed were from respiratory system (20.31%), followed by GIT (18.4%), antimicrobials (17.2%), cardiovascular (10.99%), NSAIDs (9.3%), vitamins (8.4%), and endocrine system (7.9%) (Table 4). Forty-one drugs (20.5%) in patients were potentially inappropriate drugs based Beers criteria and belonged mostly to antispasmodic/anticholinergic (belladonna alkaloids, clidinium, and dicyclomine), antihistaminics (chlorpheniramine, cyproheptadine, dexchlorpheniramine, and diphenhydramine), sedatives (chlordiazepoxide and diazepam), NSAID (piroxicam), and H2 blockers (ranitidine) (Table 5).

DISCUSSION

Geriatric group is most vulnerable to adverse effects of drugs primarily because they consume in large number of drugs. The current study was done to examine the prescribing pattern of drugs in elderly patients attending medical OPD. Polypharmacy is closely linked with inappropriate medication which further expose to economic burden and chances of ADRs.

The present study has shown that most of patients reporting were male (64%). Most of the patients were in the age group of 65–74 years (73.5%), while 65–69 years group alone contributed 37.5%, similar to our observation, a study has also reported 68.0% of OPD patients were between 65 and 74 years [8].

Analysis of the prescriptions revealed that majority of them had 1–5 drugs (61%), while 6–10 drugs were prescribed in 38.5% of prescriptions. Average number per prescription was 5.64. Another study has also observed 5.50 ± 2.8 drugs per prescription [9].

Most of these drugs were prescribed by brand name (93.26%) while generic only accounted for 6.73%. This underscores that still brand pharmaceuticals are preferred over generic. This is a matter of concern and needs to be addressed as brand adds to economic burden on patients. At present, Prime Minister's Jan Aushadhi outlets are destined to change the scenario but hospital pharmacy also needs to be strengthened. Strict regulations ensuring bioequivalence standard of drugs will further boost confidence in generic drugs.

About 10.46% FDCs were found prescribed in the present study. Most these were analgesic combinations followed antimicrobials. Similar to our results, FDCs use of 10.82% has have been reported in recent past [10].

FDCs are popular as they lead to improved compliance and decrease pill burden. However, FDC is pharmacologically acceptable only if the combination has a proven therapeutic and safety advantage over single ingredients administered separately and should act by different mechanisms and have additive effects. However, FDCs cause unnecessary prolonged exposure and are reported to be responsible for a causing more ADRs that single drugs [11]. Therefore, the use of FDCs in geriatric group demands more caution as this group is more prone to ADRs because of declined physiological functions.

Research workers have demonstrated that polypharmacy is a big issue in geriatric population. There is no consensus definition for polypharmacy but most commonly term is applied with use of five or more drugs used daily by an individual [12]. Whereas, the World Health Organization defined polypharmacy as "the administration of many drugs at the same time or the administration of an excessive number of drugs" [13].

Table 1: Demographic profile of patients

Age in years	Number of patients	Number of male patients	Number of female patients	Percentage
65–69	75	40	35	37.5
70–74	72	51	21	36.0
75–79	48	34	14	24.0
>80	5	3	2	2.5
Total	200	128 (64%)	72 (36%)	

Table 2: Number of drugs prescribed as per prescription

Number of drugs	Number of prescription	Percentage
1–5	122	61.0
6–10	77	38.5
10–14	01	0.5
>14	0	0

Table 3: Distribution of drugs as generic, brand, and FDCs

Drugs	Number of drugs	Percentage
Generic	76	6.73
Brand	1052	93.26
Fixed drug combinations	118	10.46

Table 4: Drug categories prescribed

Category of drugs prescribed	Number of drugs	Percentage
Drugs acting on respiratory tract	226	20.3
Drugs acting on gastrointestinal tract including PPI (GIT)	208	18.43
Antimicrobial drugs	192	17.02
Drugs acting on cardiovascular system	124	10.99
Analgesics and anti-inflammatory drugs	105	9.30
Vitamins, minerals	95	8.42
Endocrine system	90	7.97
Drugs acting on central nervous system	54	4.78
Diuretics	25	2.2
Others (hematinic, etc.)	9	0.79
Total	1128	100

Table 5: Potentially inappropriate medication

Name of drug	Number
Antispasmodic-anticholinergics	22
Antihistaminics	8
Sedatives	7
H2 blocker	2
NSAIDs	2
Total	41

In the current study, a total of 1128 drugs were prescribed in 200 prescriptions, accounting to average 5.64 number of drugs per prescription. About 38.5% of total prescriptions had drugs more than 5 drugs, while 61% had five or less number of drugs. About 56.2% of geriatric are reported to receive six or more medication (polymedication) in one study [14].

Our results reveal that polypharmacy conducted on medical OPD patients is prevalent in elderly population. However, higher percentage of polymedication has been reported in some studies but mostly related to inward patients as hospitalized patient need more medication in view of their clinical condition [15]. The polypharmacy can be overcome by increasing awareness among prescribing physicians about adverse effects.

Maximum drugs prescribed were from respiratory system (21.1%), followed by GIT (19%), antimicrobials (14.9%), cardiovascular (11.8%), NSAIDs (10.8%), and vitamins (8.1%). Almost similar trend of prescribing has been reported in the past in Indian set up [8,14,16]. However, study from developed country showed cardiovascular drugs, diuretics, and psychotropic drugs accounted for 64% of all drug prescriptions, but these results pertained in population comprised 75 years or above [17].

Alterations in physiological functions, pharmacokinetic and dynamic functions with advancing age make this population more prone to deleterious effects of inappropriate prescribing. In the present study, 41 drugs (20.5%) in patients were potentially inappropriate drugs based Beers criteria and belonged mostly to anticholinergic, antihistaminic, sedatives, and NSAIDs. Anticholinergic is known to cause urinary retention, visual disturbances, and dryness of mouth. Antihistaminic and antianxiety sedatives do lead to prolonged hangover may prove hazardous in this group of population and sometime even may result in fall. Inappropriate NSAIDs are responsible for acid peptic disease. Chitra *et al*., 2017 [16], have also shown PIM in 35.5% in geriatric group.

CONCLUSIONS

The current study has shown that polypharmacy in medical OPD geriatric population is prevalent and 34% received six or more medications. FDCs accounted for 10%. Inappropriate use of medicine was seen in 20.5%. Brand drugs were mostly prescribed, Maximum drugs prescribed were from respiratory system, followed by GIT and antimicrobials, cardiovascular, and NSAIDs. Results of current trial suggest that polypharmacy issue needs to be redressed, application of Beers criteria to avoid inappropriate prescribing, increasing awareness about polypharmacy should be promoted. Generic drugs usage can be further strengthening Jan Aushadhi outlets.

AUTHORS' CONTRIBUTIONS

Dr. Kanika conceived the research idea of research work, collected, analyzed, interpreted the data, and wrote the manuscript, while Dr. Vijay Khajuria supervised, reviewed, and edited the manuscript.

CONFLICTS OF INTEREST

Authors declared no conflicts of interest related to study.

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