



Journal of Applied Pharmaceutical Science

Available online at www.japsonline.com

ISSN: 2231-3354
Received on: 12-11-2011
Revised on: 21-11-2011
Accepted on: 03-12-2011

Trends of prescribing for out-door geriatric patients in a private hospital of Bangladesh

Muhammad Asaduzzaman, Nishat Nasrin, Farhana Rizwan, Forhad Monjur and Rumana Mowla

**Muhammad Asaduzzaman,
Rumana Mowla**
*Department of Clinical Pharmacy &
Pharmacology, Faculty of Pharmacy,
University of Dhaka, Dhaka-1000,
Bangladesh.*

Nishat Nasrin, Farhana Rizwan
*Department of Pharmacy,
East West University,
Dhaka-1212, Bangladesh*

Forhad Monjur
*Dept of Pathology, Institute of Child
Health & SSFH 6/2, Barabag,
Mirpur-2, Dhaka, Bangladesh.*

For Correspondence
Muhammad Asaduzzaman
*Lecturer,
Department of Clinical Pharmacy and
Pharmacology, University of Dhaka,
Dhaka 1000, Bangladesh.
Tel: +88-02-9661920-73 (Ext-8156),
Fax: +88-02-8615583*

ABSTRACT

The present study was performed to find out the prescribing patterns of the doctors for geriatric patients, to characterize the behavior of the outdoor geriatric patients of a selected private hospital and to investigate whether polypharmacy is a suitable indicator for occurrence of unnecessary or irrational drug therapy. A prospective study was carried out with the help of a structured questionnaire and the prescriptions of the patients. Patients aged 65 year and above were included in the study. A total of 35 patients were interviewed and their prescriptions were collected after taking their consent. Among the patients, hypertension was found to be most prevalent (46%) followed by diabetes mellitus (16%). Chief complaints were chest pain (41%), joint pain (37%), muscle pain (34%) and respiratory distress (27%). About 34% of the patients did not comply with the prescription and 75% did not take regular physical exercise. Stress (49%) and insomnia (41%) were common among the patients. Polypharmacy was observed in 69% of the patients and an average of 5.5 drugs was given to them. Losartan potassium was the mostly prescribed (31%) drugs followed by esomeprazole (20%) and multivitamins (17%). Unnecessary drug use problem can be prevented by the rational prescribing of drugs by the practitioners. Any medications without therapeutic benefit, goal or indication should be avoided during prescribing for geriatric patients. This study reveals the prescription trends, and indicates possible areas of improvement in prescribing practice.

Keywords: Prescribing patterns, geriatric patients, Polypharmacy, rational prescribing, therapeutic benefit.

INTRODUCTION

Polypharmacy can be defined as the condition where five or more drugs are administered concurrently (Hayflick, 2000). Some researchers have categorized polypharmacy into minor and major indicating prescribing two drugs and more than five drugs respectively (Viktil *et al.*, 2006). It can also be described as the use of more drugs than are clinically required, i.e. prescribing two or more drugs for the same condition or two or more drugs from the same therapeutic class. Polypharmacy is a form of irrational drug prescribing which sometimes can lead to serious consequences. It is associated with increased incidences of adverse drug effects, drug-drug interactions etc. There is evidence of 38% adverse drug interactions when taking four drugs and increasing to 82% if seven or more drugs are given simultaneously (Gallagher *et al.*, 2007). Polypharmacy is a particular concern for older adults, who make up 13% of the population but account for almost 30% of all prescribed drugs (Alexander *et al.*, 2011). Elderly patients are more likely to suffer from different chronic illnesses that require multiple drug therapies. There are age-related physiological changes in the elderly populations which lead to change in the pharmacokinetics and pharmacodynamics of the drugs (Hamilton *et al.*, 2009). The ultimate

consequences are increased risk of adverse drug reactions, geriatric syndromes, diminished functional status, longer hospital stay and healthcare costs. For all these reasons, prescribing geriatric population is a complex and challenging task. Careful and rational prescribing is essential for optimum drug therapy for the older patients. The present study was aimed to investigate the pattern of prescribing to geriatric population in selected hospital in Dhaka, Bangladesh.

MATERIALS AND METHODS

The present study was attempted to observe prescribing patterns and to address the trends of polypharmacy among the outdoor geriatric patients in a private hospital of Dhaka city. A total of 35 outdoor geriatric patients aged 65 or above were included in the study. All the patients were interviewed according to a pre-formulated questionnaire about type of the diseases, chief complaints, frequency of doctor visit, and compliance to the prescriptions, whether they suffer from insomnia or stress and whether they take regular physical exercise. The number and type of drugs prescribed to them were obtained from the prescription given at outdoor premises by the doctors. All the data taken were fed into Microsoft Excel 2007 for analysis.

RESULTS AND DISCUSSION

Among 35 patients, 58% were male and 42% were female. Only 6% patients were above 90 years of age. Maximum 26% of patients were within the age range of 75 and 79 (Table 1). According to Walker & Whittlesea (2007), common clinical disorders among geriatric patients include dementia, parkinsonism, stroke, osteoporosis, arthritis, hypertension, myocardial infraction, cardiac failure, leg ulcer, urinary incontinence, constipation, gastrointestinal ulceration and bleeding. About 46% of geriatric patients included in this study suffered from hypertension (Table 2). The second most prevalent disease was Diabetes Mellitus (16%). Asthma and Arthritis were prevalent among 8% of the patients. A small number of patients also suffered from liver disease and ulcer.

Table 1: Distribution of patients by sex, age group and occupation.

Name of the factors	Types of groups	No. of patients	% of total patients (n = 35)
Sex	Male	20	57
	Female	15	43
Age group (in years)	65-69	4	11
	70-74	7	20
	75-79	9	26
	80-84	7	20
	85-89	6	17
	>90	2	6
Occupation	Retired	19	54
	Housewife	15	43
	Business	1	3

The most common complaints of geriatric patients were chest pain (41%). Joint pain, muscle pain and respiratory distress

were found in 34%, 31% and 25% of the patients, respectively.

Elderly patients are famous for presenting with any combination of non-specific, apparently unrelated and seemingly trivial complaints. Sometimes they have no complaint at all. Unlike many younger patients, it is the rare elder who walks in and hands her physician a discrete and easily recognizable diagnosis.

Table 2: Common diseases and chief complaints.

Common Diseases of Geriatric patients	
Diseases	% of total patients (n = 35)
Hypertension	6
Diabetes	16
Arthritis	9
Asthma	9
Chief complaints of geriatric patients	
Chief complaints	% of total patients (n = 35)
Chest pain	41
Joint pain	37
Muscle pain	34
Respiratory distress	27

About 66% of the patients claimed to follow the prescription and only 25% said that they used to take regular physical exercise as directed by the physicians. It is commonly believed that the elderly are poor compliers with their drug therapy. Poor adherence may result in treatment failure. The degree of adherence required varies depending on the disease being treated. A study showed that a single dose of antibiotic may be all that is required for treatment of a single urinary tract infection, and therefore compliance is not important. By contrast, adherence of 90% or more is required for successful treatment of epilepsy or difficult hypertension (Walker and Whittlesea, 2007). Non-compliance to prescription may lead to life-threatening condition and adverse drug reaction (Avorn J and Shrank W, 2008). Non-adherence to the prescriptions by a significant number (34%) of the study population necessitates extensive patient counseling and education. Geriatric patients belong to the vulnerable groups in the society (Lions Club, 2009; GCN, 2010) and sedentary life-style is mostly responsible for co-morbidity and even death (Chakravarthy *et al.*, 2002). Numerous studies showed that undertaking and maintaining moderate levels of physical activity (e.g., brisk walking 3 hours a week) greatly reduces the incidence of developing many chronic health conditions, most notably type 2 diabetes mellitus, obesity, cardiovascular disease, and many types of cancers (Chakravarthy *et al.*, 2002; Penedo *et al.*, 2004). In majority of cases, hypertension and diabetes mostly occur as co-morbid conditions among the geriatric patients (Kesavadev *et al.*, 2003). From the present study, it can be seen that hypertension and diabetes occur predominantly among the geriatric population (Table 2). Age-related stress and insomnia are not uncommon among the geriatric patients. Our study is also supportive of the fact. It was found that 41% of the patients suffered from insomnia and 49% had stress in life (Table 3). Family burden and low income may be the possible causes.

Table 3: Different physical and behavioral patterns and poly-pharmacy.

Different physical and behavioral patterns	
Characteristics	% of total patients (n = 35)
Following prescription	66
Physical exercise	25
Insomnia	41
Stress in life	49
Polypharmacy	
Number of drugs	% of total patients (n = 35)
Less than 5	31
5 and more than 5	69

An average of 5.5 drugs was prescribed which is indicative of polypharmacy. Majority of the patients (69%) received 5 or more than 5 drugs, and 31% got less than 5 drugs. The study did not give any indication whether the multiple medication prescribing was justified or not. Nonetheless, prevention of unnecessary drug therapy can reduce the risk of secondary problems associated with unnecessary and multiple drug use and can contribute in cost saving among elderly patients (Rahmawati *et al.*, 2009). To improve drug safety in this high-risk population, appropriate prescribing might be more important than simply reducing the number of prescribed drugs (Schuler *et al.*, 2008).

Almost all (100%) of the drugs were prescribed by brand name. Among the study population, majority of the patients (31%) were given losartan potassium. Esomeprazole, multivitamins, Theophylline, azithromycin and gliclazide were given to 20%, 17%, 14%, 11% and 8% patients, respectively (Table 4). A combination of atenolol and amlodipin and levofloxacin were given to least number of patients (3%).

Table 4: Top 15 commonly prescribed drugs for the geriatric patients.

No.	Drug	Class	% of patients (n = 35)
1	Losartan potassium	Antihypertensive (ARB)	31
2	Esomeprazole	Anti-ulcerants (PPI)	20
3	Multivitamines	Nutraceutical	17
4	Theophyllin	Anti-asthmatic (Bronchodilator)	14
5	Azithromycin	Antibacterial (Macrolide)	11
6	Gliclazide	Antidiabetic	8
7	Alendronate	Anti-osteoporosis (Bisphosphonates)	5
8	Thyroxine	Anti-hypothyroidism	5
9	Domperidone	Gastroprokinetic agent	5
10	Metformin	Antidiabetic (Biguanide)	5
11	Flupenthixol	Antidepressant	5
12	Ramipril	Antihypertensive (ACEI)	5
13	Glyceril trinitrate	Antianginal	5
14	Atenolol+amlodipin	Antihypertensive (BB+CCB)	3
15	Levofloxacin	Antibacterial (Fluoroquinolone)	3

ARB = Angiotensin receptor blocker, ACEI = Angiotensin-converting enzyme inhibitors, BB = Beta blocker, CCB = Calcium channel blocker, PPI = Proton pump inhibitor

CONCLUSION

Overall, the study gives an insight as to the prescribing practice of the doctors for geriatric patients. The high prevalence of polypharmacy should be addressed properly and measures should be taken to reduce unnecessary medication use by the geriatric patients. The study will help to improve the prescribing behavior of the physicians by raising awareness among the prescribers.

ACKNOWLEDGEMENT

The authors are thankful to the administrative and medical staffs of Md. Abdur Razzak Hospital, Narayanganj, Bangladesh, for their co-operation during the entire period of the study.

REFERENCES

- Alexander GC, Varre CDL, Moloney R, and Parris B. Polypharmacy in older adults. [Internet]. 2011 Oct 05; [About 9 screens]. Available from: <http://prescriptions.uchicago.edu/Polypharmacy/index.html>
- Avorn J and Shrank W. Adverse drug reactions in elderly people: A substantial cause of preventable illness. *BMJ* 2008; 336:956-957.
- Chakravarthy MV, Joyner MJ, and Booth FW. An Obligation for Primary Care Physicians to Prescribe Physical Activity to Sedentary Patients to Reduce the Risk of Chronic Health Conditions. *Mayo Clin Proc.* 2002; 77:165-173.
- Gallagher P, Barry P, Mahony DO. Inappropriate prescribing in the elderly. *J Clin Pharm Ther* 2007; 27:113 – 21.
- GCN (Geriatric Centre Nepal) [Internet]. Status Report on Elderly People (60+) in Nepal on Health, Nutrition and Social Status Focusing on Research Needs. C2010 [updated 2010 Dec 4, cited 2011 Oct 4]. Available from: <http://www.globalaging.org/health/world/2010/nepal.pdf>
- Hamilton HJ, Gallagher PF and Mahony DO. Inappropriate prescribing and adverse drug events in older people. *BMC Geriatrics* 2009; 9:5.
- Hayflick L. The future of ageing. *Nature* 2000; 408:267-296.
- Kesavadev JD, Short KR and Nair KS. Diabetes in Old Age: An Emerging Epidemic. *JAPI.* 2003; 51:1083-94.
- Lions Club [Internet]. Kathmandu Samakhushi: Lions Senior Citizens Home; c2009 [updated 2010 Nov 13; cited 2011 Oct 4]; 22(1): 51-67. Available from http://www.lionsclubs.org.np/senior_citizen_home.php
- Penedo FJ, Schneiderman N, Dahn JR and Gonzalez JS. Physical Activity Interventions in the Elderly: Cancer and Comorbidity. *Cancer Invest.* 2004; 22(1):51-67.
- Rahmawati F, Sulaiman SAS, Rohmah W and Pramantara IDP. Polypharmacy and unnecessary drug therapy on geriatric hospitalized patients in Yogyakarta Hospitals, Indonesia. *Int J Pharm Pharm Sci*, 2009; 1(Suppl 1):6-11.
- Schuler J, Dückelmann C, Beindl W, Prinz E, Michalski T and Pichler M. Polypharmacy and inappropriate prescribing in elderly internal-medicine patients in Austria. *Wien Klin Wochenschr (The Middle European Journal of Medicine)*, 2008; 120:733–741.
- Viktil KK, Blix HS, Moger TA, Reikvam A. Polypharmacy as commonly defined is an indicator of limited value in the assessment of drug-related problems. *Br J Clin Pharmacol* 2006; 63 (2): 187-95.
- Walker R. and Whittlesea C. *Clin Pharm Ther*, Churchill Livingstone Elsevier, Philadelphia, U.S.A. 2007.