

A Study of Drug Prescribing Pattern in Geriatric Patients in the Department of Medicine in a Tertiary Care Hospital in North East India

Ruhul Amin¹, Pran Pratim Saikia¹, S Renuka Singh, Anuradha Deuri³, Dwipen Khanikar¹, Bhaskar Jyoti Dutta¹, Swopna Phukan¹, Siddhartha Shankar Patowary¹, Ripunjoy Sarmah¹

¹Department of Pharmacology, Gauhati Medical College And Hospital, Guwahati, Assam, India

²Department of Pharmacology, Tinsukia Medical College And Hospital, Tinsukia, Assam, India.

³Department of Medicine, Gauhati Medical College And Hospital, Guwahati, Assam, India

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Corresponding author: **Dwipen Khanikar** Email : dwipenkhanikar@gmail.com

ABSTRACT

Introduction and Aim: Geriatrics, or geriatric medicine, provides care for the unique health needs of older adults. Treating geriatric patients is a very challenging task for healthcare providers. The present study was carried out to analyze the prescription pattern of drugs used to treat different diseases in geriatric patients.

MATERIAL AND METHODS: A hospital-based prospective, observational, and cross-sectional study involving patients aged 65 years and above was planned for three months, from June 2023 to August 2023.

RESULTS: A total of 125 patients aged 65 years and above were analyzed. Eighty-three patients (66.4%) were males, 42 (33.6%) were females, and 65.6% of patients belonged to the 65-69 age group. The average number of drugs per prescription was 7.8 (range 3-14); antibiotics prescriptions were 80%.

CONCLUSION: Our study analyzed the prescriptions based on the five WHO drug prescribing indicators. More such studies are needed to facilitate the rational use of drugs in geriatric patients.

KEYWORDS: Geriatrics, prescription, rational

INTRODUCTION

According to the World Health Organization (WHO), most developed countries have accepted the chronological age of 65 as a definition of 'elderly' individuals. Ageing is the lifelong process of growing older at the cellular, organ, or whole body level throughout life(1). This affects the functioning of all body systems and leads to altered pharmacokinetic and pharmacodynamic phases of pharmacotherapy. The reduction in physiological reserve in organ systems makes the elderly susceptible to some peculiar diseases, and complications precipitate easily (2). In general, the elderly are considered to be two to three times at a higher risk of developing adverse effects (3). Reasons for this high incidence include errors in prescribing and errors in drug usage by the patient. Practitioner error sometimes occurs because physicians need to appreciate the importance of changes in pharmacokinetics with age and age-related diseases (4). The use of appropriate and

rational drugs is impossible without having updated knowledge of these. Identification of patterns of inappropriate medication in the elderly population is essential to take measures to prevent adverse drug reactions (5). Thus, assessment and evaluation of rational and appropriate use of drugs play an essential role in providing quality healthcare to patients (6). This type of study, elaborating on the prescription pattern of geriatric patients, has been limited in this part of the country. This study was undertaken to learn the disease pattern and prescribe practices for geriatric patients in a tertiary care hospital. Moreover, this study was also performed to evaluate whether the prescribed drugs were enlisted under the WHO Model List of Essential Medicines 2021 (22nd list) and prescribed by generic name.

MATERIAL METHODS

A hospital-based prospective, observational, and cross-sectional study was conducted involving patients aged

65 years and above admitted to the Department Medicine in a tertiary care hospital for three months. A total of 125 patients were included in the study.

Inclusion Criteria

- 1) Patients of either sex who had completed 65 years of age on December 31st, 2022, or earlier and who were admitted to the Medicine Department.
- 2) Patients who were willing to give informed consent.

Exclusion Criteria

- 1) Patients who were unwilling to participate in the study.
- 2) Seriously ill patients.
- 3) Patients requiring intensive care unit admissions or on ventilators.
- 4) Patients who were mentally unstable.

The data from the prescription of the patient was noted in profile forms and entered in excel sheet. The data was analyzed by using Microsoft Excel Worksheet and descriptive statistics such as mean, frequency and percentage were calculated. The WHO prescribing indicators are used to analyze the drugs. The Institutional Ethics Committee permission was taken to conduct this study (IEC approval no. MC/190/2007/Pt-II/April-2023/6).

RESULTS

A majority of patients were young older age group 65–69 years (65.6%), as mentioned in table 1. The male geriatric patient's preponderance was more 66.4% than females at 33.6%, as mentioned in Table 2. The mean age of geriatric patients was 69.8 years in the present study.

The socio-demographic details in the current research showed that the majority of the patient were from Rural areas, consisting of 83(66.4%) and from urban areas, 42(33.6%). As table 3 mentions, the majority of the patients, 66(52.8%), stayed in the hospital for 6-10 days. Disease percentages are shown in Fig. 3.

The most common oral formulation is tab. calcium is (31) 3.18%; the most common parental formulation is inj. pantoprazole (99) 10.15%.

Fixed dose combination of taurine and acetylcysteine were maximum (14) 1.43% as shown in table 6.

Table 1: Age wise Distribution of the Patients

Age (Years)	Number of patients	Percentage (%)
65-69	82	65.6
70-74	22	17.6
75-79	9	7.2
80-84	7	5.6
≥85	5	4
Total	125	100

Table 2: Gender Wise Distribution of the Patients

Gender	Number of patients	Percentage (%)
Male	83	66.4
Female	42	33.6
Total	125	100

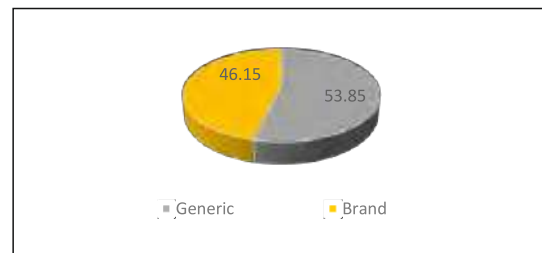


Fig. 1: Distribution of Prescribed drug in % (Generic vs Brand name)

Table 3: Duration of stay in the hospital

Duration (in days)	Number of patients	Percentage (%)
0-5	52	41.6
6-10	66	52.8
11-15	7	5.6
>15	0	0

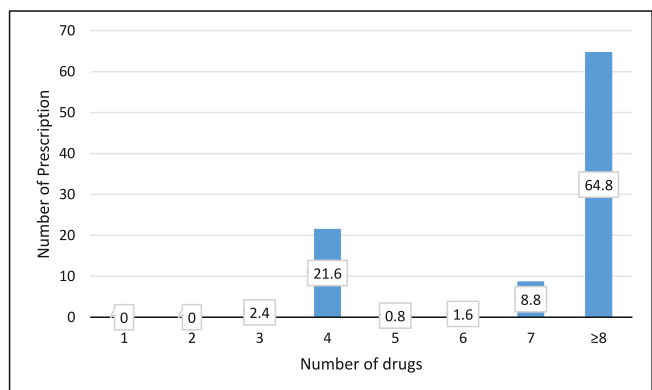


Fig. 2: Number of Drugs Per Prescription

Table 4: Class of Drugs Prescribed

Category	Drugs	Total number	Percentage(%)
Antibiotics	Inj. Ceftriaxone	47	4.82
	Inj. Cefotaxime	10	1.03
	Inj. Piperacillin+Tazobactam	33	3.39
	Inj. Meropenam	9	0.92
	Inj. Vancomycin	3	0.31
	Inj. Metronidazole	18	1.85
	Inj. Ofloxacin	8	0.82
	Tab. Azithromycin	12	1.23
Antifungal	Tab. Rifaximin	18	1.85
	Clotrimazole vaginal tablet	8	0.82
Antifungal	Inj. Fluconazole	8	0.82
	Tab. Tramadol hydrochloride	9	0.92
Opioid analgesic	Tab. Nifedipine	18	1.85
	Tab. Telmisartan	16	1.64
	Tab. Telmisartan + Amlodipine	13	1.33
	Tab. Metoprolol	16	1.64
Antihypertensive	Inj. Human insulin	25	2.56
	Inj. Insulin glargine (lantus)	7	0.72
	Tab. Dapaglifozin	8	0.82
	Tab. Linagliptin	5	0.51
Antidiabetic	Tab. Vildagliptin	5	0.51
	Tab. Pregabalin+nortryptiline	2	0.21
	Diuretics	Inj. Furosemide	28
Diuretics	Tab. Spironolactone	15	1.54
	Inj. Mannitol	4	0.41
	Antiemetics	Inj. Ondansetron	19
Antipyretic	Tab. Paracetamol (24)	39	4.00
	Inj. Paracetamol (15)		
Antiallergic	Tab. Montelukast	3	0.31
	Tab. Levocetirizine + Montelukast	5	0.51
Proton pump inhibitors	Tab. Pantoprazole (6)	105	10.77
	Inj. Pantoprazole (99)		
	Tab. Rabeprazole		
Laxative purgative	Syr. Lactulose	25	2.56
	Syr. Lactital	5	0.51
Probiotic	Cap. Pre & Probiotic	15	1.54
Antidiarrhoeal	Tab. Racecadotril	5	0.51
Antiarrhythmic	Tab. Amioderone	5	0.51
Antiplatelet	Tab. Aspirin	21	2.15
	Tab. Clopidogral	15	1.54
	Tab. Aspirin+Atorvastatin+Clopidogrel	6	0.62
Antihyperlipidemic drug	Tab. Atorvastatin	15	1.54
Antianginal	Tab. Nitroglycerin	13	1.33
	Tab. Isosorbitedinatrate	5	0.51
Antianxiety	Tab. Lorazepam	6	0.62
Calcium supplement	Tab. Calcium	31	3.18
Antigout drugs	Tab. Febuxostat	9	0.92
Vitamin & minerals except calcium&vit d	Tab. Multi vitamins (9)	45	4.62
	Syr. Multi vitamins (11)		
	Inj. Multi vitamins (25)		
Haematinics	Tab. Iron	29	2.97
	Inj. Ferric carboxy maltose	7	0.72
Hypothyroid	Tab. Thyroxine	21	2.15
Histamine analogue	Tab. Betahistine	15	1.54
Antiseptic gel	Gel. Choline salicylate	9	0.92
Alpha blocker	Tab. Tamsulosin	18	1.85
Antihypokelemic	Syr. Potassium citrate	12	1.23
Diabetic kidney disease	Tab. Taurine+Acetylcystine	14	1.44
Urinary alkaliser	Syr. Disodium hydrogrn citrate	15	1.54
Bronchodilator	Tab. Acebrophylline	9	0.92
	Inhalation Ipratropium &levosulbutamol	37	3.79
	Inhalation Budesonide	20	2.05
Ulcer protectant	Susp. Sucralfate	15	1.54
Hepatoprotective	Tab. Ursodeoxy cholic acid	13	1.33

Fig. 3:Disease percentage

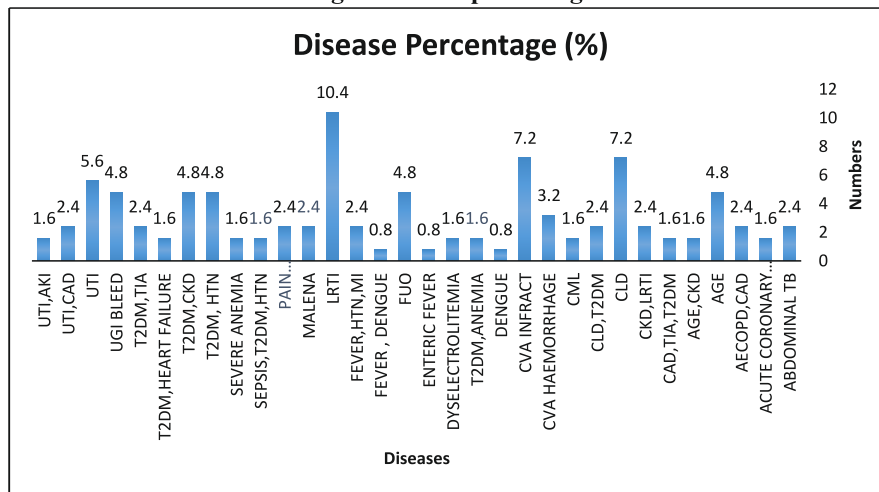


Table 5: Most common drug

Most common oral formulation	Most common parenteral formulation
Tab. Calcium (31)	Inj. Pantoprazole(99)
3.17%	10.15%

Table 6: Fix Dose Combinations

Name	Number	Percentage
Tab. Aspirin+ Atorvastatin+ Clopidogrel	6	0.62%
Tab. Levocetirizine+Montelukast	5	0.51%
Tab.Telmisartan+ Amlodipine	13	1.33%
Tab. Pregabalin+Nortryptiline	2	0.21%
Tab. Taurine + Acetylcystine	14	1.44%

Prescriptions were analyzed using WHO prescribing indicators.

Total number of drugs prescribed was 975

- 1) Average number of drugs per prescription was found to be 7.8 .
- 2) Drug prescribed by generic name 53.85%
- 3) Drug prescribed from WHO Essential Medicine List was 86.46%
- 4) Patients prescribed with an Injection 96.8%
- 5) Antibiotics prescribed was 80%.

DISCUSSION

The present study was aimed to evaluate the drug prescribing pattern in elderly patients.A total of 125 patients were included in the study.The male geriatric patient number was (66.4%) higher than that of females

(33.6%). Similar results were observed in the Nataraj and Bharathi study, with male geriatric patients' preponderance 55.89% than that of females, 44.11% (7) and study conducted by Rajesh Kumar, Nusrat Kreem Bhat et al. with male (54.67%) and female (45.32%)(8). A majority of patients were in the age group 65–69 years 82 (65.6%), which is double (31.2%) of a previous study by Wegayehu Lemma, Mojahidul Islam et al. (9) and similar to other studies conducted in India (10,11,12).

The prescription pattern in the geriatrics needs modification as per the rational use of medicine so that a cost-effective and safe drug reaches the geriatric communities (13).

Drug prescribed by Generic name was 53.85% and by Brand name was 44.15% which is very less as per WHO

guidelines. By prescribing a generic name, the risk of medication errors can be reduced because it depicts a clear identification and enables precise and better communication among healthcare professionals. (12,14).

Drug prescribed from WHO Essential Medicine List was 86.46% against the WHO standard at 100% (15). The majority of the patients presented with diseases of lower respiratory tract infection (10.4%) followed by cerebrovascular accidents (7.2%), and chronic liver disease (7.2%). The percentage of injections prescribed was 94%, which is much higher than Borah Lakhimi et al.'s (65%) study (16). Analysis of prescriptions using WHO drug use indicators showed that the average number of drugs per prescription was 7.8 which is more than similar studies on geriatric population done by Borah Lakhimi et al.'s where the average was 5.6 (16) and by El yamani Majda A. and Sherif Fathi M. where the average was 3.3 (17). The average number of drugs prescribed per prescription was 0.32 for fixed-dose combinations which is less than (2.15 ± 1.41) that of Keche et al. (18) study.

CONCLUSIONS

The study shows that a good percentage of drugs were from the essential drug list, but this practice must be increased in the future. Again, the average number of drugs per prescription was high, so physicians must reduce the number of drugs per prescription to avoid adverse drug reactions. Although a good number of drugs were prescribed by their generic names, the number should be increased. Regular educational interventions at different levels further promote rational prescribing.

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CONFLICT OF INTEREST

None

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