ORIGINAL ARTICLE
NORTH BENGAL MEDICAL COLLEGE JOURNAL [2022], VOL.,8 , No.2 : 09-15

Rational Use of Drug among Geriatric Patients Prescribed by Different Level of Private Practitioners

*Nazia Mahmud Badhon,[1] Md Anwar Habib,[2]
Nurun Nahar,[3] Taslima Akter Sumi[4]

ARTICLE INFO

Article history:
Received: 23 October 2021
Accepted: 20 May 2022

Online:
www.nbmc.ac.bd

Keywords:
Rational use of drug,
WHO, Geriatric patient

ABSTRACT

Introduction: *This study was conducted on the basis of different private practitioner's prescription for geriatric patient. Clinically inappropriate use of drugs in health care facilities result increased mortality, morbidity, adverse drug reactions, poor patient outcomes and wastage of limited resources. The main objective of the study was to investigate the pattern of rational use of drugs by the private practitioners in the Rajshahi Metropolitan Area of Bangladesh based on core indicators of rationale drug use as per World Health Organization (WHO). These indicators mainly based on clinical encounters taking place at doctor`s private chamber during the treatment of diseases.* ***Methods:*** *For the purpose of this descriptive study, data collected from 262 patients attended in the different practicing chamber of 131 doctors. Two prescriptions from each doctor were collected, coded and analyzed by SPSS. We have done main focus on two major prescribing indicators i.e. geriatric patient and poly pharmacy.* ***Results:*** *Among 131 doctors, 29 (22.14%) were MBBS/BDS degree holder, 22(16.79%) were diploma/M.Phil degree holders, 80(61.07%) were MD/MS/Fellowship/PhD degree holders. Average number of drugs per prescription was 4.8 and percentage of drugs prescribed from EDL (Essential Drug List) of Bangladesh was 27.96.Among the all prescribed drugs, 11.60% were antibiotics and 2.94% of drugs were injections. No prescription with generic name was found.* ***Conclusion:*** *So, the current study expressed the need to train our prescribing doctors on writing rational prescriptions for strengthening the health care delivery system.*

1. *Associate Professor, Department of Pharmacology and Therapeutics, MH Samorita Medical College, Dhaka, Bangladesh*
2. *Professor, Department of Pharmacology and Therapeutics, Islami Bank Medical College, Rajshahi, Bangladesh*
3. *Professor, Department of Pharmacology and Therapeutics, MH Samorita Medical College, Dhaka, Bangladesh*
4. *Associate Professor, Department of Community Medicine, MH Samorita Medical College, Dhaka, Bangladesh*

***Corresponding author:** ⊠ badhoncbmcb@gmail.com

INTRODUCTION

Society has traditionally classified every one over 65 as elderly but most authorities consider geriatrics to person over 75. The National Institute on Aging and the National Institute of Health, have redefined the term ''geriatric" as referring to the age group greater than or equal to 65 years old.[1]Rational use of drugs requires that patients receive medications appropriate to their clinical needs, in doses that

meet their own individual requirements for an adequate period of time and the lowest cost to them and their community.[2] Clinically inappropriate and inefficient use of drugs is a widespread problem at all levels of care and results in increased mortality, morbidity, adverse drug reactions, poor patient outcomes and wastage of resources. Irrational or non-rational use is the use of drugs in a way that is not compliance with rational use.[3] World Health Organization (WHO) defined irrational use of drug as "Patients receive medications with Wrong clinical diagnosis, Wrong selection of drugs, Wrong doses, and Wrong route of administration, Wrong duration, Wrong patients, Wrong information and interpretation. Common type of irrational medicine uses are the application of too many medicines per patients (Poly pharmacy), inappropriate use of antimicrobials often in insufficient dosage for non-bacterial infection, over use of parenteral formulations where oral forms would be more applicable, failure to prescribe drugs from essential drug list and drugs prescribed in trade name not in generic name.[4] Clinically inappropriate and economically inefficient use of medicine is very serious problem worldwide. It is estimated that worldwide more than 50% of all medicines are prescribed, dispensed or sold inappropriately and 50% of patients fail to take them correctly, 70-80% prescription for antimicrobials are unnecessary and an estimated two-thirds of global antibiotic sales occur without any prescription.[2]

Private medical practitioners or general practitioners are the doctors who are frequently visited by the general public and they treat them for common illnesses. They provide primary health care especially in developing countries as they are easily approachable by the society. General practitioners give treatment of wide variety of diseases at primary health care level and this makes them to prescribe a wide range of drugs of different classes.[5] Without knowledge of how drugs are being prescribed and used, it is difficult to initiate a discussion on rational drug use or to suggest measures to improve prescribing habits. In order to obtain objective, reproducible and enable comparisons of measures of the effectiveness and efficiency of drug use practices at facility, regional and country levels, WHO and International Network for Rational Use of Drugs (INRUD) introduced drug use indicators. These indicators depend on three perspectives; the patient, prescriber and health care environment in which the patient is being treated. Due to the relevance of drug utilization studies in ensuring safe and effective drug therapy outcomes in the healthcare system, healthcare institutions in various parts of the world are providing insightful research findings which have been very useful in making appropriate interventions in the rational use of drugs at both the institutional and national level.[6] The main objective of this study was to investigate the pattern of rational drug use at different levels of private practitioner in Rajshahi metropolitan area by using the WHO standard indicators. Recommendations from findings would become helpful for policy making and health care management to design interventions which would improve rational drug usage among the private practitioners.

METHODS

This cross sectional descriptive study was carried out in the Department of Pharmacology and Therapeutics, Rajshahi Medical College, Rajshahi, from January to December 2016. Purposive sampling technique was applied for selection of doctors. Two prescriptions of geriatric patients from each of 131 registered practitioners were collected from the different private chambers within Rajshahi Metropolitan area. Thus, Total 262 prescriptions of geriatric patients were collected. A partially structured checklist was used as the research instrument. Then the prescriptions were analyzed by tabulated data in prescription sheet. All relevant information was recorded on the basis of a prescription order writing check list. The data were analyzed by using SPSS (statistical package for social sciences) software program version16. Descriptive analytic techniques involving frequency description, computation of percentage and mean etc. were applied. After data analysis, results were founded

according to objectives, study results were presented in the form of tables, chart, graphs and description of the key findings according to need.

RESULTS

Total 262 prescriptions of geriatric patients from 131 registered private practitioners were collected from the chambers of private practitioners and also in front of pharmacies within Rajshahi Metropolitan area during January, 2016 to December, 2016. Among 131 private practitioners, 29 (22.14%) were MBBS/BDS degree holders, 22(16.79%) were diploma/M.Phil degree holders, 80(61.07%) were MD/MS/Fellowship/PhD degree holders either from Bangladesh or from abroad (Figure 1).

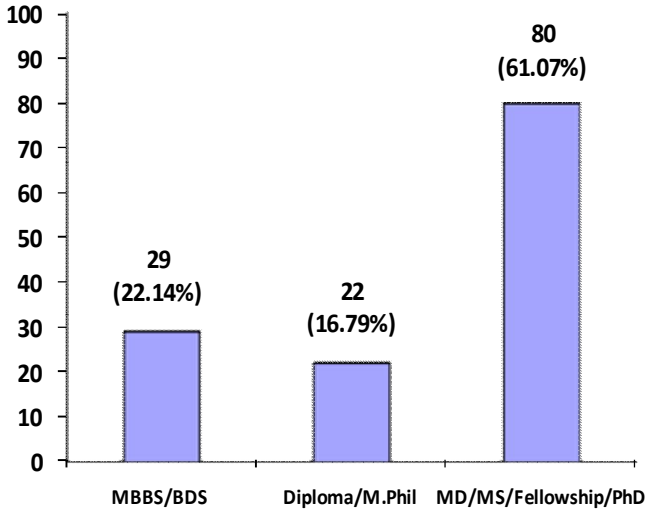

Figure 1: Qualification status of Doctors

Table I: WHO core drug prescribing indicators among general practitioner, consultant and specialist

WHO core drug use indicator (Prescribing)	MBBS/BDS (General practitioner)	Diploma/ M.Phil. (Consultant)	MD/ MS/ Fellowship/ PhD (Specialist)	Values obtained (Total)	WHO standard for adults in general
Average no. of drugs per prescription	3.7	4.5	6.2	4.8	1.6-1.8
Percentage of drugs prescribed by generic name	0.0(%)	0.0(%)	0.0(%)	0.0(%)	100(%)
Percentage of encounters with an antimicrobial prescribed	10.9(%)	11.7(%)	12.2(%)	11.6(%)	20-26.8 (%)
Percentage of encounters with an injection prescribed	2.8(%)	2.5(%)	3.6(%)	2.9(%)	13.4-24.1 (%)
Percentage of drugs prescribed from EDL of Bangladesh	34.5(%)	27.3(%)	22.2(%)	28.0(%)	100%

Core drug prescribing indicators of WHO for the general practitioner, consultant and specialist are shown in Table I. On average 4.80 drugs were prescribed in each prescription and also for GP,

consultant and specialist were 3.7, 4.5 and 6.2 respectively. All the drugs were prescribed by trade name. Among the all prescribed drugs 11.60% were antibiotics. Percentage of antimicrobial among GP, consultant and specialist were 10.9%, 11.7% and 12.2% respectively. On an average 2.94% of drugs were injections in each prescription and 2.8%, 2.5%, 3.6% among GP, consultant and specialist. Drugs prescribed from EDL of Bangladesh were 28% and also for GP, consultant and specialist were 34.5%, 27.3% and 22.2% respectively.

Table II: Number of drugs prescribed per prescription (N-1259)

Number of drugs	Number of Prescription	Percentage
One	2	0.8
Two	16	6.1
Three	41	15.6
Four	64	24.4
Five	65	24.8
Six	32	12.2
Seven	21	8.0
Eight	12	4.6
Nine	4	1.5
Ten	5	1.9
Total	**262**	**100.0**

N= Total number of drugs

The number of drugs prescribed per prescription is shown in Table II. The range of drugs per prescriptions varied from 1-10. There was no prescription without prescribing any drug. Among total 262 prescriptions, five drugs were prescribed in 65 (24.8%) prescriptions as highest and four drugs were prescribed in 64 (24.4%) prescriptions which was the second most common and ten drugs were prescribed in 5 (1.9%) prescriptions.

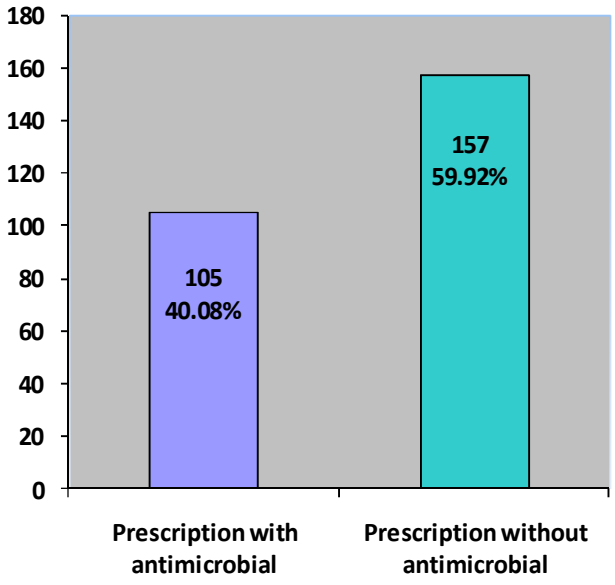

Figure 2: Categorizing Prescriptions by presence of antimicrobial drugs

Total number of prescriptions with and without antimicrobial is shown in Figure 2. Among 262 prescriptions, 105 (40.08%) were with antimicrobial and 157 (59.92%) prescriptions were without antimicrobial.

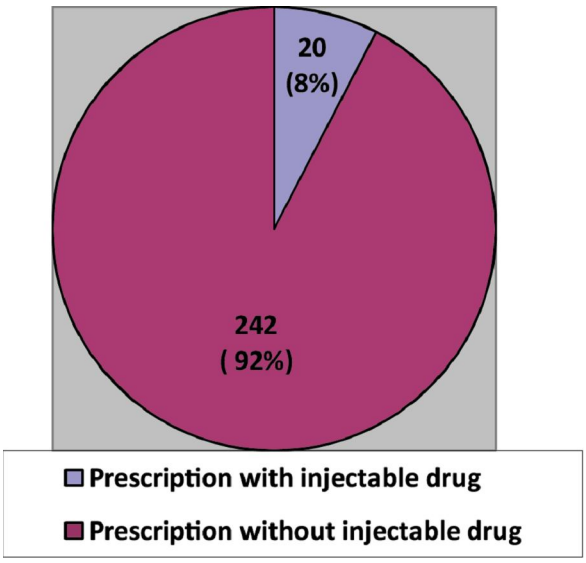

Figure 3: Prescriptions with injectable and without injectable drugs

Among 262 prescriptions, 20 (8%) were with injectable drugs and 242 (92%) prescriptions were without injectable drugs (Figure3).

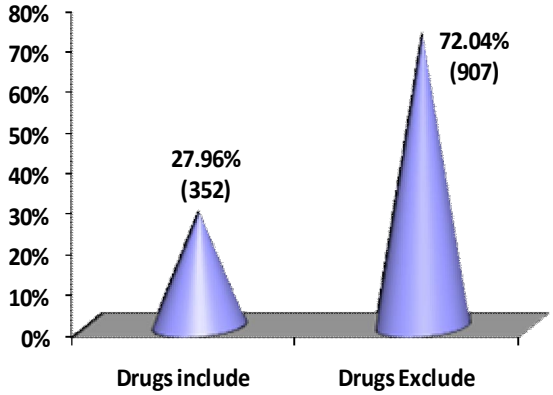

Figure 4: Distribution of drugs prescribed from essential drug list (EDL) of Bangladesh

The percentage of drugs prescribed which were included or excluded from EDL is shown in Figure 4. Only 352 drugs (27.96%) out of 1259 drugs in 262 prescriptions were prescribed from the Essential Drug List (EDL) of Bangladesh and the majority of drugs 907 (72.04%) were prescribed from the pharmaceuticals other than EDL of Bangladesh.

DISCUSSION

The present study allowed us to get information about the rational use of drug for geriatric patients in private doctor's chambers within Rajshahi metropolitan area. WHO provided adequate guidelines for the formulation of national use of drugs by every country and Bangladesh is still trying to achieve the standard by following those guidelines.

In the present study, among the physicians, 61.07% were holding MD/MS/Fellowship/PhD degrees, 16.79% were with Diploma degrees and 22.14% were MBBS/BDS degree holders. This may be due to most specialist doctors used to do their practice within the metropolitan area. Urban patients supposed to consider specialist doctors for better treatment.

With regard to the average number of drugs per prescription, the value found in the present study was 4.80. We also found average number of

drugs per prescription among doctors like GP, consultant, specialist were 3.7, 4.5 and 6.2 respectively. Similar studies were conducted in other countries, in Ghana (3.7),[7] Nepal (2.53),[8] India (2.77),[9] Pakistan (3.04)[10] where the values found lower than this study. These differences may be due to variation in health care delivery systems, socioeconomic conditions, mortality and morbidity criteria of the population. According to WHO, the average number of drugs per prescription should be 1.6-1.8 inadultpopulations.[10] So, polypharmacy is reflected by the result of this study. This polypharmacy might cause adverse drug reactions, drugs interactions, decreased efficacy of treatment regimens and unnecessary drug expenses.

In this study, Percentage of drugs prescribed in generic name was 0%. More than 60% of the drugs were prescribed by generic name in 26 countries.[11] Pakistan, India, Uzbekistan, Namibia showed less than 50% of drugs prescribed by generic name.[11]According to WHO, for adults in general the percentage of drug prescribed by generic name should be 100%.[10] Most of the physician consider the trade name to prescription because they want to ensure the quality of drug which is best for their patient.

In our findings, percentage of average number of antimicrobial drugs was 11.6% and percentage of encounters antimicrobial among doctor like GP, consultant, specialist were 10.9%, 11.7% and 12.2% respectively. According to WHO for adults in general the percentage of encounters with an antimicrobial is 20-26.8%.[10]Antibiotic resistance among pathogenic microorganism is a matter of worldwide concern, in this study we found limited use of antimicrobial in patients. It may be due to physician are concern about adverse effect produced by antimicrobial use and harmful effect on the vital organs like liver, kidney etc.

WHO recommended target for adults in general of prescribing injection is 13.4-24.1%.[10]But in this study, the percentage was 2.9% and for GP, consultant, specialist these were 2.8%, 2.5%, 3.6% respectively. This lower rate of prescribing injectable form of drugs may be due to its inconvenient application in outdoor patients. Usually doctors prescribed injectable drugs after hospitalization of patients.

The percentage of drugs prescribed from national EDL was 27.96% and for GP, consultant, specialist were34.5%, 27.2% and 22.2% respectively. Less number of drugs was used from national EDL. This lower rate is may be due to commonly used drugs are absent in the list of national EDL and they are easily available outside.

LIMITATION

1. The Current study do not represents the broad perspective.
2. There might be selection bias.
3. Most of the responder were not cooperative and lack of time that why purposive sampling had been done.

CONCLUSION

This study provided a feature on the layout of prescription, prescribed by the physicians with different qualifications in their private chambers within Rajshahi Metropolitan area. The WHO core drug prescribing indicators were observed. Polypharmacy, absence of generic name in prescriptions and less number of drugs from national EDL were frequently observed. On the other hand careful use of antibiotics and injections were identified. A standard prescription lay out should be formated at national level, make it available in all health facilities, training of prescribing doctors and regular monitoring should be conducted. The result obtained in this study provides a baseline for policy makers to monitor and make the necessary educational and managerial interventions to improve the situation.

Acknowledgement: Authors are grateful to all physicians for their cordial cooperation.

Conflict of interest: None

REFERENCES

1. Singh S, Bajorek B. Defining 'elderly' in clinical practice guidelines for pharmacotherapy. NLM. 2014; 12(4): 489. DOI: 10.4321/s1886-36552014000400007.
2. Chowdhury FR, Rahman MM, Huq MF, Begum S. Rationality of drug uses: its Bangladeshi perspectives. MMJ. 2006; 15(2): 215-219.

3. Bandyopadhyay D, Banerjee CN, Chattopad hyay S, Singha P. A study of prescription auditing in a tertiary care teaching care hospital of eastern India. J Drug Deliv Ther. 2014; 4(1): 140-149.
4. The rational use of drugs: report of the Conference of Experts, Nairobi, 25-29 November 1985. World Health Organization. https://apps.who.int/iris/handle/10665/37174.
5. Pandiamunian J, Somasundaram G, Manime-kalai K and SalweK J. A study on prescribing pattern of drugs by general practitioners in a rural area of Tamilnadu. *Int J Pharma Bio* Sci. 2013; 4(2): 480-486.
6. Afriyie DK, Tetteh, Raymond. A description of the pattern of rational drug use in Ghana police hospital. Int J Pharm Pharm. 2014; 3(1): 143-148.
7. Jain S, Khan ZY, Upadhyaya P, Abhijeet K. Assessment of prescription pattern in a private teaching hospital in India. Int J Pharma Sci. 2013; 3(3): 219-222.
8. Mhetre NA, Bodhankar SL, Pandit VA, Zambare GN. Study of pattern of drug usage in an urban area. Indian J Pharmacol. 2003; 35: 316-317.
9. Akhtar MS, Shafiq M, Irshad N, Hussain R, Malik A, Qayyum MI. Assesment of prescribing practices of private GP's in Islamabad. Int J Curr Pharm Res. 2013; 5(1): 49-53.
10. Taskeen M, Anitha N, Ali RS, Bharath R, Khan BA. A Study on Drug Prescribing Pattern in Geriatric Patients in Hyderabad Metropolitan. JDDT. 2012; 2(5): 109-113.
11. Pavin M, Nurgozhin T, Hafner G, Yusufy F, Laing R. Prescribing Practices of Rural Primary Health care Physicians in Uzbekistan. Trop Med Int Health. 2003; 8(2): 182-190.