

A RETROSPECTIVE STUDY ON DRUG PRESCRIBING PATTERN AMONG GERIATRIC PATIENTS IN A GENERAL WARDS OF TERTIARY CARE HOSPITAL, MANDYA

Deeksha shetty¹, A.Vikneswari*², Gayathri.S³, Joyel Manjila⁴

¹Pharm-D, Bharathi College of Pharmacy Bharathinagara, Mandya.

*²Associate professor, Department of Pharmacy Practice, Bharathi College of Pharmacy, Mandya, Karnataka, India.

³Pharm-D, Bharathi College of Pharmacy Bharathinagara, Mandya.

⁴Pharm-D, Bharathi College of Pharmacy Bharathinagara, Mandya.

*Corresponding Author: A. Vikneswari

Associate professor, Department of Pharmacy Practice, Bharathi College of Pharmacy, Mandya, Karnataka, India.

Article Received on 06/08/2021

Article Revised on 27/08/2021

Article Accepted on 16/09/2021

ABSTRACT

Background: Geriatric population is raising throughout the world, so the quality and the safety of prescribing medication in the geriatrics population is a global health care concern. It is compulsory for the health care professionals to be aware of the limitations of prescribing certain drugs to the elderly. This present study is an attempt to shed a light on the utilization of prescription pattern among geriatrics and enhance the knowledge regarding the clinical profile and medicines prescribed in geriatrics. **Methodology:** It is a Retrospective cross-sectional study including 200 geriatrics inpatients admitted to medicine wards was conducted for a period of 6 months. Relevant details were collected from case files of the patients and entered into a predesigned pro forma and data were analyzed. **Results:** Majority of the patients were between the ages of 65 and 74 years (72.77%). There was female preponderance (57.7%). Antibiotics were the most commonly prescribed drug (17.66%) followed by anti-inflammatory and analgesics(14.40%), drugs acting on gastrointestinal system (9.32%), drugs acting on respiratory system (8.6%). Ceftriaxone was the most frequently prescribed drug followed by Ranitidine and Paracetamol. Average number of drugs prescribed per encounter was 6.13. Diclofenac was found to be the most prescribed inappropriate medication (11.11%) followed by Pantoprazole (10.55). In our study the major drug interactions were found to be (12.77%) and overdosed prescriptions were found to be (1.11%). **Conclusion:** Drug prescribing data can help in assessing the quality of care given to patients; promote rational use of medicines by helping to improve prescribing patterns.

KEYWORDS: Geriatrics, Prescribing pattern.

INTRODUCTION

As per the WHO report, most of the countries have accepted the sequential of 65 and above years as definition of elderly. Geriatrics population is raising rapidly in India and at present geriatrics population accounts for 7.45% of total population which is expected to raise to 12.45% by the following years. There will be so many physiological changes that can be seen in the older people as they get older and old. It may be changes with the body water, changes in the kidney and liver functions and raised body fat changes the pharmacokinetic and dynamics of the drugs. Prescription of drugs is the important factor of health care system in all age groups of population.^[1] Gerontology is the scientific analysis of the human senescence process; it is the study of the all factors that takes place as the person develop from middle age to later life phases. It includes the study of physical, mental and social changes that

transpire within the older individuals as they get aged.^[2] Most studies among geriatrics patients thus have sorted elderly adults in to one group. Even though there are many methods to classify geriatric patients, some studies classified elderly people between the ages of 65 and 75 years as youngest-old, between ages 75 to 84 years are as middle-old, and those aged above 85 years are as oldest-old.^[3] Polypharmacy is nothing but the use of collective medications by the patient. Polypharmacy is mostly refers to prescribed medications, it is important to include the number of over-the-counter and herbal/supplements used.^[4] A Potentially Inappropriate Medication (PIMs) is helpful for older people in prohibit adverse drug events occurring at prescription phase. PIMs use among elderly patients is linked with negative health related issues and can affect the patient's quality of life.^[5]

A medication error is nothing but a failure of the medication therapy that leads to affect the patient’s quality of life. Medication errors usually occurs at stage where, which medicine and dosage regimen to use (prescribing issues,—irrational, inappropriate, and ineffective prescribing, under prescribing, overprescribing); writing the prescription (prescription errors); manufacturing the formulation; dispensing the formulation; administering or taking the medicine; monitoring therapy.^[6]

Prescribing guidelines for geriatric patients are:1. To conduct a routine medication review, discuss the changes observed in patients; 2. Avoid any current drug that are not indicated; 3.Prescribe the medications that have noticeable indications;4. Stop the drugs that affect the health condition of elderly patients, such as benzodiazepines, and recommended dosage reduction when appropriate; 5.Use the recommended dosage for elderly patients;6.Use the simple drug chart and appropriate administration systems; 7.consider using once daily or twice or weekly formulations and using fix dose combination when possible.^[7] So this present study was conducted with the aim to describe the prescription pattern among geriatrics patients in tertiary care hospital.

METHODOLOGY

A record based retrospective study was conducted in the department of General Medicine of Tertiary care Hospital MIMS, Mandya. This study was initiated after getting ethical clearance from the ethics committee of MIMS teaching hospital, Mandya. Sample size of 180 patients of both gender, aged above 65 years was considered. Data were collected from the patient case records, patient’s socio-demographic details like age, sex, present complaints, present history, laboratory findings and diagnostic tests have been recorded.

RESULT

This study was conducted in the general medicine ward of MIMS, Mandya. The prescription data of 180 patients were enrolled in the study based on study criteria. The required details from the patient’s prescriptions were recorded in a suitably designed patient profile form. The prescription data of 180 prescriptions were categorized based on age, gender, type of disease and medicines used.

Table 1: Patient Demographic Characteristics.

Characters	No. of patients
Age (mean ± SD)	70.15±5.63
Gender	
Male	76
Female	104
Social history	
Smokers	49
Non smokers	131
Alcoholic	65
Non alcoholic	115
Reduced appetite	52
Disturbed sleep	43

Patientdistribution based on age group

All patients were divided on the basis of WHO classification of geriatrics based on their age. Most of the patients in the age group of 65-70 years received a highest percentage of prescriptions (72.77%), between 75-85 years of age group people received 23.33% of prescriptions, whereas lowest percentage of the prescriptions was in the age above 85 years (3.88%).

Table 2: Age related distribution of the elderly patients according to prescriptions.

S. no.	Age in years	Total number of patients	Percentage
1	65-74	131	72.77%
2	75-85	42	23.33%
3	More than 85	7	3.88%

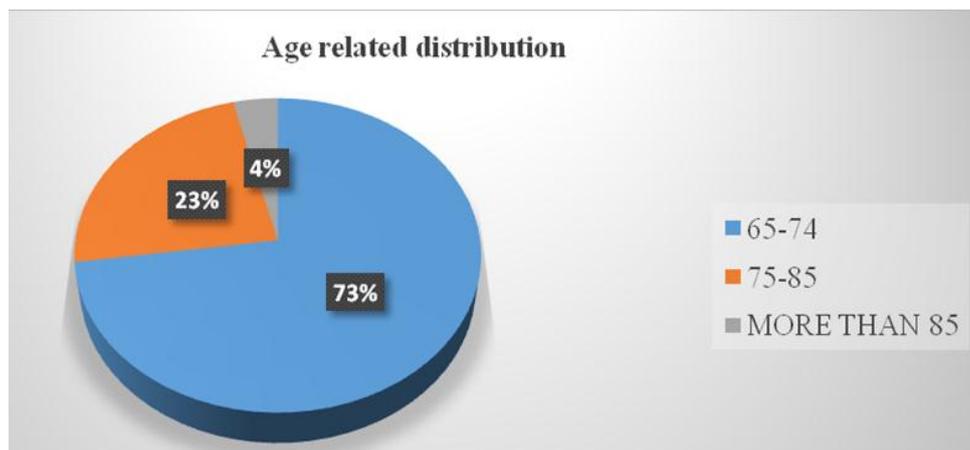


Figure 1: patient distribution based on age group.

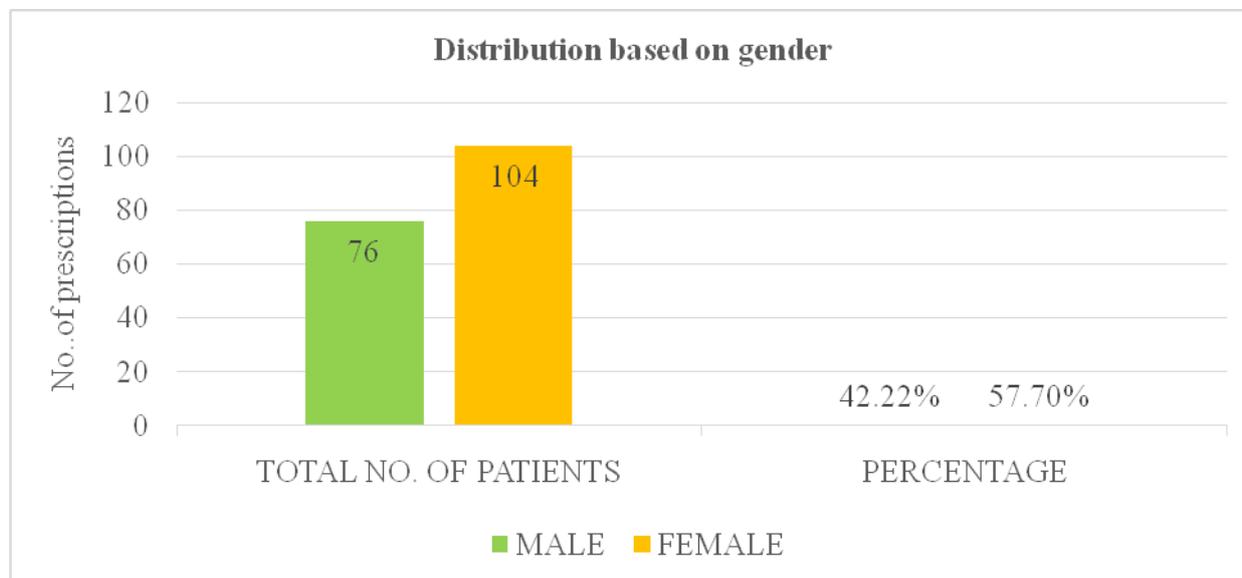
Patient distribution based on the gender

The prescription data of 180 patients were analyzed in the current study, out of which 74(41.11%) belongs to

males and rest 104(58.88%) belonged to females. Our study shows that females were more in number.

Table: 3 patient distribution based on the gender.

Sl.no.	Gender	Total no. of patients	Percentage
1	Male	76	42.22%
2	Female	104	57.7%

**Figure 2: Patient Distribution Based on the Gender.****Therapeutic classes of the prescribed drugs in the elderly**

Out of 180 prescriptions analyzed, disease encountered by elderly people are classified according to number of disease encountered. The total number of drugs

prescribed for various disease condition in the study population was 1104. The mean number of drugs per prescriptions was 6.13. Polypharmacy is also found in prescriptions at about 11.71% out of 180 prescriptions.

Table 4: Therapeutic classification of drugs.

Sl. No.	Drug Classifications	Number of Drugs Prescribed	Percentage
01	Antibiotics	195	17.66%
02	Antidiabetics	44	3.98%
03	Anti Hypertensives	71	6.43%
04.	Hmg-Coa Reductase	29	2.62%
05.	Anti Viral	7	0.63%
06	H2 Blockers	103	9.329%
07	Antiemetics	38	3.44%
08	Antacids	4	0.362%
09.	Corticosteriods	20	1.811%
10.	Anti Histamine	17	1.53%
11.	Laxative	3	0.271%
12.	Anti Psychotics	20	1.811%
13.	Anti Depressants	6	0.543%
14.	Anti Coagulants/ Platelets	42	3.80%
15.	Anti Fungal	10	0.905%
16.	Anti Helmintics	6	0.543%
17.	Antimalarial	11	0.99%
18.	Anti Microbials	4	0.36%
19.	Anti Cholinergics	3	0.217%
20.	Diuretics	7	0.634%

21.	Anti Tubercular	4	0.362%
22.	Proton Pump Inhibitors	22	1.99%
23.	Hepato Protectant	21	1.90%
24.	Bronchodilator	95	8.605%
25.	Vitamins	62	5.61%
26.	Probiotics	19	1.74%
27.	Anti Thyroid	1	0.09%
28.	Others(Ivf, Medicinal Gas)	82	7.42%
29.	Anti-Inflammatory And Analgesics	159	14.40%
	Total	1104	

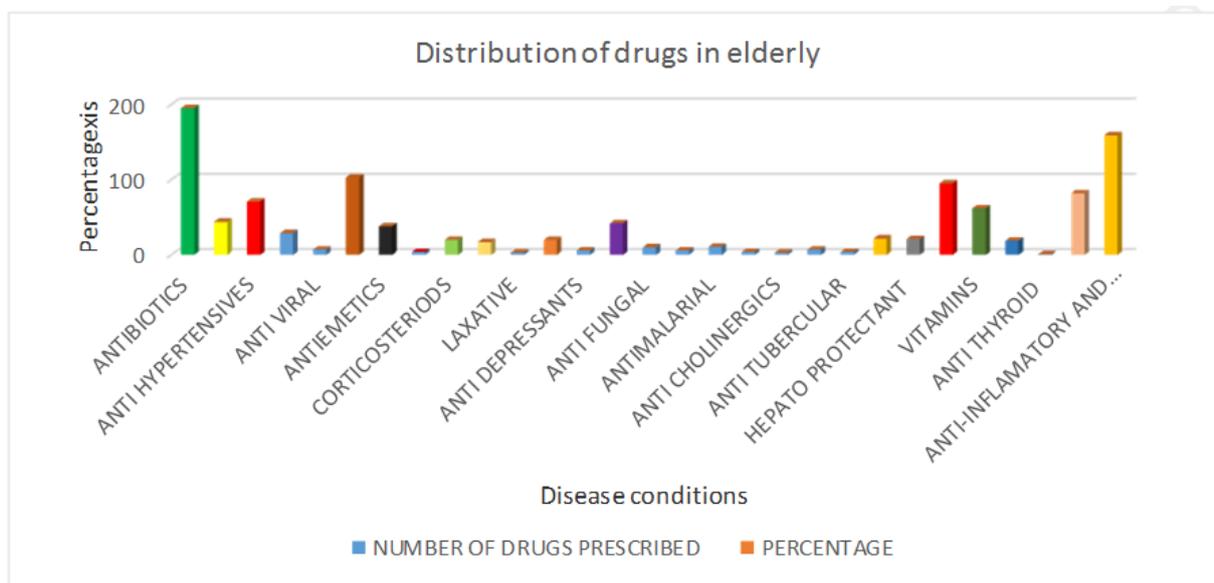


Figure 3: Distribution of drugs in Elderly.

Drug related problems

Geriatrics patients are high risk of drug related problems (DRPs) due to multi-morbidity associated with polypharmacy, age related physiological changes, pharmacokinetic and pharmacodynamics alternations. Some drug related problems are drug-drug interactions, inappropriate medications, over dosage, drug use without indications and untreated indications.

Out of 180 prescriptions (52.72%) of drugs are inappropriately prescribed. Most common being pantoprazole 10.55% and least being haloperidol (1.66%).

Out of 180 prescriptions 12.77% of drugs undergone major drug interactions and 8.33% of drugs undergo moderate interactions and 6.11% of minor and 79.94% of drugs undergo no interactions.

Out of 180 prescriptions 1.11% of drugs were prescribed which exceeds minimum dosage level. Out of 180 prescriptions 4.44% of patients did not receive any drugs for their conditions. Out of 180 prescriptions 1.66% of drugs prescribed in patients without any conditions.

Table 5: Drug related problems.

S.No	Drug Related Problems	No.of Prescription	Percentage (%)
1	Inappropriate Prescriptions	8	4.44%
2	Drug-Drug Interactions	49	27.22%
3	Overdose	2	1.11%
4	Untreated Indications	8	4.4%
5	Drug Use Without Indication	3	1.66%

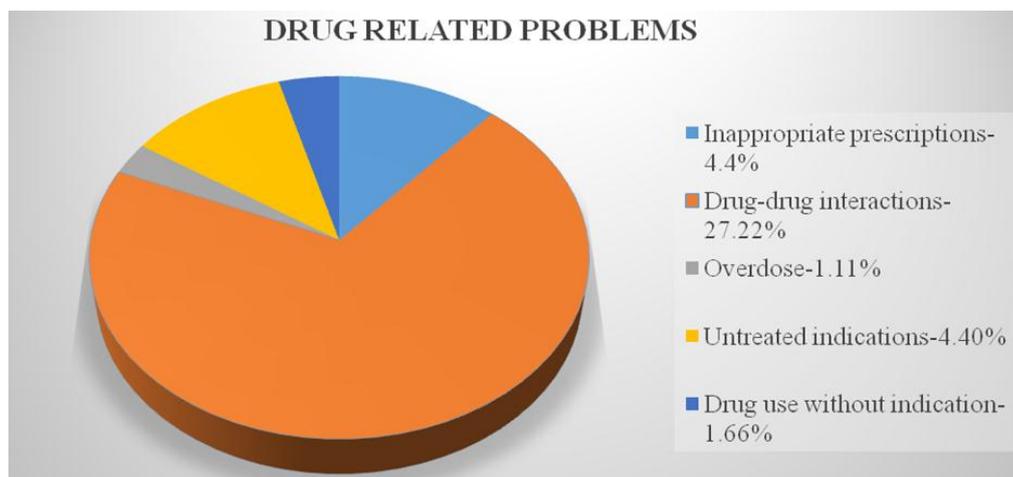


Figure 4: Drug related problems.

DISCUSSION

A Retrospective study was conducted to assess the prescription pattern of inpatients who are admitted in general medicine department of Mandya institute of medical science and teaching hospital, Mandya.

The prescription data of 180 patients were enrolled in the study based on study criteria. The required details from the patient's prescriptions were recorded in a suitably designed patient profile form. The prescription data of 180 prescriptions were categorized based on age, gender, type of disease and medicines used.

All patients were divided on the basis of WHO classification of geriatrics based on their age. Most of the patients in the age group of 65-70 years received a highest percentage of prescriptions (72.77%), between 75-85 years of age group people received 23.33% of prescriptions, whereas lowest percentage of the prescriptions was in the age above 85 years (3.88%). Similar study is conducted by the Prakash goudanavar *et al.*^[8] where age between 65-69 years receive highest prescriptions (73.55%) and least being 80-89(7.2%).

The prescription data of 180 patients were analyzed in the current study, out of which 74(41.11%) belongs to males and rest 104(58.88%) belonged to females. Our study shows that females were more in number which is similar to the study of Majda A. *et al.*^[9] They reported similar study where females more in number 54.2% whereas males are only 45.8%.

In the study of 180 prescriptions most commonly used route in the elderly is oral (47.01%) and Intravenous, and intramuscular and subcutaneous route is also followed in the elderly (42.39%) and Inhalations are also common in the elderly due to their disease condition(9.23%) and least we found is local applications its only 1.35%.

Social history of 180 prescription were analyzed where we found 27.22% of elderly patients are smokers and rest 72.77% of patients are non-smokers and 36.11% of patients who consumes alcohol irrespective of gender and 63.88% of patients are non- alcoholic and 28.88% of elderly patients have reduced appetite and 23.88% of patients have disturbed sleep.

Geriatrics patients visits hospital with one or more disease conditions. Here we considered single disease condition, two disease condition, and three disease condition and four or more disease conditions Out of 180 prescriptions 20.55% of patients who admitted in the hospital diagnosed with the one disease condition and 27.77% of patients admitted in hospital with two disease condition and 27.22% of three disease conditions and 8.33% of four disease conditions and 16.11% of five or more disease conditions. Similar study was conducted by Rima B shah *et al.*^[10] where patients admitted to the hospital diagnosed with single condition was found to be 21.25% and with two disease condition was found to be 34.5% and three disease was found to be 23%, four disease 15%.

Out of 180 prescriptions analyzed, the patients included on the basis on clinical diagnosis most common being respiratory infections, hypertension, diabetes mellitus, gastrointestinal disease, bacterial infections many more. The total number of drugs prescribed for various disease condition in the study population was 1104. The mean number of drugs per prescriptions was 6.13. This is similar to the study conducted by the Jyothsna CS *et al.*^[11] where the average number of prescription was 6.7. Most of the drugs are anti-biotics (17.66%) among the antibiotics, ceftriaxone was most commonly prescribed drug. Anti-inflammatory and analgesics are the second most prescribed drug in our study. The most commonly prescribed parenteral drug was ranitidine which is also the highest prescribed drug in the elderly (9.3%) for gastroenteritis.

Elderly will be prescribed with more medication due to several disease condition which they face in their life.

Out of 180 prescription major polypharmacy was found to be 2.27% and 9.44% of minor polypharmacy and 87.77% of non-polypharmacy. Similar study was conducted by Sumitra Shrestha *et al.*^[12] where they found 0.9% of major polypharmacy and 11.2% of minor polypharmacy.

Geriatrics patients are high risk of drug related problems (DRPs). Some drug related problems are drug-drug interactions, inappropriate medications, over dosage, drug use without indications and untreated indications. Out of 180 prescriptions 95 (5.22%) of drugs are inappropriately prescribed. Most common being pantoprazole 10.55% and least being haloperidol (1.66%) and similar study was conducted by Pavani golla *et al.*,^[13] shows that proton pump inhibitors are most inappropriate drug followed by chlorphenaramine and theophylline.

Out of 180 prescriptions 12.77% of drugs undergone major drug interactions and 8.33% of drugs undergo moderate interactions and 6.11% of minor and 79.94% of drugs undergo no interactions. Similar study was conducted by Sujatha Sapkota *et al.*,^[14] according to their study they have found 29.9% of drug interactions was found in total prescriptions.

Out of 180 prescriptions 1.11% of drugs were prescribed which exceeds minimum dosage levels and 4.44% of patients did not receive any drugs for their conditions. 1.66% of drugs prescribed in patients without any conditions

CONCLUSION

A Retrospective study was conducted to assess the prescription pattern of inpatients who are admitted in general medicine MIMS, Mandya. Present study concludes that geriatric patients admitted to the hospital with one more disease condition and treatment is given to the particular disease condition. Antibiotics are the most prescribed drug and anti- thyroid drugs are least prescribed drugs. And polypharmacy is also found in few prescriptions.

Inappropriate prescriptions, drug interactions, overdose, use of drugs without indications and untreated indications are the few drug related problems found in our study. Awareness among geriatrics should be created to improve their health and to avoid them from exposure to many drugs. Pharmacist intervention requires for improving quality of life in geriatric patients.

REFERENCE

1. Rajesh Kumar, Nurstkareen bhat, Dharminder kumar, Seema guptha. Drug prescribing pattern in Elderly patients admitted in medicine department of tertiary care hospital in North India-A prescription Evaluation study, 2017; 19(04): 233-237. www.jkscience.org.

2. Dr. Radhika kapur. Understanding of Gerontology.1-8 <https://www.researchgate.net>
3. Sang Bum Lee, Jae Hun oh, Jeong Ho Park, Serung Pill choi, Jung hee wee. Difference in youngest-old, middle-old, and oldest-old patients who visits the emergency department. *Clin experiment emergency*, 2018; 5(4): 249-255.
4. Paula A Rochan. Drug prescribing for older adults, 2021; 1-34 www.uptodate.com.
5. Gulistan Bahat, Fatih Tufa, Sibel Akin, Asli Tufan, Nilgun Erten and Mehmet Akif Karan. Rational Drug Use in the Elderly. *Journal of gerontology geriatrics research*, 2012; 1(01): 1-5. DOI:10.4172/2167-7182.1000104.
6. J.K Aronson. Medication errors; what they are, how they happen, and how to avoid them. *Quartely Journal of Medicine*, 2009; 102(08): 513-521. DOI: 10.1093/qjmed/hcp052.
7. James C Milton, Ian Hill-Smith, Stephen H D Jackson. Prescribing for older people. *Journal of biomedical and research*, 2008; 336(7644): 606-609. doi:10.1136/bmj.39503.424653.80.
8. Prakash Goudanavar, Yalavarthi Keerthi, Sharan Elezabeth John, Justin Jacob, M.Shiva Rama Krishna. A Prospective Study on Medication Prescribing Pattern for Geriatric Patients in a Tertiary Care Teaching Hospital. Prakash Goudanavar *et al.*: *Asian Journal of Biomedical and Pharmaceutical Sciences*, 2016; 6(56): 23-27
9. Majda A. El Yamani, Fathi M. Sherif. Assessment of drug prescribing pattern and prescription errors in elderly patients. *Journal of medical and pharmaceutical science*, 2016; 4(2): 46-50.
10. Rima B. Shah, Bharat M. Gajjar1, Sagun V. Desai. Drug utilization pattern among geriatric patients assessed with the anatomical therapeutic chemical classification / defined daily dose system in a rural tertiary care teaching hospital. *International Journal of Nutrition, Pharmacology*, 2012; 2(03): 331-334.
11. Jyothsna C S, Nagarajaiah B H, Shiva Kumar K M. Drug utilization pattern in geriatric inpatients of Medicine wards at a government tertiary care hospital. *National Journal of Physiology, Pharmacy and Pharmacology*, 2019; 9(04): 320-326.
12. Sumithrashareshtha, SangithMaharajan, Dr.Jeevan Raj Shrestha, Antesh Poudel. Polypharmacy among older patients attending selected hospital. *International Journal of Innovation scientific research and review*, 2021; 3(03):941-944. <http://www.Journalijisr.com>.
13. Pavani Golla, Ranga Rao Bhemathati2, Sai Pawan Adepu Ramesh1, Namratha Edara1, Ramesh Adepu1, Prescribing Pattern of Medications in Geriatric Patients in a South Indian Tertiary Care Teaching Hospital. *Indian Journal of Pharmacy Practice*, 2020; 13(01): 68-72.
14. Sujatha Sapkota, Nawin, Pudasaini, Chandansingh, Sagar GC. Drug prescribing pattern and prescription error in elderly. *Asian journal of pharma of clinical research*, 2011; 4(03): 129-132.