A STUDY ON ASSESSING PRESCRIBING PATTERN OF ANTIBIOTICS IN GERIATRIC PATIENTS

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ARTICLE INFO	ABSTRACT
Article history Received 01/08/2019 Available online 31/08/2019 **Keywords** Antibiotics; Antibiotic Resistance; Geriatrics; Appropriate; Dosing; Indication; Prescribing Pattern.	Objective: Rational use of antibiotics is extremely important an injudicious use can adversely affect the patient, cause emergence of antibiotic resistance and increase health care cost. Aim: A prospective observational study was carried out in the department of general medicine at Cure Emergency Hospital critical care & trauma centre, Khammam from June 2017 to November 2017. The aim of the study was to assess the prescribing pattern of antibiotics used in geriatric patients. Methodology: The data was collected in a specially designed data collection form, from the case sheets of inpatients and OPD cards of outpatients of the enrolled geriatric patients. Results and Discussion: The study result showed that there were a total of 312 cases prescribed with 432 antibiotics. The study revealed that, in 94(30.10%) patients culture sensitivity test have not been performed. The major disorders for which antibiotic were prescribed, was 42(13.46%) URTI, and followed by38(12.20%)LRTI, 32(10.26%)GIT infections and 30(9.61%)Fever from unknown origin cases.Results showed that most prescribed class of antibiotics were Penicillin's, followed by Cephalosporins, Aminoglycosides. Conclusion: From this study it's been concluded that the prescribing of antibiotics in a appropriate manner is helpful for the increasing quality of life in case of geriatric patients. So that there may be clear implement of antibiotic policy and need a versatile research on usage of antibiotics.

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INTRODUCTION

Rational use of drugs is one of the major problems that public health providers and administrators face nowadays in many countries[1].Therefore; during the past few years the concept of rational drug use has been the theme of various international and national meetings. Various studies have been conducted in developing and developed countries during past few years regarding safe and effective use of drugs now show that irrational drug use is a global phenomenon and only few prescriptions justify rational drug use[2,3]. The general advancement in medicine and knowledge has contributed to the increase in life expectancy of the population, not only in India but in all countries of the world. This has led the people to live longer and at the same time has led to an increase in risk of illness, diseases and injuries.

Prescription of medicines is a fundamental component of the care of elderly people. Several characteristics of ageing and geriatric medicine affect medication and prescribing for these people is a challenging and complex process[4,5] . Special precautions have to be taken as there are changes in pharmacokinetics and pharmacodynamics due to the age. Older people with numerous health problems often require several medications to treat them; prescribing multiple drugs has been found to be related to inappropriate prescribing and therefore could increase the risk of adverse drug-related events, disability, hospitalization, inefficient utilization of resources and even death. Physicians face the challenge of prescribing medications safely in older adults with multiple chronic disorders, balancing the complex trade-off between restricting the number of drugs pre-scribed and using all medications that may be beneficial, which requires extra attention in assessment when pre-scribing. Although the simultaneous use of multiple medications is termed polypharmacy, the minimum number of drugs needed to achieve polypharmacy is inconsistent in the literature, ranging from three to six different prescribed drugs. Prescribing medications using a standardized mode has been reported to improve the quality of prescriptions. Several assessment tools have been developed to measure potentially inappropriate medication (PIM) for older people[6,7,8].

The objective of study was to describe Antibiotic drug prescribing on general practice for elderly patients, using patient's age, sex, encounters and the occurrence of some predefined inappropriate drug prescribing.

MATERIALS & METHODS [9-13]

It was a prospective observational study conducted for 6 months from June 2017 to November 2017 in Cure Emergency Hospital critical care & trauma centre, Khammam and a500 bedded tertiary care teaching hospital, in which patients aged 60yrs and above were included. A total of 312 patients were randomly enrolled in to the study on their visit to hospital and the study duration was 6 months. Patients on ventilators who required ICU were excluded from our study.

RESULTS AND DISCUSSION

Gender distribution of patients enrolled in the study. This results showed that out of 312 patient 218(69.88%) were inpatients, 94(30.12%) were outpatients, out of them 172(55.12%) patients were males and 140 (44.88%) patients were females. This parameter is performed to enumerate the number of inpatients and outpatients prescribed with class of antibiotics. The gender distribution is also done to find the male and female patients for whom antibiotics are more frequently prescribed. The results are shown in Table 1 & Figure 1.

TABLE 1: Gender Distribution of Geriatric Patients.

| S.No	Description	Male	Female	Total	Percentage (%)
1.	In patients	112(65.12%)	106(75.72%)	218	69.87
2.	Out patients	60(34.88%)	34(24.28%)	94	30.13
	Total	172	140	312	100
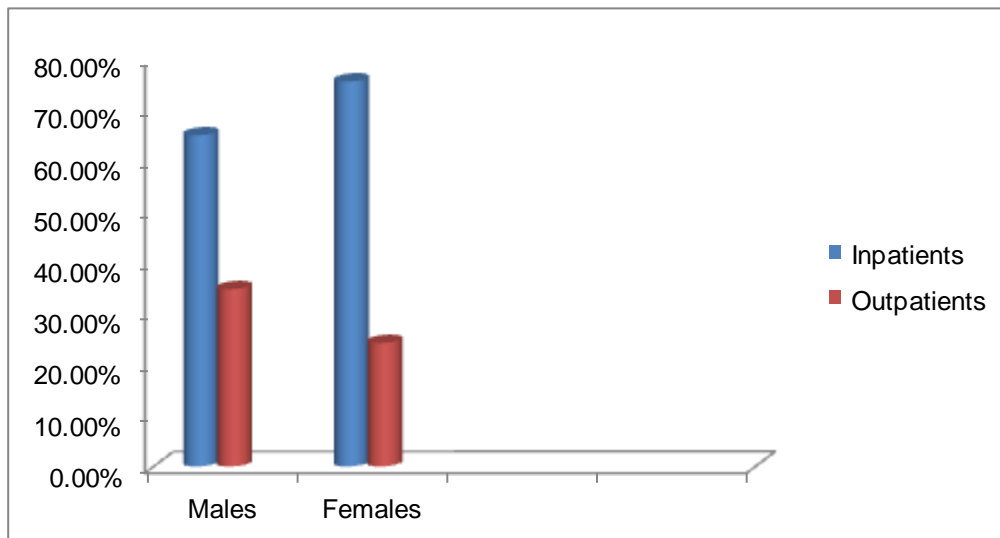
FIG 1:Gender Distribution of Geriatric Patients.

Age wise distribution of geriatric patients enrolled in the study. The results showed that geriatrics followed by 204(65.38%) were in the age group of 60-74years, 94(30.12%) were in the age group of 75-84years, 14(4.50%) were in the age group of 85 & above. This parameter was performed to find the number of antibiotics prescribed more frequently for particular age group of patients. The results shown in Table 2 & Figure 2.

TABLE 2:Age Wise Classification.

| S.No	Age Description	No. of patients	Percentage%
1	60-74	204	65.38
2	75-84	94	30.12
3	85 & above	14	4.50
	Total	312	100
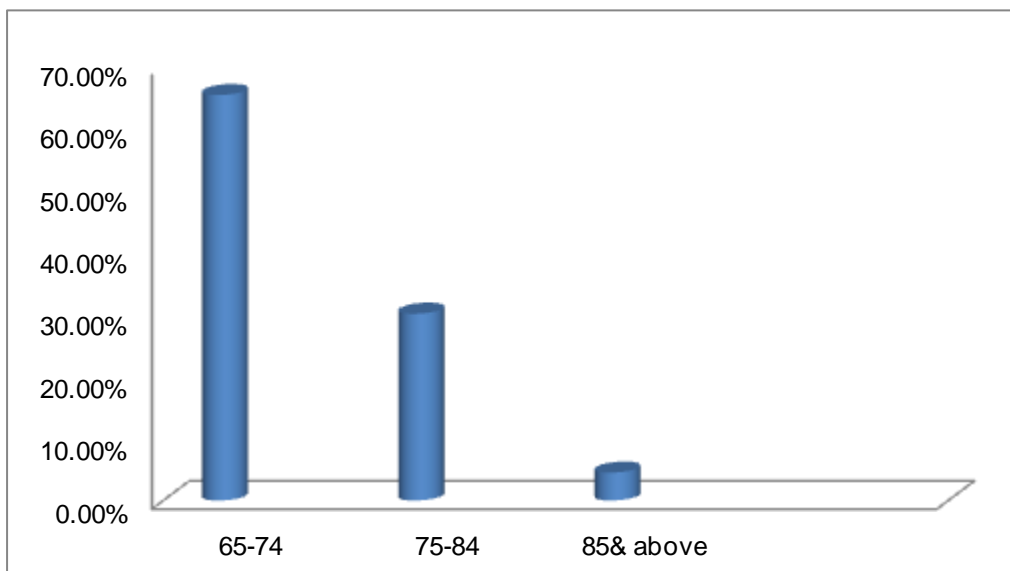
FIG 2: Age Wise Classification.

Various co-morbid conditions such as COPD, Hypertension and Diabetes mellitus were also foundassociated as depicted. The results shown in Table 3 & Figure 3.

**TABLE 3: Percentage of patients associated with co-morbid condition.**

S.No	Associated with co-morbid conditions	% of patients
1.	COPD	36%
2.	Hypertension	42%
3.	Diabetes Mellitus	14%
4.	COPD & Hypertension	8%
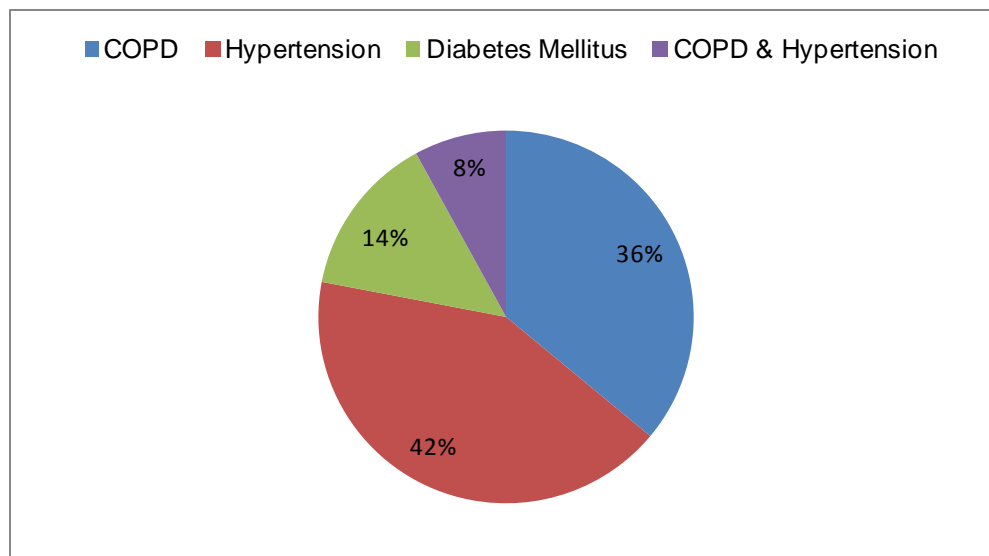
FIG 3: Percentage of patients associated with Co-morbid conditions.

The study revealed that, in 218 patients (69.9%) antimicrobial culture sensitivity test have been carried out, 94(30.1%) patients have not been carried out. However culture and sensitivity test has a significant role to choose the appropriate antibiotic therapy. The results shown in Table 4 & Figure 4.

TABLE 4: Antimicrobial Culture Sensitivity Tests.

| S.No	Sensitivity test	No.of patients	Percentage
1.	Yes	218	69.90%
2.	No	94	30.10%
	Total	432	100%
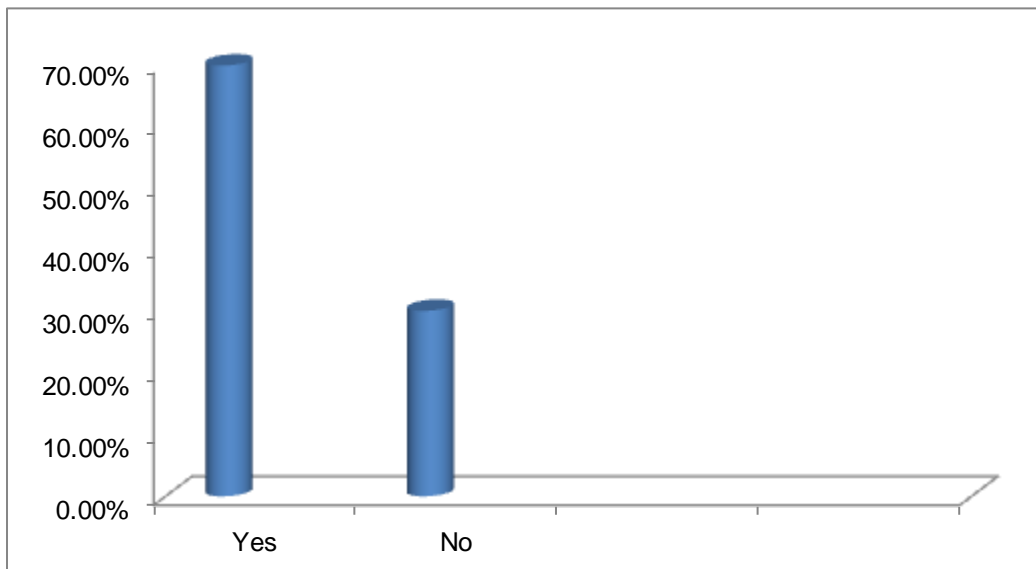
FIG 4: Antimicrobial Culture Sensitivity Tests.

The study revealed that 310(71.75%) antibiotics were administered parentally and followed by 122(28.24%) were administered orally. This parameter is evaluated to find the route of antibiotics which are more prescribed in geriatrics. The results shown in Table 5 & Figure 5.

TABLE 5: Route of Administration of antibiotics.

| S.No	Routes of Administration	No.of antibiotics	Percentage%
1.	Parentally	310	71.75
2.	Orally	122	28.24
	Total	432	100%
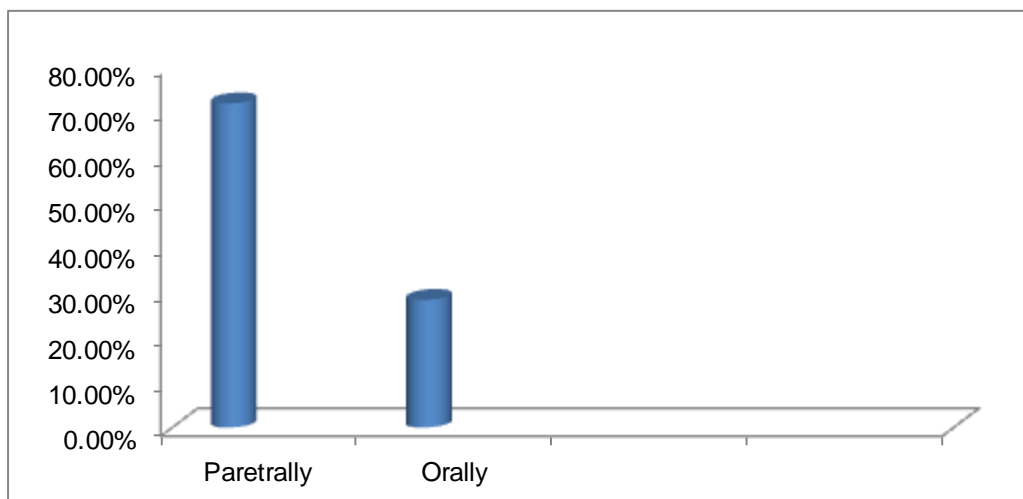
FIG 5: Route of administration of antibiotics.

Out of 432 prescriptions 156(75%) prescriptions antibiotics was prescribed by brand name and 52(25%) prescriptions antibiotics was prescribed by generic name. This parameter is used to analyzed the number of antibiotics prescribed with Generic name and Brand name. The results shown in Table 6 & Figure 6.

**TABLE 6:Prescriptions with Generic name and Brand name.**

S.No	Prescriptions with	No.of prescriptions	Percentage%
1.	Generic name	78	25.0
2.	Brand name	234	75.0
	Total	**312**	**100**
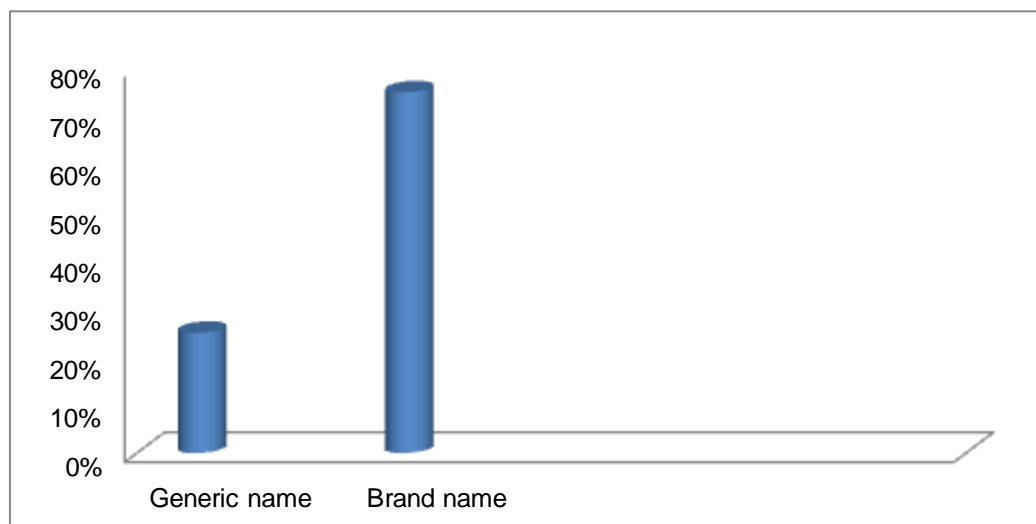
FIG 6: Prescriptions with generic name and brand name.

The results showed 42 (13.46%) cases were treated for URTI, followed by 38 (12.20%) LRTI, 32 (10.26%) GIT infections, 30 (9.61%) pyrexia from unknown origin, and 24 (7.70%) malaria, 21 (6.73%) Cutaneousinfections, 16 (5.12%) entericfever, 12 (3.84%) endocarditis, 10(3.20%)Meningitis, 25 (8.01%) asthma, 24 (7.70%) UTI, 16 (5.12%) Poisoningcases, 22 (7.05%) others. The results shown in Table 7 & Figure 7.

TABLE-7: Details of the indications for which antibiotics were prescribed.

| S.No	Class of indications	No. of cases	Percentage%
1.	UTI	24	7.70
2.	Asthma	25	8.01
3.	Enteric fever	16	5.12
4	PUO	30	9.61
5..	Meningitis	10	3.20
6.	GIT	32	10.26
7.	LRTI	38	12.20
8.	URTI	42	13.46
9.	Malaria	24	7.70
10.	Cutaneous infections	21	6.73
11	Poisoning cases	16	5.12
12.	Endocarditis	12	3.84
13.	Others	22	7.05
	Total	312	100
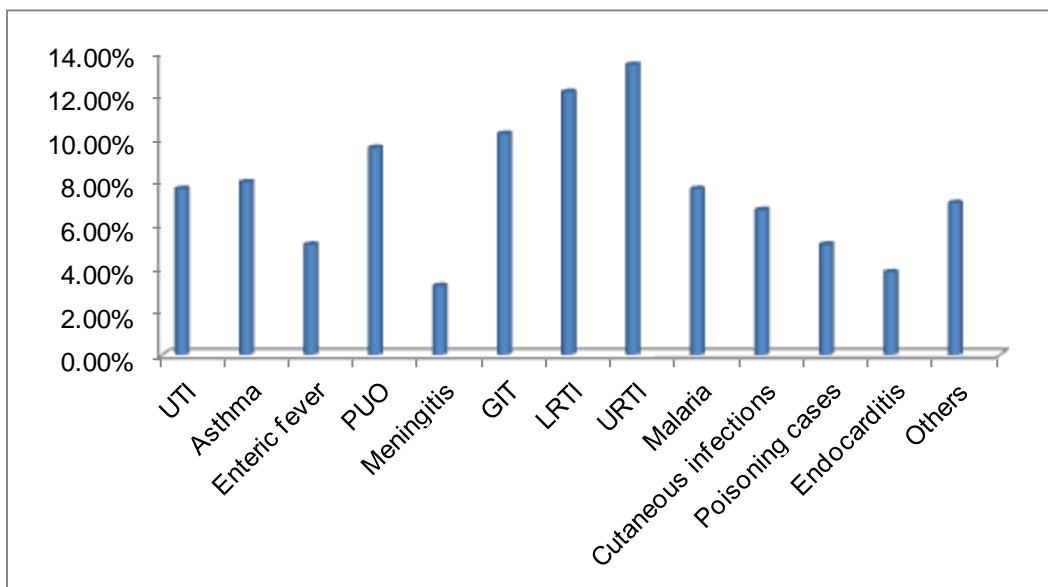
FIGURE 7: Details of the indications for which antibiotics were prescribed.

Results showed 152(30.55%) cephalosporins were prescribed, followed by 132 (35.81%) pencillins, 86 (19.90%) aminoglycosides, 17 (3.93%) fluoroquinolones, 18 (4.16%) antiprotozoals, 11 (2.54%) antihelmenthics, 12 (2.77%) macrolides, 4 (0.92%) others was commonly prescribed antibiotics. The results shown in Table 8 & FIGURE 8.

TABLE-8: Class of antibiotics prescribed.

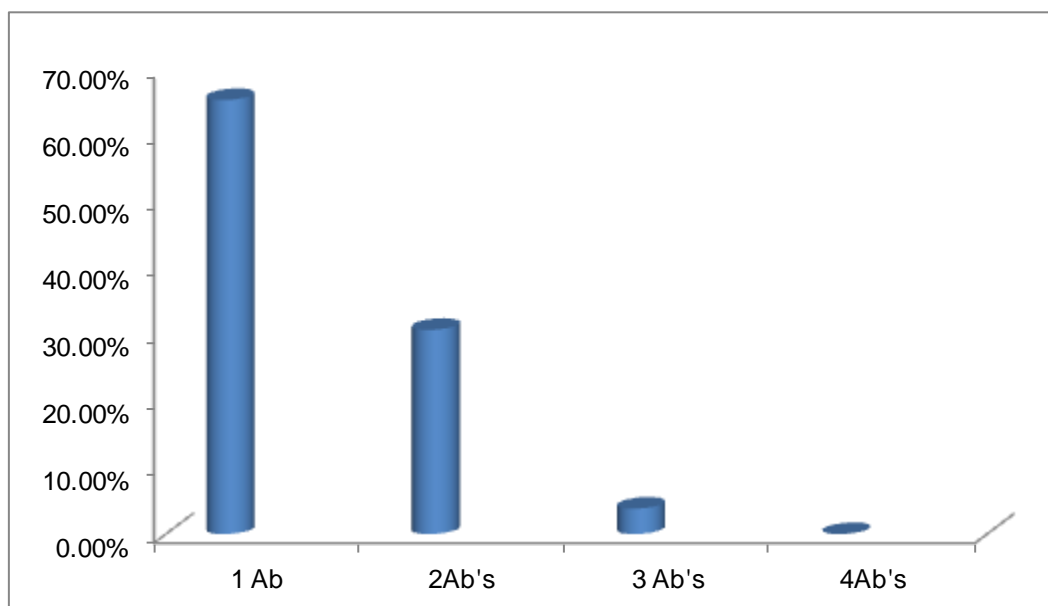| S. No	Class of antibiotics	No. of antibiotics	Percentage%
1.	Pencillins	132	30.55%
2.	Cephalosporins	152	35.81%
3.	Aminoglycosides	86	19.90%
4.	Fluoroquinolones	17	3.93%
5.	Antiprotozoals	18	4.16%
6.	Antihelmenthics	11	2.54%
7.	Macrolides	12	2.77%
8.	Others	4	0.92%
	Total	432	100
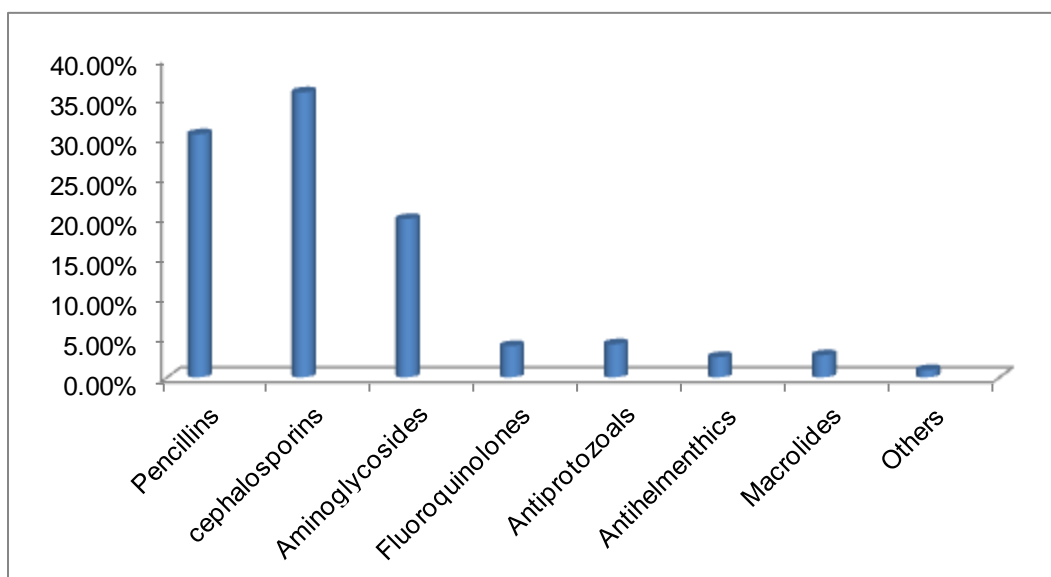
FIG 8: Class of antibiotics prescribed.

Results revealed that more number of prescriptions, 204 (65.38%)were prescribed with 1 antibiotic, followed by 96 (30.76%) prescriptions with 2 antibiotics, 12 (3.84%)prescriptions with 3 antibiotics. This parameter is used to find number of antibiotics prescribed for each prescription, this is useful in evaluating the prescription with poly pharmacy.

TABLE-9: Number of antibiotics per prescription.

S.No	No.of antibiotics	No.of prescriptions	Percentage%
1.	1	204	65.38
2.	2	96	30.76
3.	3	12	3.84
4.	4	0	0
	Total	312	100%

FIG 9: Number of antibiotics per prescription.

This parameters is used to evaluate the antibiotics which are prescribed from essential and non-essential antibiotic list.

TABLE-10: Prescribed essential antibiotics from WHO model list.

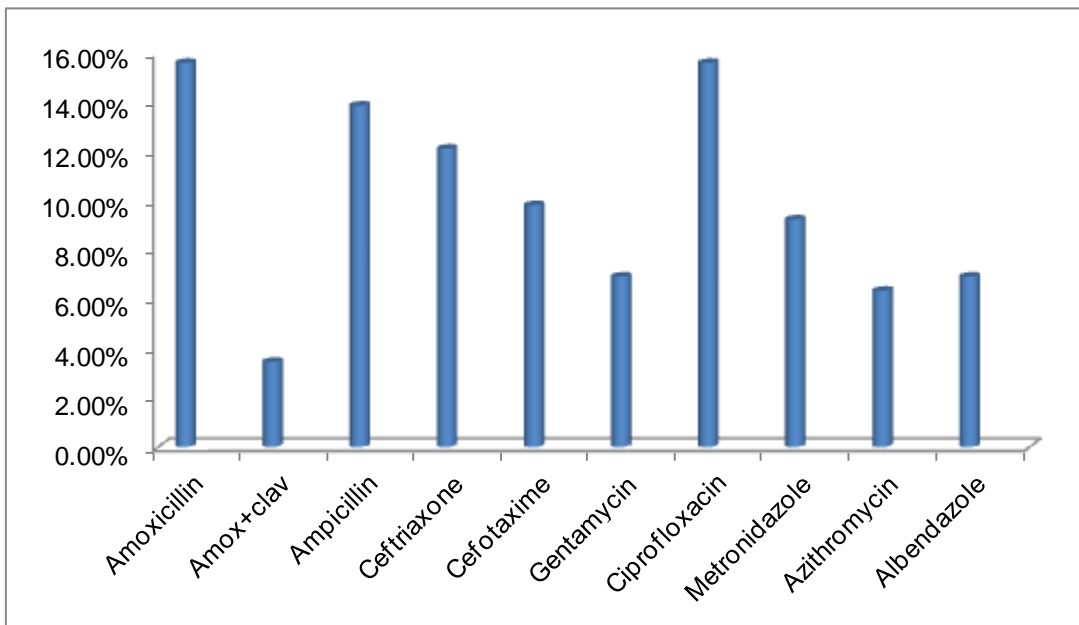| S.No	Essential antibiotics	No.of times prescribed
1.	Amoxicillin	54(15.62%)
2.	Amoxicillin + clavulanic acid	14(3.46%)
3.	Ampicillin	46(13.88%)
4.	Ceftriaxone	42(12.13%)
5.	Cefotaxime	34(9.83%)
6.	Gentamycin	24(6.93%)
7.	Ciprofloxacin	54(15.62%)
8.	Metronidazole	32(9.25%)
9.	Azithromycin	22(6.35%)
10.	Albendazole	24(6.93%)
	Total	346

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FIG 10: Prescribed essential antibiotics.

TABLE 11: Prescribed non-essential antibiotics.

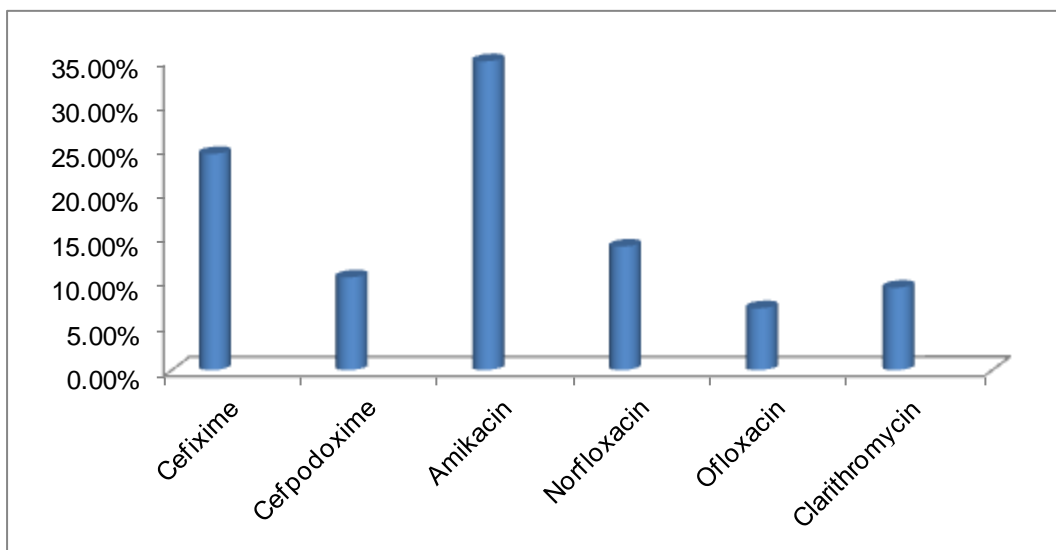| S.No	Non-essential antibiotics	No.of times prescribed
1.	Cefixime	21(24.42%)
2.	Cefpodoxime	9(10.46%)
3.	Amikacin	30(34.89%)
4.	Norfloxacin	12(13.95%)
5.	Ofloxocin	6(6.98%)
6.	Clarithromycin	8(9.30%)
	Total	86

FIG 11: Prescribed Non-essential antibiotics.

TABLE-12: Essentiality ratios of antibiotics.

S.No	Parameter	No.of antibiotics	Percentage
1.	Essential	346	80.09%
2.	Non-essential	86	19.90%
	Total	432	100%
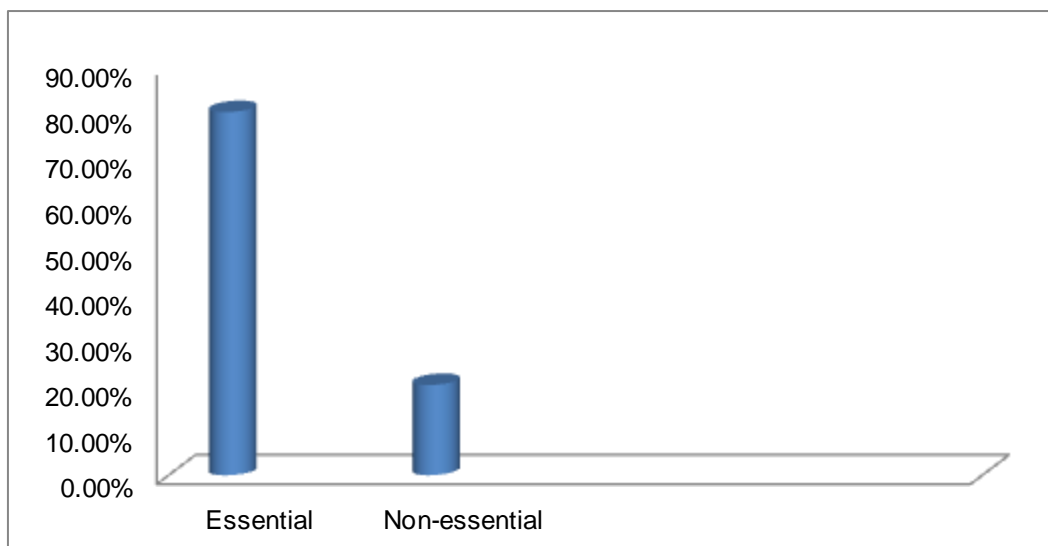
FIG 12: Essentiality ratios of antibiotics.

The study results shows that 346 Essential Antibiotics were prescribed, followed by 86 Non-Essential Antibiotics were prescribed. This parameter is used to estimate the antibiotics which are appropriate and in appropriate based on essentiality criteria. The results shown in Table 12 & Figure12.

CONCLUSION

With less resistance correct diagnosis of disease with management of medicines constitutes important aspects of patient care, which is more important in case of geriatric patients, who are having less resistant power. From this study it's been concluded that the prescribing of antibiotics in a appropriate manner is helpful for the increasing quality of life in case of geriatric patients.So that there may be clear implement of antibiotic policy and need a versatile research on usage of antibiotics.

In future this data is very helpful to industries, Physicians. regulatory authorities and research students.

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ABBREVIATIONS
PIM   **:** Potentially Inappropriate Medication,
ICU   **:** Intensive Care Unit
COPD   **:** Chronic Obstructive Pulmonary Disease
URTI   **:** Upper Respiratory Tract Infections
LRTI   **:** Lower Respiratory Tract Infections
GIT   **:** Gastro-Intestinal Tract
UTI   **:** Urinary Tract Infections
PUO   **:** Pyrexia from Unknown Origin

CONFLICT OF INTEREST
The Authors declare none.

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