Drug utilization study in the Otorhinolaryngology department in a tertiary care teaching hospital in coastal Karnataka

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ABSTRACT

Drug utilization study is a powerful tool to evaluate the rational drug use practices by monitoring the prescribing pattern. The objective of this study was to evaluate the drug utilization pattern based on WHO core prescribing indicators in the E.N.T out patient department in a tertiary care teaching hospital. A prospective observational study was carried out in this department for 6 months by studying 500 prescriptions of patients who were chosen through simple random sampling. Details of the prescription along with sociodemographic details of the patients were recorded in a proforma and then analysed after entering them in Microsoft excel sheet. Majority of patients were male belonging to age group of 31-50 years. Maximum number of patients came with ear complaints. The average number of drugs prescribed per encounter was 2.5. Percentage of prescription with antibiotics prescribed was 25 %. About 95% of drugs were prescribed from essential drug list. Most commonly prescribed group of drugs was antihistamines followed by NSAIDs. Among antibiotics β- lactam group was most prescribed followed by azithromycin and levofloxacin. Among β- lactam antibiotics, most commonly prescribed was Amoxicillin –Clavulanic acid combination followed by Cefpodoxime and cefixime. All the drugs prescribed were in their brand name. The average cost for treatment per day was Rs 62.5. Most of the study findings were on par with WHO recommended ranges. Prescription by brand name is the only area of concern. More studies are required including large number of patients and departments.

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INTRODUCTION

Drug utilization study as defined by WHO is "study of marketing, distribution, prescription and use of drugs in society, with special emphasis on the resulting medical, social, and economic consequences."[1]. Rational use of medicines as defined by WHO is prescribing the right medicine, for the right patient, at the right dose, for the right duration, and at the right cost to them and their community. [2] In the present-day scenario, there is much concern regarding inappropriate and expensive prescribing and also about under prescribing. Hence, it is imperative to conduct a study on drug prescribing and drug usage in a scientific and formal manner. It might help to identify trends in prescribing practices and to make suitable interventions aiming at enhancing prescribing behavior.[3]

Patients with wide range of diseases can be found in ENT outpatient department and hence drugs belonging to various classes are used here. So, this gives us an ideal platform to study the drug utilization and to evaluate the extent of rational drug use.Though there are various studies done on drug utilization in various parts of country, very few studies are reported in coastal part of Karnataka.

STUDY OBJECTIVE

To evaluate the drug utilisation pattern based on WHO core prescribing indicators in the E.N.T outpatient department in a tertiary teaching care hospital.

METHODS
Study Setting

This study was conducted in department of otorhinolaryngology at a tertiary care teaching hospital in the southern parts of coastal Karnataka for a period of 6 months starting from September 2022 to February 2023. The study was initiated after obtaining written approval from the Institutional Ethics Committee (IEC). Written informed consent was obtained from the patients of the study group.

Study Design

It is a cross-sectional, prospective observational study.

In our study, we have used the WHO core prescribing indicators given below, to describe drug prescription pattern. [4]

(1) Average number of medicines per encounter—total number of different medicines prescribed divided by the number of prescriptions surveyed (WHO recommended value, 1.6–1.8)

(2) Percentage of encounters with an antibiotic—number of encounters in which an antibiotic was prescribed divided by the total number of encounters surveyed, multiplied by 100 (WHO recommended value, 20–26.8%)

(3) Percentage of encounters with an injection—number of encounters in which an injection was prescribed divided by the total number of encounters surveyed, multiplied by 100 (WHO recommended value, 13.4–24.1%)

(4) Percentage of medicines prescribed by generic name—number of medicines prescribed by generic name divided by total number of medicines prescribed, multiplied by 100 (WHO recommended value, 100%)

(5) Percentage of medicines prescribed from the essential medicine list—number of medicines prescribed that are in the essential medicine list divided by the total number of medicines prescribed, multiplied by 100 (WHO recommended value, 100%) [4]

Sampling Unit

Sample size of 500 prescriptions was taken into consideration.
Inclusion criteria
1. All patients attending ENT OPD during the study period.
2. Age 18-70 years

Exclusion criteria
1. Pregnant women
2. Patients with severe ailments shifted to indoor.

Statistical analysis

Data was collected and entered in Microsoft Excel sheet and data was analysed.

Results

A total of 500 patients attending ENT OPD were selected for study using simple random sampling. Written informed consent was obtained. Their socio-demographic details were

recorded in the proforma and details analysed. Out of 500 patients 345 were males and 155 were females. (Table 1)

Table 1:Age and Sex distribution amongst ENT patients

Age (years)	Male	Female	Total number of patients
18-30	123	52	175
31-50	122	78	200
51-70	100	25	125
Total	345	155	500

All the 500 prescriptions were divided into 3 groups based on diagnosis, namely ear disease, nose disease and throat disease. 192 patients attended OPD with ear related complaints, 156 patients came with nasal complaints and 152 patients came with throat problems. Among ear diseases chronic suppurative otitis media was most common (18%) followed by other diseases. Among nose r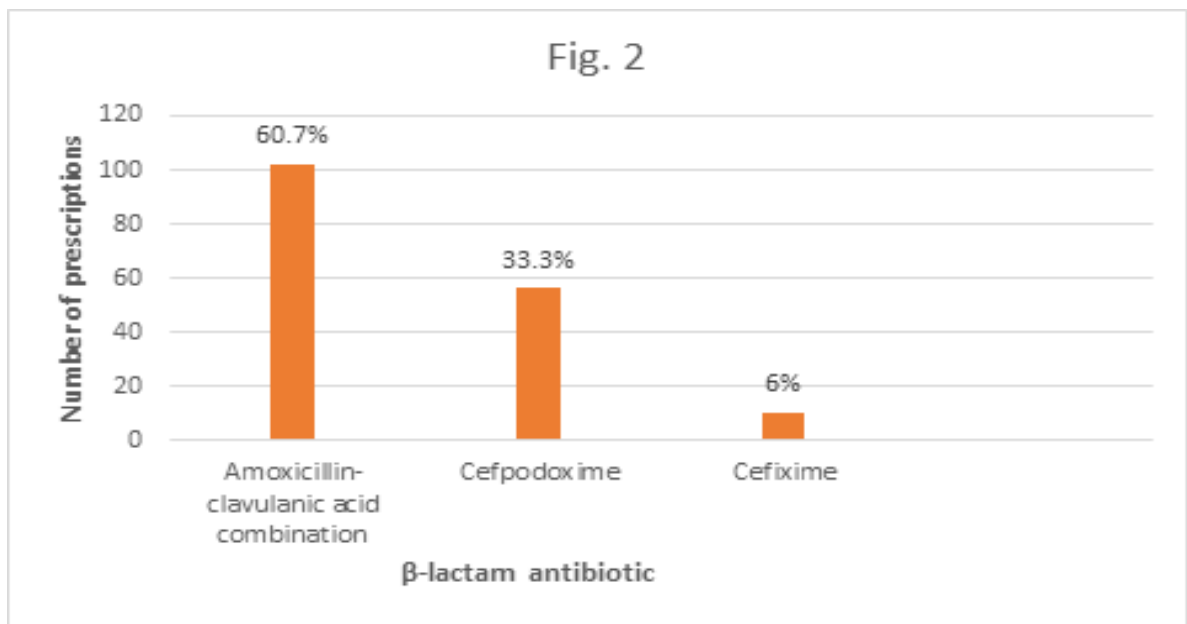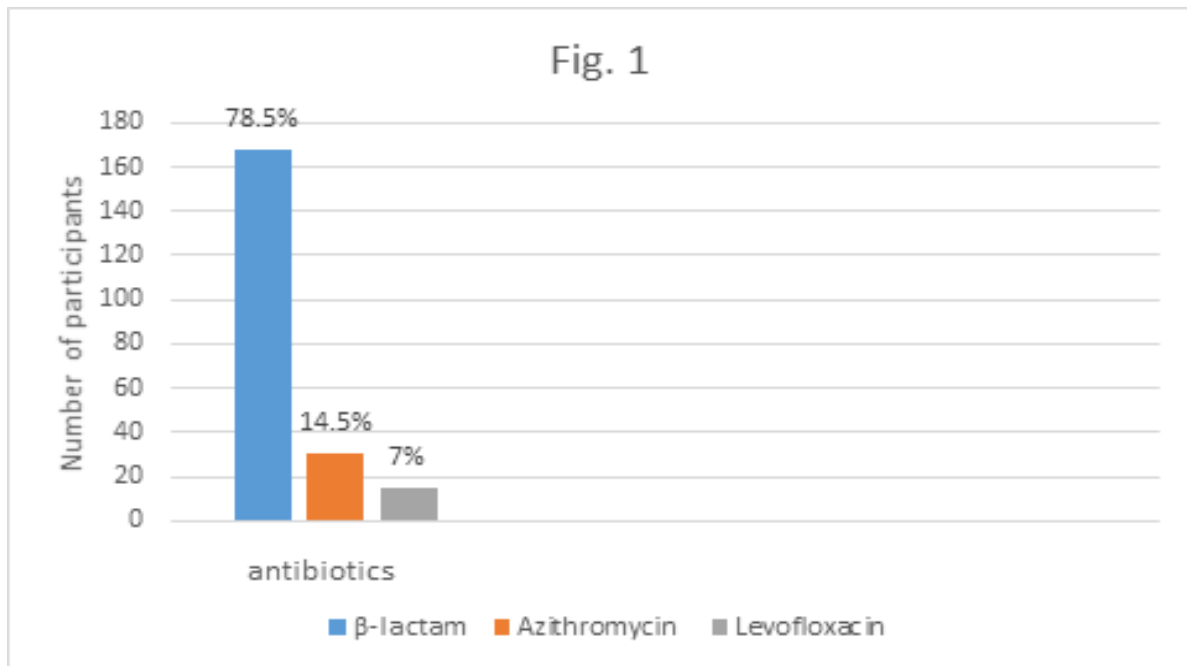elated diseases, most common was allergic rhinitis (15 %). Acute tonsillitis was most common throat related disease (10%).The average number of drugs prescribed per encounter was 2.5 (optimal value 1.6-1.8). Percentage of prescription (encounters) with antibiotics prescribed was 25 % (optimal value 20-26.8%). Injections were prescribed in 2% of cases (optimal value 13.4-24.1 %). 95% of drugs were prescribed from essential drug list.(optimal value 100 %). Table 2.

Table 2 : WHO core indicators assessing drug prescription

WHO core indicators	value observed in our study
Average number of medicines per encounter	2.5
Percentage of encounters with an antibiotic	25 %
Percentage of encounters with an injection	2 %
Percentage of medicines prescribed by generic name	none
Percentage of medicines prescribed from the essential medicine list	95%

Most commonly prescribed group of antibacterials was β- lactam (penicillins and cephalosporins)-168 followed by azithromycin-31 and levofloxacin-15.(Fig. 1) Among β- lactam antibiotics, most commonly prescribed was Amoxicillin –Clavulanic acid combination (102) followed by Cefpodoxime (56) and cefixime (10).(Fig. 2)

Fig. 1

Number of participants vs antibiotics

- β-lactam: 78.5%
- Azithromycin: 14.5%
- Levofloxacin: 7%

Fig. 2

Number of prescriptions vs β-lactam antibiotic

- Amoxicillin-clavulanic acid combination: 60.7%
- Cefpodoxime: 33.3%
- Cefixime: 6%

Amongst all the groups of drug prescribed, most common was antihistamines. Among antihistamines , ebastine was most commonly prescribed followed by levocetirizine and cetirizine. Next commonly prescribed group of drugs was NSAIDs-paracetamol,diclofenac and ibuprofen .Xylometazoline was commonly prescribed decongestant followed by oxymetazoline. Among steroids deflazacort was used more compared to methylprednisolone and prednisolone. Other drugs that were prescribed were proton pump inhibitors- pantoprazole and omeprazole. Multivitamins were prescribed in 112 cases. (Fig. 3) (Table 3)

Table 3:

Drugs prescribed other than antibiotics	Number of prescriptions containing the drug

1. Antihistamines
   a. Ebastine
   b. Levocetirizine
   c. Cetirizine
	358 (total)
	164
	136
	58

2. NSAIDs
   a. Paracetamol
   b. Diclofenac
   c. Ibuprofen
	288 (total)
	128
	118
	42

3. Nasal decongestants
   a. Xylometazoline
   b. Oxymetazoline
	190 (total)
	169
	21

4. Steroids
   a. Deflazacort
   b. Methylprednisolone
   c. Prednisolone
	84 (total)
	68
	11
	5

5. Proton pump inhibitors
   a. Pantoprazole
   b. Omeprazole
	168 (total)
	130
	38

6. Multivitamins	112

Time trend in the usage of antibiotics: The following graph shows the distribution of prescriptions containing antibiotics from September 2022 till February 2023.

Fig. 3:Number of prescriptions containing antibiotics
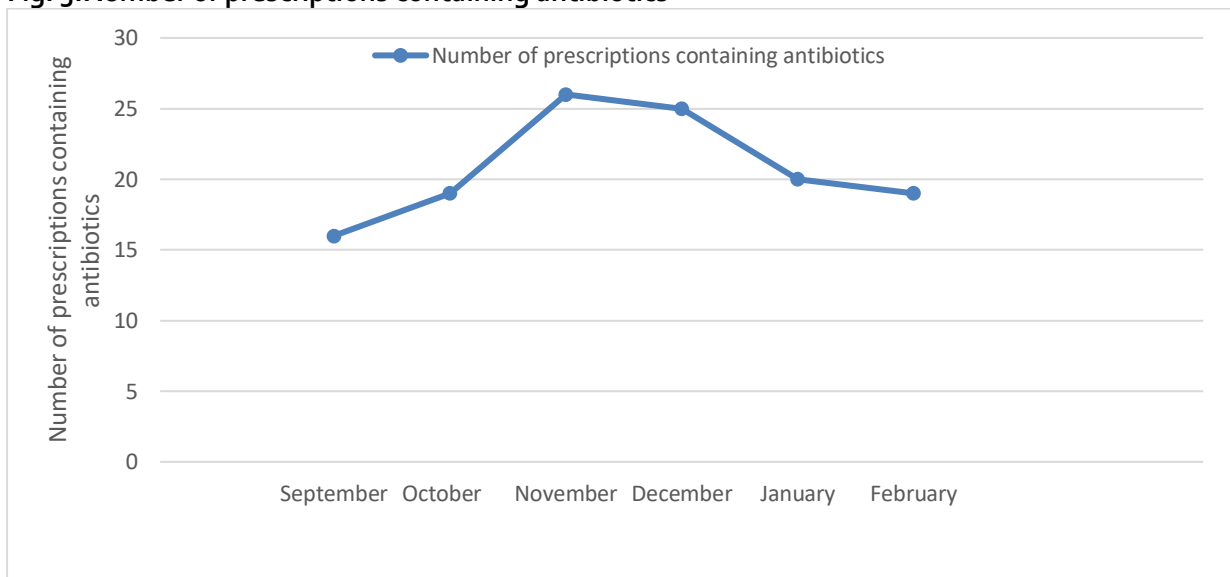
We could see a rise in the usage of antibiotics in the months of November and December 2023.Adverse drug reactions of these drugs were also recorded. Most common adverse drug reaction was of sedation due to antihistamines followed by dryness of mouth, fatigue, headache

and constipation. Around 96 people complained of sedation, 56 complained of dryness of mouth, 24 patients complained of fatigue. 19 patients complained of constipation and 15 had headache.

DISCUSSION

In our study most of the patients were male (69%) compared to female (31%).This is similar to study done by Kumar.Y et al where male to female ratio was 70:30.[5] This male preponderance may be due to occupational reasons. Most of the patients belonged to the age category of 31-50 years. Next common were in the age group of 18-30 years. Least number of patients belonged to elderly group (51-70 years). This is similar to a study done by Sridevi et al.[6]. Among all patients, majority attended the OPD for ear complaints compared to nasal and throat complaints. This is comparable to study done by Yadav et al.[7]

In our study, the average number of drugs prescribed per encounter was 2.5 which though little more than optimal range of 1.6-1.8, is less compared to studies by Choudhary et al. and Meher et al.(4.05 and 4.02 respectively) [8,9]. Hence, polypharmacy is ruled out in our study which is one of the major indicators of rational drug prescribing. All the drugs were prescribed by their brand names. This could be under the influence of medicinal drug promotional activity. Overall expense could be reduced if generic drugs were prescribed.

Percentage of prescription (encounters) with antibiotics prescribed was 25 % , within the range of WHO recommended value(20% -26.8%) There is an increase in number of prescriptions containing antibiotics during November and December reflecting increased number of infections during the said time.(Fig. 3)

The percentage prescription with injections was only 2%, given the fact that the study was conducted in OPD section.

The percentage of medicines prescribed from essential medicine list was 95%, although slightly lower than WHO recommended standard (100%), were much higher compared to other studies like Ozdamar I et al.[10]In our study the most commonly prescribed group of drugs was that of antihistamines. This is in contrast to study done by

Vijay R et al. where NSAIDs is the commonly prescribed one.[11]In our study most common prescribed antibiotics was that of β-Lactam group followed by azithromycin and levofloxacin. Among β- lactam antibiotics, most commonly prescribed was Amoxicillin –Clavulanic acid combination followed by Cefpodoxime and cefixime. This is in contrast to study done by Khan et al. where cefixime was most commonly prescribed antibiotic.[12]

In our study, the average cost for treatment per day was Rs 62.5. This is much lower compared to other studies like Meena VK et al. where the average cost for treatment per day was Rs 157.6.[13]The adverse effects reported did not require stoppage of treatment, reduction of dose, nor did they require any treatment.

In our study, mean number of drugs per prescription was less compared to other studies which excludes polypharmacy. Antibiotics were used in appropriate amount 25% which is within the range given by WHO (20-26 %) which is again a major indicator of rational drug use. Majority of drugs prescribed were from the Essential list of Medicines (95%) in contrast to other studies. Yet our study carried limitations wherein drugs prescribed were brand name which may be under the influence of medicinal promotional activities.

CONCLUSION

Our study focused on drug use patterns and rational drug use practices using WHO core prescribing indicators. All the other parameters were found to be either optimal or near optimal compared to the WHO ideal ranges, except that most of the drugs prescribed were brand names as opposed to WHO core prescribing indicators though mean cost per prescription was low compared to other studies. Otherwise, all the other observed parameters suggest the rational drug use. As the present study was conducted in only one of the various departments on limited number of patients, further studies can be carried on comparing drug utilisation pattern and evaluation of WHO prescribing indicators across various disciplines including both outpatients and inpatients, that can provide an expanded view adding on to the credibility of the study .

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Abbrevations	
NSAIDs	Nonsteroidal anti-inflammatory drugs
WHO	World health organisation