Research Article

Drug use pattern in the ear, nose, throat outpatient department of a rural tertiary-care teaching hospital

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Abstract

Background: It is imperative to evaluate and monitor the drug use patterns from time to time and make suitable modifications in prescribing patterns to increase the therapeutic benefit and decrease the adverse effects to optimize the medical services to the patients. Keeping this scenario in mind, the present study was undertaken. **Aims and Objectives:** To evaluate pattern of drug use in ENT (ear, nose, throat) outpatient department (OPD) of a rural tertiary care teaching hospital using WHO core drug prescribing indicators. **Material and Methods:** A cross-sectional observational study was carried for 3 months in the ENT OPD of SRTR Government Medical, Ambajogai, Beed, Maharashtra, India. Data were collected from the prescriptions written by treating surgeons and interviewing patients regarding their understanding of dosage forms. **Results:** A total of 3342 drugs were prescribed through 855 prescriptions with average number of drugs per prescription being 3.90 and average number of 2.5 drugs dispensed per prescription. Majority (59.64%) of the patients were male. Antibiotics were the most frequently prescribed drugs (24.86%) followed by nonsteroidal anti-inflammatory drugs (23.60%), gastroprotective agents (22.55%), and antihistaminics (19.92%). Antibiotics were prescribed in 831 prescriptions (97.19%). Most common route of drug administration was oral (97.75%) followed by topical. Drugs were mostly (80%) prescribed by brand names. **Conclusion:** The present study highlights the problems of polypharmacy, overuse of brand names, and symptomatic rather than definitive approach toward patient management. Interventions to rectify overprescription of antibiotics, use of brand names, inadequate labeling of drugs are necessary to improve rational drug use. Standard treatment guidelines, hospital formulary, and educational intervention become essential to modify this behavior to benefit the patient.

KEY WORDS: Drug Utilization Study; ENT; Polypharmacy; Prescription Pattern

Introduction

Diseases of ENT commonly affect the general population. These diseases may vary from a trivial common cold to more complicated chronic suppurative otitis media and its complications. ENT diseases affect all the age groups ranging from children to adults with significant disability-adjusted life-year (DALY) of patient.[1] With increasing world population, it is observed that infection remained an important cause of disease. Upper respiratory tract diseases (most common being the upper respiratory tract infections—URTIs) cause not only significant hearing loss but are also responsible for learning disability and absenteeism from school and work.[2]

According to World Health Organization (WHO) report of Global Burden of Disease 2004 Updates,[3] respiratory tract infections (RTIs) remained the fourth important cause of mortality worldwide, that is, 4.2 million death every year after cardiovascular, other infectious and parasitic diseases, and cancer. It is also responsible for 94.6 DALYs lost worldwide, contributing 6.2% of all DALYs.[3]

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Most of the RTIs are viral in origin, common culprit being respiratory syncytial virus, and do not require use of antibiotics as they resolve spontaneously.[3] Antibiotics become necessary when the RTIs are complicated by secondary infections such as lower RTI, acute tonsillitis, sinusitis, and acute otitis media with effusion.[4] In general hospital, acute RTIs are responsible for 20%–40% of outpatient and 12%–35% of inpatient admissions. URTIs including nasopharyngitis, pharyngitis, tonsillitis, and otitis media constitute 87.5% of the total episodes of respiratory infections.[4]

The International Network for the Rational Use of Drugs (INRUD) was established in 1989 to promote the rational use of drugs in developing countries. WHO defines rational use of drugs when "patients receive medications appropriate to their clinical needs, in doses that meet their own individual requirements, for an adequate period of time, and at the lowest cost to them and their community."[5] Various indicators were developed by INRUD in collaboration with WHO that provided objective indices to allow for assessment of drug use practices.[6]

Drug use study is an important component of pharmacoepidemiology. WHO[7] defines drug use as "The marketing, distribution, prescribing and use of drug in society, with special emphasis on medical, economical and social consequences." Drug use studies are continuing programs that are helpful in giving feedback to the prescribers regarding prescribing, dispensing, administering, and also rational use of drugs.[7,8] Therefore, it is imperative to evaluate and monitor the drug use patterns from time to time and make suitable modifications in prescribing patterns to increase the therapeutic benefit and decrease the adverse effects to optimize the medical services offered to the patients.[7,9] Keeping this scenario in mind, the present study was undertaken with the aim to evaluate the pattern of drugs used in patients presenting to ENT outpatient department (OPD).

Materials and Methods

This study was conducted after obtaining approval from institutional ethics committee. This was a cross-sectional observational study carried out in ENT OPD of our hospital for 3 months (from May to July 2013).

Study Population

The patients attending the ENT OPD and those willing to participate were randomly selected. Copy of original prescription written by ENT surgeons was used for data collection. Data were collected using a special case record form and interviewing the patients. The indicators were expressed using descriptive statistics as mean and percentage.

Outcome Measures

The prescriptions were evaluated for the presence of the following parameters: demographic profile, diagnosis, and drug details using WHO core drug prescribing indicators (average number of drugs per prescription, concomitant medications, use of nonsteroidal anti-inflammatory drugs (NSAIDs), percentage of prescriptions with injection, and antibiotics prescribed were also calculated) and route of administration, frequency, and duration of the prescription. The frequency of drugs prescribed by brand or generic names and fixed-dose combinations was also evaluated.

Drugs were classified as per the WHO list of essential medicines. A drug is considered adequately labeled if it contains at least name of patient, drug name, and when the drug should be taken.

The knowledge of drug usage was assessed by interviewing the patients attending the OPD during the specified period. In children aged less than 12 years, parents were interviewed for knowledge of drug dose. To measure patients' understanding of dosage, a semi-scientific grading scale developed by Dinesh et al.[10] was used to see whether patients understood the information given at the end of consultation. Six parameters were measured for adequacy or inadequacy: indication, dose, duration, frequency, whether to be taken before or after meals, and awareness regarding side effects. The score of 1 was assigned for adequate information about the said parameters and 0 for inadequacy. Maximum score assigned was 6 and minimum was 0 for each patient. Total score obtained indicated the patients' understanding of drug use. Scoring system is shown in Table 1.

Table 1: Patients' understanding of correct dosage

Total score	Category
>3	Well understood
3	Moderately Understood
<3	Poorly understood

Prescribing indicators	Patient care indicators
1. Average number of drugs per encounter	1. Percentage of drugs actually dispensed
2. Percentage of drugs prescribed by generic names	2. Percentage of drugs adequately labeled
3. Percentage of encounters with antibiotics prescribed	3. Patients' knowledge of correct drug use
4. Percentage of encounters with injections prescribed	
5. Percentage of drugs prescribed from essential drug list or formulary	

All prescriptions were analyzed using WHO core indicators,[11] as mentioned below:

Results

A total of 855 prescriptions were analyzed. The demographic data, as shown in Table 2, show that among the patients attending

Table 2: Age and gender wise distribution of drug

Age (years)	Number of prescriptions	Percentage
<18	261	30.52
18–30	255	29.82
31–49	201	23.50
50–69	111	12.96
⩾70	27	3.1
Total	855	
Gender	**Number of patients**	**Percentage**
Male	510	59.64
Female	345	40.36
M/F ratio	1.478	

Table 3: Number of drugs per prescription

No of drugs per patients	No. of prescriptions	Total no. of drugs prescribed	Percentage
1	15	15	1.76
2	51	102	5.96
3	87	261	10.18
4	555	2220	64.91
5	138	690	16.14
6	09	54	1.05
Total	855	3342	100

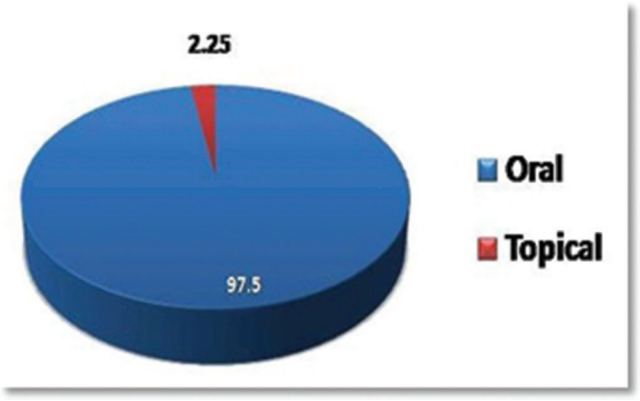

Figure 1: Routes of drug administration.

the OPD, male patients (59.64%) outnumber the female. Majority (60%) of the patients were under 30 years of age.

Overall 3342 drugs were prescribed to these patients. Drugs were prescribed in the range of 1–6, that is, minimum 1 to maximum 6 drugs per prescription. Majority of the patients received four drugs per prescription (65%) whereas only five patients (1.76) received single drug therapy, as shown in Table 3. As shown in Figure 1, most (97.75%) of these drugs were administered orally.

Average drug per encounter was 3.90. Figure 2 shows the category-wise drug distribution. Antimicrobials were the most commonly prescribed drugs (24.86%) followed by NSAIDs (23.60%) and gastroprotective agents (H_2 blockers and antacids–22.55%). Other drugs (topical drops, multivitamins and B complex, calcium etc.) were prescribed in 9.07% of the patients.

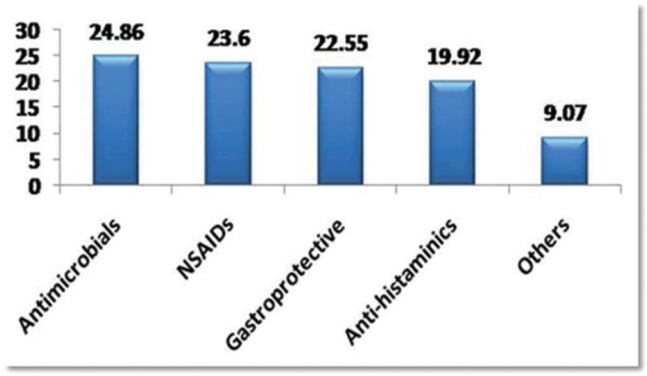

Figure 2: Commonly prescribed class of drugs.

Table 4: Number of antimicrobials per prescription

Number of antibiotics per prescription	Prescription	Percentage	Total number of antibiotics
1	795	92.98	795
2	18	2.10	36
No antibiotics	42	4.92	00
Total	855	100	831

Table 5: Class-wise antimicrobial prescriptions with combinations

Group of antibiotics	No of prescription	Percentage
Penicillin (amoxicillin)	480	56.14
Fluoroquinolones	207	24.21
Co-trimoxazolei	108	12.63
Penicillin + Metronidazole	12	2.10
Penicillin + Ciprofloxacin	03	
Penicillin + Co-trimoxazole	03	
Total	813/855	92.02%

Antibiotics were prescribed to majority (92.08%) of patients. Only 42 patients did not receive any antibiotic [Table 4]. Co-trimoxazole was the only fixed-dose combination prescribed to 108 patients. Antibiotics were given for 3 days only as per hospital guidelines, with follow-up treatment in subsequent visit.

Most of the antibiotics prescribed belonged to penicillin group (amoxicillin), followed by fluroquinolone (ciprofloxacin), and co-trimoxazole. Only 18 patients received antibiotic combinations, as shown in Table 5.

The number of drugs actually dispensed was 2130 (63.73) with average number of drugs dispensed per prescription being 2.5. Total drugs prescribed from National Essential Drug List

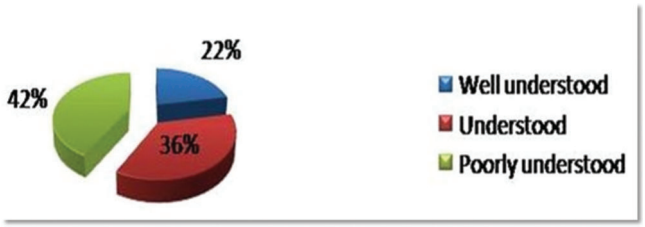

Figure 3: Patients understanding of correct dosage.

Table 6: Prescriptions as per brand/generic names

Parameter	Numbers
Drugs prescribed by brand names	2673 (80%)
Drugs prescribed by generic names	669 (20%)
Total	3342

Table 7: Adequacy of prescription parameters

Prescription parameter	Number of prescription	
	Mentioned	Not mentioned
Chief complaint	675	180
Duration of treatment	237	618
Frequency of doses	816	39
Dose of antibiotics	657	198
Diagnosis	798	57
Drops or ointment	75	780

were 2883 (86.26) with average number of essential drugs per prescription being 3.371.

On assessing the patients' understanding of correct dosage, it was observed that 58% of patients understood the drug usage adequately [Figure 3].

As depicted in Table 6, majority of the drugs (80%) were prescribed by their brand names. Prescriptions were lacking in various parameters, as mentioned in Table 7; duration of treatment was lacking in 618 prescriptions.

Discussion

Drug use or prescription pattern studies are the tools that are helpful for both prescribing physicians and the hospital administration regarding drug audit, drug expenditure, and also cost-effective analysis—all important parameters to decide whether it is a rational or irrational drug therapy.[7] It is also helpful in framing hospital formulary and standard treatment guidelines as per the diagnosis. These studies not only guide for the rational use of drugs but are also helpful in making treatment cost effective and beneficial to patients,[7] and reduce the burden of poorly funded health system in developing countries like India.

In this study, the average number of drugs per encounter was 3.90, which is higher than the WHO recommendation of 2–2.5, indicating a trend of polypharmacy. A hospital-based study in India had reported average number of two drugs.[12] Polypharmacy trend has also been reported by Yadav et al.[13] Average number of drugs per prescription should always be kept low as it can lead to increase in unnecessary cost of treatment, higher possibility of drug–drug interaction, and also increase risk of adverse drug reactions and antibiotic resistance.[14,15]

It was observed that almost every patient received one antibiotic, one NSAID, one gastroprotective, and one antihistaminic drug. This pattern indicates "symptomatic" rather than "definitive" approach toward patient management. Overprescription of gastroprotective agents without valid need or history of acid–peptic disease unnecessarily increases the cost of treatment.

Demographic profile shows male preponderance in attending the ENT OPD, which could be attributed to their occupation as majority of patients were farmers and laborers. Similar findings were reported by Pradhan and Jauhari.[16] Majority of the patients were in age group less than 30 years, indicating that most of ENT diseases are common in young adults and children. The drugs in most of the patients were administered orally. The absolute lack of use of injections indicates physicians' awareness regarding adverse effects associated with overuse of injection practices.

Majority of the patient received at least one antibiotic. Cotrimoxazole was the only fixed-dose combination antibiotic used. Average number of antibiotics per prescription was 0.98, which is less than that reported in previous studies, for example, Das et al.[17] reported 1.4 and Ain et al.[2] reported 1.58. Single antibiotics were prescribed in 92.98% prescriptions and two antibiotics in 2.10% prescriptions. Similar observations were made in the study conducted by Das et al.,[17] single drugs being prescribed in majority (89.52%) of the patients, followed by two drugs (9.94%) and three drugs (0.52%).

In the present study, it was found that most of the drugs were written in their brand names, highlighting physicians trust over brand names despite knowing the low cost of generic drugs. Use of generic drugs is helpful in decreasing the cost of therapy and avoiding medication errors.

Conclusion

Prescription or drug use study acts as a tool to give feedback to clinicians and hospital administration regarding over/underprescription of drugs, cost–benefit analysis, and rational drug use. The present study highlights the overuse of drugs prescribed per encounter, use of brand names, and symptomatic rather than definitive approach in management of patient. Creating awareness amongst physicians about rational drug utilization through continues medical education (CME), use of standard treatment guideline and hospital formulary

is essential to modify the prescribing practices to benefit the patients as well as entire health-care system.

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