

Evaluation and Analysis of Drug Usages Pattern: A Cross Sectional Study in an ENT Outpatient Department in a Tertiary Care Hospital in Khulna, Bangladesh

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Abstract

Background: Diseases of the ear, nose, and throat (ENT) constitute the most common public health problem worldwide and account for the different varieties of drugs prescribed thereby a drug utilization study is helpful for minimizing the medication error in rational prescribing practice.

Objective: To obtain information regarding the drug uses pattern in accordance with World Health Organization (WHO) prescribing indicators.

Methods: A descriptive cross sectional study was carried out at ENT out-patient department of Khulna Medical College Hospital for two months in which a total of 300 prescriptions were assessed and data were randomly collected and analyzed by using standard guideline therapy.

Results: Among 300 patients males were 162 (54%) and females were 138 (46%) which is commonly seen between the age group of 18-27 years(44%). Maximum cases of ear, throat and nasal ailments were of acute otitis media 85 (28.33%), tonsillitis 43 (14.33%), sinusitis 14 (4.66%) respectively. Commonly prescribed antimicrobials were β -lactams 144 (17.45%) followed by aminoglycosides 43 (5.21%). Concomitant therapy included analgesics 209 (25.33%) and antihistamines 51(6.18%). Average number of drugs per prescription was 2.75. None of the drugs were prescribed by generic name rather prescribed with trade names. Percentage of encounters with an injection prescribed was nil whereas oral and topical preparations were commonly prescribed. Percentage of drugs prescribed from Essential Drug List of Bangladesh was 37.93%.

Conclusion: The overall drug uses patterns were nearly similar in accordance with WHO prescribing indicators despite of small deviation in prescribing practices.

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Keywords: ENT drugs, rational prescribing, drug utilizations

Introduction

Disease of the ear, nose and throat affects the functioning of both adults and children, often with significant morbidity causing impairment of daily life activities & rarely mortality.^{1,2} Infectious diseases are among the commonest causes of morbidity and mortality in most developing countries of the world.³ According to the world health report of 2010, it has been

estimated that respiratory infections were the fourth major cause of mortality which is responsible for global number of deaths and on other hand it also generated that 94.6 disability adjusted life years lost worldwide.^{1,4,5} According to a recent study, acute respiratory infections are the most frequent reason for seeking medical attention and are the reason for 75% of the antibiotic prescriptions each year.⁴

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For the treatment of various ENT diseases, a wide array of drugs is available in the market. Among them antibiotics, antihistamines, analgesics, etc are commonly prescribed for various indications. In the United States to seek treatment for individuals most common reasons such as ENT infections including non-specific upper respiratory tract infection (URTI), acute bronchitis, sinusitis, and Otitis Media (middle ear infection) are responsible that's why upto 75% antibiotics are used.⁵

Drug use evaluation is an ongoing, authorized and systemic quality improvement process, which will give right feed back to the clinician.^{3,6} The drug utilization studies identifies the problems that arise from drug usage in healthcare delivery system and highlights the current approaches to the rational use of drugs. Drug utilization substantially varies among different countries and even among health institutions within a country.⁷ It is very essential to analyze and monitor the patterns of drug used from time to time, to enable the basic modification in prescribing practices to enhance the therapeutic benefit and decrease the side effects.^{6,3,8} Inappropriate prescribing is a recognised worldwide problem of the health care delivery system⁹ which can be lead to ineffective and unsafe treatment, exacerbation or prolongation of illness, distress and harm to the patient and higher costs.¹⁰ To improve the overall drug use, especially in developing countries, international agencies like World Health Organization (WHO) and International Network for Rational Use of Drugs (INRUD) have recommended standard drug use indicators, which help us to know the shortcomings in our prescription writing.¹¹ Hence, this study was undertaken to scrutinize the drug use pattern which may help the clinician to take appropriate measure for the improvement of prescribing patterns and thus promote rational use of drugs in the treatment of ENT diseases.

Methods

A prospective cross-sectional study was conducted to evaluate the prescribing pattern of drugs in the ENT OPD of Khulna Medical College Hospital over a period of two months (from 1st July to 31st August 2018) after taking proper approval from hospital administration. A total of 300 patients attending in the ENT OPD during the study period were enrolled in the study following random sampling technique on the basis of inclusion and exclusion criteria. Patients of all age group for both sexes and who willing to participate in the study were included in this study whereas indoor patients, follow up visit patients and who will not willing to participate in the study were excluded from this study. Data were collected in preformed customized pro-forma in the form of questionnaire and physician's prescription and analyzed on the basis of WHO prescribing indicators and essential drug list of Bangladesh. Demographic details and other general information are taken in that questionnaire. Compilation and analysis of data were done by using Microsoft Excel 2007 and represented as number and percentage.

Results

A total of 300 prescriptions were studied where 162 (54%) were males and 138 (46%) were females. Highest number of patients was in the age group of 18-27 years 132 (44%) followed by the age group of <18 years (20.66%) and 28-37 years (16%) and other demographic details shown in Table I. The present study observed that, ear diseases 168 (56%) was the most common disease followed by throat 96 (32%) and disease related to nose 36 (12%). Among ear diseases ASOM 85 patients (28.33%) were reported more followed by otitis externa 26 (8.66%), CSOM 18 (6%), otomycosis 15 (5%), impacted wax 12(4%) and least were furunculosis, presbycusis. Among the throat diseases acute tonsillitis 43(14.33%) was more common followed by pharyngitis 18(6%), recurrent tonsillitis 15(5%), URTI 12(4%) and

some candidiasis and buccal growth. Other nose related diseases reported include sinusitis 14(4.66%), allergic rhinitis 10(3.33%) and least were vestibulitis and DNS as in Table II. Out of total 825 drugs prescribed, oral antimicrobials was used in 263 cases(31.87%) followed by analgesic & antipyretics 209(25.33%), antiulcerants 209(25.33%), others drug like mucolytic, multivitamins, nasal decongestant (81.91%) , antihistamines 51(6.18%) and corticosteroids 12(1.45%) which is showed in Figure 1. Beta-lactams 144 (17.45%) was commonly prescribed among all antimicrobial agents. Cefuroxime-clavulanate 62(7.51%) was the most commonly used followed by Aminoglycosides 43 (5.21%) in the form of gentamicin+hydrocortisone combination, Fluoroquinolones 35(4.24%). Least common drugs include macrolides 24 (2.90%),

antifungals 17 (2.06%) (Table III). The most common NSAID used was paracetamol 122 (14.78%) and naproxen 58 (7.03%), antiulcerants was Omeprazole 83 (10.06%), antihistamine was fexofenadin 32 (3.87%) and rest all of the drugs percentage showed in Table IV. Out of the 825 prescribed drugs 723(87.63%) were given for oral administration and 102 (12.36%) for topical administration as ear drops, nasal drops Figure 2. Different WHO recommended prescribing indicators which as follows: average number of drugs per prescription was 2.75. No drugs (0%) were prescribed in generic form. No injectable medicine (0%) was prescribed in this study. Percentage of encounters with an antibiotic prescribed was 31.87%. and only 37.93% drugs were prescribed from Essential Drug List of Bangladesh 2008.

Table I: Demographic profile of study population

Characteristics of study population		KMCH (n= 300, No. %)
Age (Years)	<18	62 (20.66%)
	18-27	132 (44%)
	28-37	48(16%)
	38-47	37 (12.33%)
	48-57	13(4.33%)
	>57	8 (2.66%)
Sex	Male	162 (54%)
	Female	138 (46%)
Marital status	Married	155 (51.6%)
	Unmarried	145 (48.3%)
Occupation	Business	114 (38%)
	Service	70 (23.33%)
	Student	62 (20.66%)
	Others (housewife)	54 (18%)
Residence	Urban	172 (57.33%)
	Rural	128 (42.66%)
Socioeconomic status	Medium(Tk.10000 -20000/month)	180 (60%)
	Low (<Tk.10000/month)	38 (12.66%)
	High (>Tk.20000/month)	82 (27.33%)

Table II: Prevalence of ENT diseases

Diseases		KMCH (n= 300, No.%)
Ear 168 (56%)	ASOM	85 (28.33%)
	Otitis externa	26 (8.66%)
	CSOM	18 (6%)
	Otomycosis	15 (5%)
	Impacted wax	12 (4%)
	Furunculosis	10 (3.33%)
	Presbycusis	2 (0.66%)
Nose 36 (12%)	Sinusitis	14 (4.66%)
	Allergic rhinitis	10 (3.33%)
	Vestibulitis	8 (2.66%)
	DNS	4 (1.33%)
Throat 96 (32%)	Acute Tonsillitis	43 (14.33%)
	Pharyngitis	18 (6%)
	Recurrent tonsillitis	15 (5%)
	URTI	12 (4%)
	Candidiasis	7 (2.33%)
	Buccal growth	1 (0.33%)

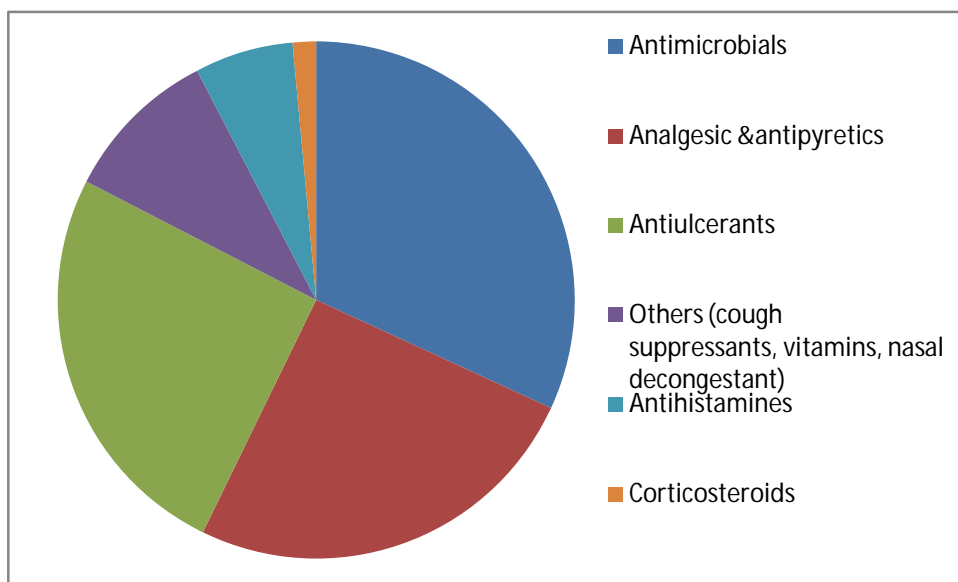


Figure 1. Different classes of drugs prescribed

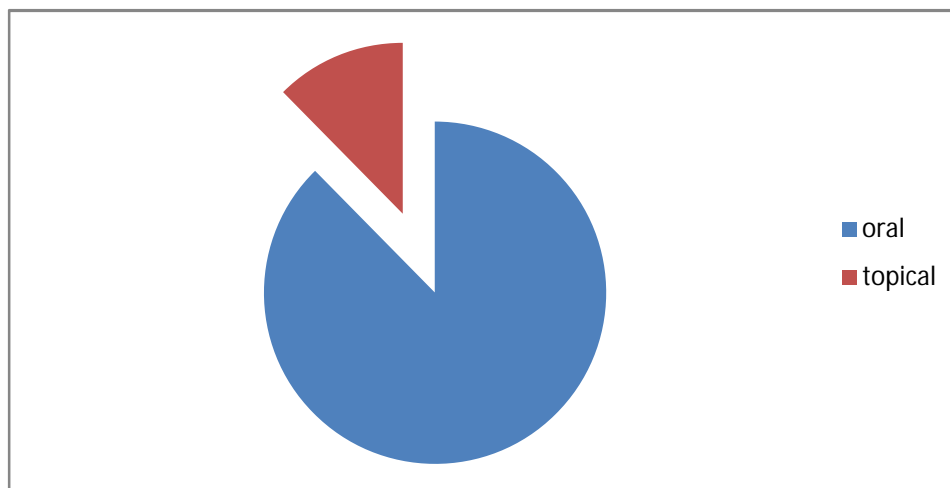


Figure 2. Route of drug administration

Table III: Different antimicrobial agents prescribed

Antimicrobials (n= 263)		KMCH (n=825, No.%)
Beta-lactams 144 (17.45%)	Cefuroxime-clavulanate	62 (7.51%)
	Amoxicillin- clavulanate	36 (4.36%)
	Cefuroxime	20 (2.42%)
	Cefixime	16 (1.93%)
	flucloxacillin	10 (1.21%)
Aminoglycosides 43 (5.21%)	Gentamicin+ Hydrocortisone	43 (5.21%)
Fluoroquinolones 35(4.24%)	Levofloxacin	23 (2.78%)
	Moxifloxacin	8 ((0.96%)
	Ofloxacin	4 (0.48%)
Macrolides 24 (2.90%)	Azithromycin	24 (2.90%)
Antifungals 17 (2.06%)	Clotrimazole	8 (0.96%)
	Fluconazole	5 (0.60%)
	Miconazole	4 (0.48%)

Table IV: Percentage of different drugs prescribed

Drugs (class)		KMCH (n= 825, No.%)
Analgesics & antipyretics 209(25.33%)	Paracetamol	122 (14.78%)
	Naproxen	58 (7.03%)
	Ibuprofen	18 (2.18%)
	Diclofenac + Paracetamol	11 (1.33%)
Antiulcerant 209(25.33%)	Omeprazole	83 (10.06%)
	Esomeprazole	68 (8.24%)
	Rabiprazole	36 (4.36%)
	Pantoprazole	22 (2.66%)
Others 81 (9.81%)	vitamins, cough suppressants, nasal decongestant etc.	81 (9.81%)
Antihistamines 51(6.18%)	Fexofenadine	32 (3.87%)
	Loratidine	13 (1.57%)
	Levocetizine	6 (0.72%)
Corticosteroids 12 (1.45%)	Triamcinolone	6 (0.72%)
	Hydrocortisone	4 (0.48%)
	Flumetasone	2 (0.24%)

Discussion

The present study aimed at evaluating the current drug uses patterns among physicians by reviewing the prescriptions in ENT outpatient department by following WHO prescribing guidelines. Therefore, a prescription may be taken as a reflection of the disease and the role of the drug in its treatment. Our study was performed based on the data of prescriptions containing antidepressants drugs with some parameters which is elaborated here.

A total number of 300 patient prescriptions were analysed and the demographic data showed that percentage of males (54%) suffering from ENT infections was more than females (46%) which might be attributed to occupational reasons and poor hygiene. Similar findings were also reported in studies in India.^{7,8,10} The highest number of patients in our study were in the age group of 18-27 years 132(44%) followed by <18 years 62(20.66%) and least were in the age group above 57 years 8(2.66%) which is in accordance with the findings of other studies.^{7,10} There was a higher prevalence of ENT drugs prescribing for

married, professional in business, medium income groups from urban area generally attended in ENT OPD during our study period.

Out of 300 patients monitored, Ear diseases 168 (56%) was the most commonly encountered followed by throat 96 (32%) and least were that of nasal ailments 36 (12%) which is in concordance with other study conducted by Pal A et al.⁷ Among the ear affections, acute suppurative otitis media (ASOM) was maximum 85 patients (28.33%) followed by Otitis externa 26 (8.66%) and CSOM 18(6%) whereas Bhat GMN et al. reported that the most common ear infection they noticed was CSOM.¹⁰ Among throat affections most common was Acute Tonsillitis 43(14.33%) followed by pharyngitis 18 (6%) and chronic tonsillitis 15 patients (5%). And among nasal ailments maximum cases were of sinusitis 14 (4.66%) followed by Allergic rhinitis 10 (3.33%).

In the present study, out of 300 patients, total number of drugs prescribed was 825 and most commonly prescribed were antimicrobials 263 (31.87%). Among the concomitant medications

most commonly prescribed were analgesics 209(25.33%) as well as antiulcerants 209 (25.33%), followed by Others 81 (9.81%) drugs like (cough suppressants, vitamins, nasal decongestant), antihistamines 51 (6.18%) and lastly corticosteroids 12(1.45%). This is in accordance with the findings of other study.⁷

Percentage of encounters with an antibiotic prescribed was high (31.87%) in this study which is consistent with other study.^{7,8} In prescribing practice, the therapeutic approach for ENT infections is nearly empirical for covering the most likely pathogens in various diseases like otitis media, tonsillitis, pharyngitis, infective rhinitis, sinusitis etc. as these conditions are infective origin so uses of antimicrobials are seems to be justified. In our study most commonly prescribed categories of antimicrobials were β -lactams 144 (17.45%) followed by aminoglycosides 43 (5.21%), fluoroquinolones 35 (4.24%) ,macrolides 24 (2.90%) and lastly antifungal drugs 17 (2.06%). this is similar to a study conducted by Khan et al. whereas in a study conducted by Pal A et al. it was found that most commonly used was β -lactams, followed by macrolides and quinolones.^{12,7} Cefuroxime-clavulanate was the most commonly prescribed 62 (7.51%) followed by Gentamicin+ Hydrocortisone combination ear drop 43 (5.21%), Amoxicillin-clavulanate 36 (4.36%). Least commonly used drugs include fluoroquinolones, macrolides and antifungals. Similar several other studies also showed that beta-lactams, were the most commonly prescribed class of drugs.^{7,8,10}

Among the analgesics & antipyretics, paracetamol 122 (14.78%) was frequently prescribed followed by naproxen 58 (7.03%), Ibuprofen and Diclofenac + Paracetamol to some extent. Omeprazole 83 (10.06%) was commonly prescribed antiulcerant drug. The antiallergics used were as Fexofenadine, Loratidine, levocetirizine of which Fexofenadine 32 (3.87%) was maximum prescribed second

generation non sedating antihistamine. Another concomitant prescribed drugs were nasal decongestant, vitamins, cough suppressants and corticosteroids to provide symptomatic relief for the various ailments. This findings are similar to some studies where concomitant drugs were prescribed along with antimicrobials. However, due to different patient populations the values are not comparable.^{7,8,10}

The average number of drugs per prescription is important in ENT as polypharmacy and misuse of drugs is common. Total 825 drugs were prescribed for 300 patient making the overall average number of drugs per encounter was 2.75. In similar studies conducted, the lower values found were Brazil 2.4¹³ and Nepal 2.91¹⁴. It is preferable to keep the average number of drugs per prescription as low as possible since higher figures always lead to increased risk of interactions, development of bacterial resistance and increased cost.¹⁵ WHO recommended prescribing indicators of drugs per prescription is less than 2¹⁶ but our study result was slightly above recommended value which may have chances of polypharmacy.

In the present study our observation was that, the percentage of drugs prescribed by generic name was 0% which was not in accordance with the WHO guidelines as rational prescribing that requires generic prescriptions whereas some studies conducted in Cambodia (99.8%),¹⁷ India(73.4%)¹⁸ showed generic prescriptions. The most common reasons for prescribing drugs by brand name in Bangladesh may be tradition, marketing, and promotional influence of pharmaceutical companies amongst the physicians. It is a matter of concern and the reasons for these should be investigated as prescribing by generic name can be of a great help in reducing the cost of treatment. In drug formulation practices in our study we observed that the percentage of prescription with an injection encountered was

0%. This is a welcome sign and has to be encouraged as it was followed WHO recommendations (<10%).

Regarding drug prescribing from essential drug list EDL, our observation was that, out of total 825 drugs, only 313 drugs (37.93%) in 300 prescriptions were prescribed from the EDL of Bangladesh 2008 which did not meet the standard criteria of prescribing medications from an EDL.¹⁶ Prescribing drugs from an EDL is one of the indicators to achieve rational drug use.

We also found that out of 825 prescriptions, 723(87.63%) were given for oral administration and 102 (12.36%) for topical administration as ear drops, nasal drops. The most common topical agent used was gentamicin+ hydrocortisone ear drop followed by topical corticosteroids, nasal drops, nasal decongestant and local antifungal drugs.¹⁰ Format of the prescriptions with respect to dose, duration, frequency was complete in 100% of the prescriptions.

In our study, total cost of therapy was 31625 taka where average cost per prescription was stands 105 taka per prescription which is affordable by the majority of the patients. This findings are similar to a other study in our country.¹⁵ Drugs included in EDL and hospital pharmacy were not counted because of their availability at free of cost. The cost analysis is an important variable in determining compliance to the treatment, especially in a developing country like Bangladesh. We found improved patients compliance regarding our treatment guidelines to a very few patients over telephone or once follow up visit though it was not possible to monitor the actual use or compliance with the prescribing regime due to short period of study.

On the basis of our observation, it may be mentioned that overall drug uses patterns in ENT OPD was good which may be considered

as an effort to improve the quality of health care services.

Conclusion

The aim of the study was to carry out evaluation of drug prescribing pattern in ENT OPD in KMCH. All the patients presenting with ENT infections were prescribed single antibiotics in combination form. Cefuroxime and clavulanic acid combination was the most commonly prescribed antibiotic in our study. The average number of drugs per prescription was slightly higher than recommended by WHO. Generic name was ignored and list of essential drugs was followed partially. Prescriptions were complete in respect to dose, duration and frequency. Prescription of drugs in injection form was nil. A further prospective drug utilization study is suggested to encourage rational drug prescription following WHO prescribing guidelines.

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