

PHARMACO-ECONOMIC ASPECTS AND PATTERN OF ANTIBIOTIC PRESCRIPTIONS IN FOUR MAJOR HOSPITALS IN KATHMANDU

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ABSTRACT

Background: Antibiotics are extensively prescribed drugs and their use is associated with increasing rate of antibiotic resistance. Nearly one third of prescriptions of physicians for colds, upper respiratory tract infections and bronchitis are of antibiotics as documented in previous studies. Antibiotic use is associated with higher cost of prescriptions, which is impracticable to low socioeconomic groups in Nepal. Besides this patients have little knowledge about the use of antibiotics as shown by previous study of antibiotics used in randomly selected 20 private clinics of Kathmandu valley.¹³

To study the prescribing pattern of Antibiotic preparations in various diseases and to find out how the treatment could become more pharmaco-economic in government hospitals, without compromising the quality of service.

The results were as under Total No. of prescriptions audited were 522, average numbers of drugs/per prescription were 2.61.

Maximum antibiotics were received in age group 21-41 y in gynecological, surgical and medical problems, in Pediatrics maximum antibiotics were prescribed between 1-12 years.

Minimum antibiotics were prescribed between 13-20 y for gynecological and Pediatric problems. In medical and surgical problems, minimum antibiotics was administered between 41-60 years. Above 60 years almost no antibiotics were used.

Males were prescribed more antibiotics than females (73% for surgical, 62% for medical and 53% for Pediatric problems)

Only in 24.5% patients, antibiotics were prescribed after proper diagnosis and sensitivity tests

Maximum cost of Prescription was 638 Nepali Rupees for treatment of sexually transmitted infection in Gynecology.

Key Words: Antibiotics, Cost, Private Clinics, Pharmacoeconomic, Sexually Transmitted Diseases.

INTRODUCTION

Infectious diseases remain the world's leading cause of death besides cardiac diseases, cancer and automobile accidents. In tropical & developing countries the pattern of infectious diseases are different where malaria, dengue hemorrhagic

fevers are more common, but world wide common infectious diseases are hepatitis, STD, HIV/AIDS.

According to WHO the impact of infectious diseases on human health has been tremendous and fatal. Antibiotic (ANTIBIOTICS) discovery and development of vaccines led

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to belief that this impact of diseases could be reduced to some extent. But it was no so, due to development of resistance of micro organisms against antibiotics.¹ As more and more strong antibiotics are launched in the market everyday leading to more resistant strains of micro-organisms. Finally we are digging deep into the barrel of antibiotics.² Antibiotics are often most used or misused drugs.^{3,4,5,6,7,8,9} In Nepal there are few reports about antibiotic survey.^{10,11}

It has been seen that approximately 12 million antibiotics prescriptions resulted from respiratory infections accounting for 21% of all antibiotics prescriptions to adults accounting for 47.2 million (pounds sterling) in expenditure in the United Kingdoms¹² Moreover, there is a inclination of prescribing costly and latest antibiotics these days.

The background that prompted this study was a survey on patient's awareness about the knowledge of antibiotics done from some hospitals and private clinics of Kathmandu that had shown interesting results.¹¹ In this study 178 patients were interviewed by a multi graded questionnaire, result showed that 54% patients had no awareness of antibiotics, 87.1% had used antibiotics previously, 89.5% had no knowledge about the side effects of antibiotics. Next another project was done to find out the pattern of antibiotic prescriptions in 20 private clinics and their pharmaco-economics.¹³ was worked out which showed interesting results. In this study 386 prescriptions were audited. Maximum antibiotics were used between 21-40 yr, males were prescribed more antibiotics, only in 20.25% cases antibiotics were prescribed after proper diagnosis & sensitivity tests, maximum cost of treatment was 510 Nepali Rupees for treatment of STD in Gynecological clinics.

This project purposely this time concentration was on out patients departments of four major specialties viz medicine, surgery, pediatrics and gynecology in four major government

hospitals of Kathmandu valley. along with pharmaco-economic aspects of antibiotics prescriptions were analyzed and discussed.

MATERIALS & METHOD

1. Inclusion & exclusion criteria :

The patients in outdoor departments of medicine, surgery, pediatrics and gynecology of four major government hospitals of Kathmandu valley only, and the prescriptions containing antibiotics alone or with other drugs were included in this study. Other specialities, indoor and follow up patients were precluded from this survey.

2. Study area :

Prescription audit was done on prescriptions containing antibiotics by contacting patients coming out after consultation with specialist,

SIZE OF DATA : At least fifty encounters receiving antibiotics from each selected hospitals of chosen prescriber. The total size of sample was 522. Prescriptions.

FIELD TEST OF DATA : Field test of the data-collecting tool was done in Om Hospital, Kathmandu.

Coding : The data was coded by following techniques

1. Age distribution: Below 1yr., 1- 10yr, 11-20 yr, 21-30 yr, 31-40y, 41-50y, 51-60yr, >60yr.
2. Sex: Male and female.
3. The total number of drug prescription and the cost of therapy were noted by using SIMS/MIMS/DRUG INDEX.

ANALYSIS OF DATA : Data was tabulated and analyzed using Tally bars, pie diagrams and MS Excel 2000 for windows.

RESULTS

Age distribution : shown in Table I

Table I : Age Distribution

AGE GROUP	GYNECOLOGY (n1)	PAED. (n2)	SURGERY (n3)	MEDICINE (n4)
>1y	NA	7.7±1.88 10 (8%)	NA	NA
1-10y	NA	7.52±1.93 110(88%)(Max.)	7.46±1.7 13(10.4%)	NA
11-20y	16.25±3.45 8 (6.4%) (Min.)	14.2±2.58 5(4%) (Min)	16.04±2.95. 22(17.6%)	15.61±2.9 18(12.2%)
21-30y	25.83±2.64 83(66.4%) (Max)	NA	26.21±2.40 55(44.%) (Max)	25.93±2.71 77(52.4%)
31-40y		NA		
41-50y	46.86±3.15 15(12%)	NA	44±2.16 7(5.6%) (Min.)	46.38±2.27 42(28.5%)
51-60y		NA		
>60y	64.10±2.44 19 (15.2 %)		64.89±2.51 28 (22.4%)	64.5±2.46 10 (6.9%)

n1=125,n2=125,n3=125,n4= 147 No. of encounters =522

Table II : Sex Distribution

SPECIALITY	MALE	FEMALE
GYNECOLOGY		125
MEDICINE	100	47
SURGERY	85	40
PAED.	67	58

Table III : Total numbers of drugs prescribed in the hospitals

Total No. of Prescriptions	Gyane	Surgery	Medicine	Paed.
	157	117	109	140.

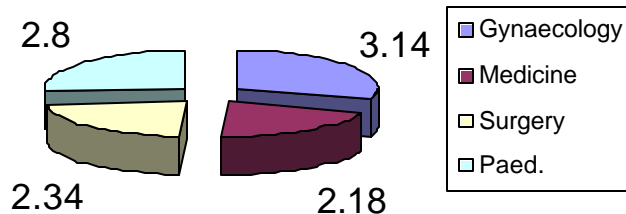
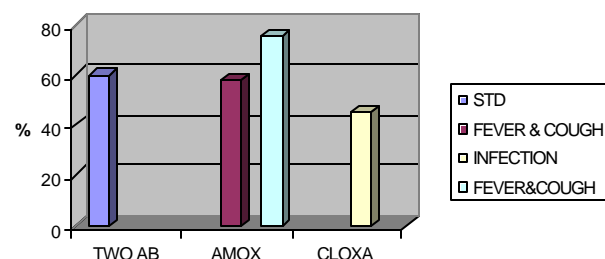
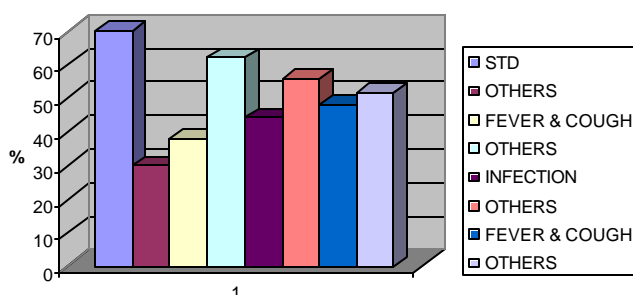
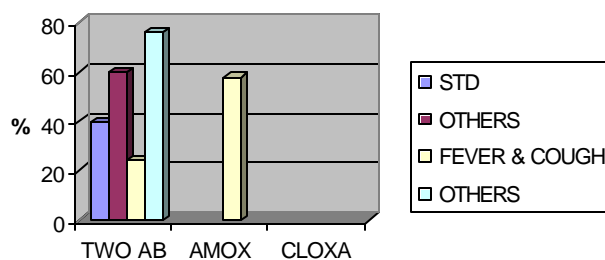
Table IV

HEALTH PROBLEMS WHERE ANTIBIOTICS WAS USED, BUT NOT REQUIRED

Pain lower abdomen
Dysmenorrhoea
Aminorrhoea
Epigastric pain
Pain in chest
Abdominal pain
Headache, vomiting

Table V : Showing percentage of antibiotic prescribed after investigations done in only 24.5% of cases

ANTIBIOTICS PRESCRIBED AFTER INVESTIGATIONS	PERCENTAGE
YES	24.5
NO	75.5
OUT OF 24.5%	
GYNECOLOGICAL OPD	66
MEDICAL OPD	8

Average number of drugs per prescription**Fig. 1 : Showing average number of prescriptions in hospitals****MAX. ANTIBIOTICS USED IN HOSPITALS****Fig. 3 : Showing commonest health problems & commonest antibiotics used in different specialties in Hospitals****HEALTH PROBLEMS IN HOSPITALS****Fig. 2 : Maximum Health Problems****MAXIMUM AB USED IN GYN. & MED.****Fig. 4a : Showing antibiotics used in OPD of Hospitals**

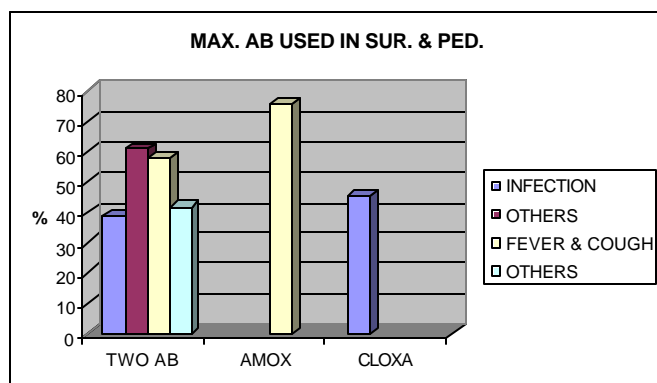


Fig. 4b : Showing antibiotics used in OPD of Hospitals

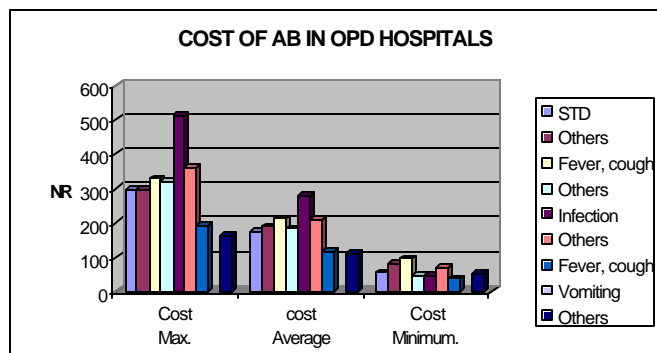


Fig. 5a : Showing pharmaco-economics of antibiotics treatment in all health problems in Hospitals OPD (cost in Nepali Rupees)

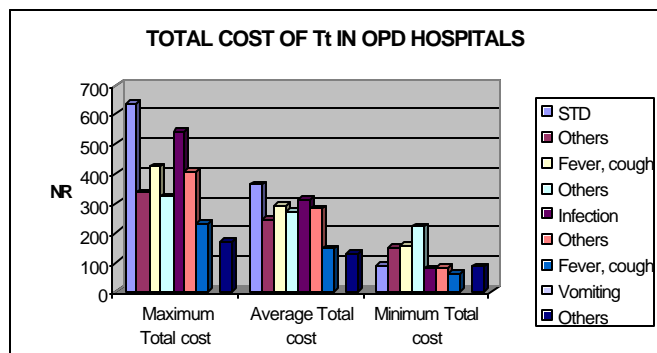


Fig. 5b : Showing pharmaco-economics of antibiotics treatment in all health problems in Hospitals OPD (cost in Nepali Rupees)

Sex distribution : shown in Table II

Males were prescribed more antibiotics than females (73% for surgical problems, 62% for medical problems and 53% for Pediatric problems)

Drug use situation : shown in table III Average number of drugs per prescription (for checking poly pharmacy) has been shown in Pie diagram I.

Health Problems in different specialties : maximum health problems have been shown in bar diagram I.

Use of different antibiotics for different health problems : The use of antibiotics in all types of health problems has been shown in figure I & II, further the maximum used antibiotics

for most frequent health problems has been shown in Bar diagram II. Some of the health problems where antibiotics was used did not require antibiotics treatment has been shown in table IV. antibiotics was prescribed without investigations have been shown in table V.

Graph I & II : Shows pharmaco-economics of antibiotics treatment in all health problems in Hospitals OPD including total cost of treatment (cost in Nepali Rupees.)

DISCUSSION

As shown in Table IV is the list of health conditions where antibiotics use was unnecessary and physicians did extra expenditure on antibiotics, which has increased the cost of prescriptions. As shown in this study even taking the average costs of antibiotic's 126, 197.5, 154, 185, 164, 48.5. Nepali Rupees extra expenditure was not required.

Many reports from world over show that antibiotics are used widely and some times indiscriminately which increases the cost of therapy, incidences of ADRs, drug interactions and emergence of resistant bacterial strains. A previous study¹⁰ documented that nearly three-fourth of indoor patients were prescribed one or more antibiotics. and more than half (52.7%) of total expenditure on drugs was on antibiotics.

Table V. Showing percentage of antibiotic prescribed after investigations done in only 24.5% of cases

PHARMACO-ECONOMIC ASPECTS:

Pharmaco-economically on average the costliest prescriptions were written by surgeons in cases of infections (average 282 Nepali Rupees) with maximum of 514 Nepali Rupees and minimum of 50 Nepali Rupees. In gynecological problems treatment of STD was costliest amounting to 106 Nepali Rupees with maximum of 295 Nepali Rupees and minimum of 56 Nepali Rupees. Physician's costliest treatment was for fever and cough 214 Nepali Rupees average and maximum of 330 Nepali Rupees and minimum of 98 Nepali Rupees. In Children's diseases prescriptions for upper respiratory infection was costliest 164 Nepali Rupees average, maximum of 292 Nepali Rupees and minimum of 36 Nepali Rupees.

The practice of prescribing antibiotics with out proper culture and sensitivity tests was as high as 75.5%. In over all view the prescriptions of gynecological clinics were costliest, they have been using antibiotics extensively and they prescribed even two antibiotics. Pharmaco-economic implications of this practice are obvious. A question that may arise is that are prescriber aware of the cost of drugs they are prescribing? Some

studies from U.K. have reported that many prescriber have rather poor knowledge about drug costs.¹² Considering that antibiotics adds heavily to the total cost of prescription, This is an alarming situation.

RECOMMENDATIONS

To improve this situation, following may be suggested Prescriber should be more careful in using expensive and multiple antibiotics. Generally oral drugs are cheaper than injections, the older drugs are usually cheaper than the newer ones.¹⁴ In situations where two or more than two antibiotics are equally effective, cheaper alternative should be the choice, without compromising the patient care. This practice is more pharmaco-economic. There are many common infections that can be treated efficiently with older and cheaper antibiotics.¹⁵ It may be valuable to categorize antibiotics into different groups and hold some antibiotics in the reserve group for more restricted use.¹⁶ A WHO expert committee (1989) has proposed that antibiotics like quinolones, third & fourth generation Cephalosporins and vancomycin may be kept as 'reserve' antibiotics for resistant hospital strains infections.

Peer group discussions, availability of sensitivity pattern of local bacterial pathogens can be very helpful in selecting antibiotics,^{16,17,18}

- ? Effective information and dissemination strategies for public at all levels should be implemented.
- ? A massive consumer awareness programme on the use of antibiotics should be conducted to produce awareness amongst the common people.
- ? A massive education programme at school level could be ideal. Medical professionals and pharmacists could be invited by school authorities to educate the younger generation not only against antibiotics but also against other health hazards on the lines of AIDS DAY (1st of December).

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