PHARMACO-ECONOMIC ASPECTS OF ANTIBIOTIC PRESCRIPTIONS IN CLINICS OF KATHMANDU

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ABSTRACT

Antibiotics (AB) are the most widely prescribed group of drugs and their use is associated with increasing rate of AB resistance. Nearly one third of prescriptions of physicians for colds, upper respiratory tract infections and bronchitis are of AB as documented in previous studies. Antibiotic use is associated with increased cost of financial burden, which may be difficult to be borne by the patients in developing countries like Nepal.

The objective was study the prescribing pattern of Antibiotic preparations in various diseases and to find out how the treatment could become more pharmaco-economic without compromising the quality of service. A cross sectional study of prescription pattern of antibiotics/drugs in which antibiotics were used from randomly selected 20 private clinics of four major specialties in Kathmandu valley.

Total No. of prescriptions audited were 386, average number of drugs/per prescription was 2.74.

Maximum antibiotics were prescribed for age group 21-40 years in gynecological, surgical and medical problems, in Pediatrics maximum AB were prescribed between 1-12 years.

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

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

Only in 20.25% patients, AB were prescribed after proper diagnosis and sensitivity tests

Maximum cost of prescription was 510 Nepali rupees (NR) for treatment of STD in Gynecology.

Key Words: *Antibiotics, Cost, Human Immune deficiency Virus, Kathmandu, Private Clinics, Pharmacoeconomic, Sexually Transmitted Diseases.*

INTRODUCTION

One of the leading causes of death is infectious disease thought the world. Discovery and development of vaccines and antibiotics AB have minimized this fatality rate to some extent. Now the major obstacle, medical science is facing is of drug resistance microorganisms, which might be due to misdiagnosis

and overwhelming prescriptions of large number of drugs.

As more strong AB were discovered leading to development of more and more resistant strains of microorganisms. Finally we are digging deep into the barrel of antibiotics.¹ AB is often most used or misused drugs²⁻⁸ as reported earlier. In Nepal there are few reports about antibiotic survey.^{9, 10}

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It has been seen that approximately 12 million antibiotic prescriptions resulted from respiratory infections accounting for 21% of all antibiotic prescriptions to adults accounting for 47.2 million (pounds sterling) in expenditure in the United Kingdoms.¹¹ Moreover; there is a tendency of prescribing costly and latest antibiotics. Such 'ambitious prescription' has led to many concerns, not only the development of resistant strains of microbes but also rising health costs. Reports related to overuse of AB in Nepal is yet to be estimated. Earlier a survey of awareness of patients about the use of AB from some hospitals and clinics of Kathmandu valley was undertaken.¹² In this study 178 patients were interviewed by a multi graded questionnaire, showing that 54% patients had no awareness of AB, 51.5% were ignorant about the action of AB and 89.5% had no knowledge about the side effects.

This background prompted to undertake this survey on the pattern of ABs prescriptions in 20 private clinics (Five of each of four major specialties, viz medicine, surgery, pediatrics and Gynecology) in Kathmandu valley and to work out pharmacoeconomic of these prescriptions.

SUBJECTS & METHODS

1. Inclusion & exclusion criteria: The patients of outdoor departments of medicine, surgery, pediatrics & gynecology in 20 private clinics of Kathmandu valley and prescriptions containing AB alone or with other drugs were included in this study. The patients of other specialities, indoor and follow up cases were precluded from this study.
2. Study area: Random selection by Lottery method was made from 20 private clinics as to diverse specialties.

SIZE OF DATA

Fifty encounters receiving AB were made from each selected

sample clinic of the chosen prescriber. The total size of the sample was 386.

TOOLS OF DATA COLLECTION

Prescription audit was done with the prescriptions of patients who were prescribed AB by their physicians in their clinics.

FIELD TEST OF DATA

Field test of the data-collecting tool was done in New Boudha Pharmacy & Boudha X-ray Diagnostic center, Kathmandu valley

Coding

The data was coded as below

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 also noted by using SIMS/MIMS/DRUG INDEX.

ANALYSIS OF DATA

Data was tabulated and analyzed using tally bars, pie diagrams and MS Excel for windows 2000.

RESULTS

- I. Age distribution: of patients receiving antibiotics is as shown in Table 1
- II. Sex distribution shown in Table II.
Males were prescribed more antibiotics (73% for surgical, 62% for medical and 53% for Pediatric problems)
- III. Table III Shows Total No. Prescriptions, % of number of prescriptions/specialty & Average no. of drugs/

Table I : Age Distribution

AGE GROUP	GYNECOLOGY (n1)	PAED. (n2)	SURGERY (n3)	MEDICINE (n4)
>1y.	-	8.5M±1.60 8 (8%)	-	-
1-10y	-	7.47±1.91 88(88%)(Max.)	8±1.73 9(10.46%)	-
11-20y	15±3.03 6 (6%)	13.5±2.38 4(4%) (Min)	16.26±2.71 15(17.44%)	16.66±2.90 12(12%)
21-30y	26.40±2.46 66(66%) (Max)	-	26.21±2.36 57(66.27%)(Max)	26.23±2.47 52(52%)
31-40y	-	-	-	-
41-50y	47.03±2.51 28 (28%)	-	43±1.58 5(5.81%) (Min.)	47.14±2.38 28(28%)
51-60y	-	-	-	-
>60y	-	-	-	63.75±2.12 8 (8%)

Number of encounter = 386 (n1=100, n2=100, n3=86, n4=100)

Table II : Sex Distribution

SPECIALITY	Male	Female
GYNECOLOGY	-	100
MEDICINE	62	38
SURGERY	63	26
PAED.	47	53

Table III : Total No. Prescriptions, % of prescriptions/specialty & Average No. of drugs/prescription (for checking polypharmacy)

TOTAL No. OF PRESCRIPTIONS (386)	GYNE. %	MED . %	SUR. %	PED %
	31	25	16	28
AVERAGE No. OF DRUGS/PRESCRIPTION	3.2	2.58	2.3	2.8

Table IV

HEALTH PROBLEMS WHERE AB WAS USED, BUT NOT REQUIRED
Pain lower abdomen
Dysmenorrhoea
Aminorrhoea
Epigastric pain
Pain in chest
Abdominal pain
Headache, vomiting

Fig. 1 : Use of AB. After proper investigations

Fig. 3 : Showing commonest health problems & commonest AB used in different specialties in Hospitals

Fig. 2 : Showing maximum health problems in clinics

prescription (for checking polypharmacy)

IV. Diagnosis:

The study showed that in clinic 20.25% of patients was prescribed ABs after proper diagnosis and the rest

without it.

Out of 20.25% cases that were prescribed AB after investigations Figure I shows the breakup of 20.25% ABs prescriptions in different specialties in clinics.

V. Bar diagram I show health problems in different specialties:

VI. Use of different AB for different health problems:

Table IV shows health conditions, where the AB use was unnecessary and extra expenditure on AB has increased the cost of prescriptions

Bar diagram II. Shows commonest health problems and commonest AB used in different specialties in clinics

The use of different AB for different health problems has been shown in bar diagram III, IV.

Fig. 4 : Bar Diagram

Fig. 5 : Use of Ab in Surgical & Pediatrics Clinics

Fig. 6a : Showing pharmaco-economics of ABs treatment in all health problems in clinics (cost in NRs.)

Fig. 6b : Showing pharmaco-economics of ABs treatment in all health problems in clinics (cost in NRs.)

DISCUSSION

As shown in Table IV of this study even taking the average costs of AB 177.5, 116, 112, and 151. 99.75, 84. NR spent by patients was not required.

In gynecological clinics total number of prescriptions were 160, which was maximum, but minimum prescriptions were in surgical clinics that were 84. Maximum average number of drugs per prescription was 3.14 in gynecological clinics and minimum average number was 2.34 drugs /prescription in surgical clinics.

Out of prescribed drugs prescriptions of Abs were 20.25% out of which 61.84 % AB was prescribed without any proper investigations. In those cases where investigations were done only in 8.6% patients culture /sensitivity was done before AB therapy; in 29.56 % patients some investigations were done before AB used.

PHARMACO-ECONOMIC ASPECTS OF AB THERAPY

Pharmaco-economic aspects of AB treatments in different specialties are shown in Table VII.

Quinolones and fluoroquinolones were the Abs of choice in private clinics.

This is an alarming situation to improve this alarming situation

RECOMMENDATIONS

Following may be suggested---

Effective information and dissemination strategies for public at all levels should be implemented.

A massive consumer awareness programme on the use of ABs should be conducted to produce awareness amongst the common people.

A massive education programme at school level could be ideal. Medical professionals and pharmacists should 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).

A national antibiotic policy should be formulated and standard treatment guidelines for Physicians should be issued.

Culture & sensitivity reports of commonly used AB should be available from time to time

Importance of investigations should be stressed in chronic cases. Prescriber should be more careful in using expensive and multiple ABs. Generally oral drugs are cheaper than injections, the 1st generation drugs are usually cheaper than the latest generations.¹³ In situations where two or more than two ABs

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 ABs.¹⁴ It may be valuable to categorize ABs into different groups and hold some ABs in the reserve group for more restricted use.¹⁵

A WHO expert committee (1989) has proposed that ABs like quinolones, third & fourth generation Cephalosporins and vancomycin may be kept as 'reserve' ABs for resistant hospital strains infections.¹⁶

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

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