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IRRATIONAL PRESCRIBING OF ANTIBIOTICS IN DIFFERENT OUTPATIENTS SETTINGS AT HYDERABAD, SINDH

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ABSTRACT

The main aim of this study is to evaluate the irrational use of antibiotics in out-patients, because irrational use of antibiotic is harmful for the community and a widespread problem of the world mainly for under developed countries. In addition antibiotics will show same actions against the host cell, as they do to the bacterium. For Example, Trimethoprim can depress folic acid in both microorganism and also host cell. According to world health organization microbial resistance will be produced by irrational use of medicines and it can cause morbidity and mortality. In this study prescriptions were collected from different out-patient settings of Hyderabad city. Total 500 prescriptions were collected during the period of one year from November 2014 to November 2015. Collected prescriptions were evaluated for rational prescribing and use of antibiotics on the basis of authentic drug references e.g. Drug Information Handbook, British National Formulary, and WHO standards for prescription writing. Results of the study reveals that patients related information like age, weight were not present in 24.6% and 58.4% prescriptions respectively, antibiotic dose was incorrect in 37% prescriptions, duration of therapy was not mentioned in 49.6% prescriptions, dosing frequency were inaccurate in 55% prescription and 69.6% prescription were lacking from direction to the patient. Additionally it is also resulted that 60.3% of total prescription were

prescribed irrationally. This irrational use may lead to severe side effect and antibiotic resistance.

KEYWORDS: Irrational prescribing, Antibiotics, Microbial resistance, Hyderabad, Pakistan.

INTRODUCTION

Irrational prescribing of medicines is a major health problem of the world especially in developing countries. Irrational or inappropriate use of medicines is described by James Trostle as "consumption of drugs in a way that decreases or negates their efficacy or in a situation where they are unlikely to have the desired effects".[1]

Irrational prescribing is a major health care problem in many countries[2-3] because it may increase the cost of medical treatment. A study of Nepal in primary health care centers proved that 20% to 52% of drug costs were wasted during irrational prescribing[4]. Therefore it is very necessary to study the irrational use of medicines, especially the use of antibiotics and introduce interventions by mutual involvement of both the physicians and the pharmacists in order to achieve sensible use of antibiotics. Judicious use of antibiotics includes provider adherence to prescribing guidelines, not using antibiotics for probable viral infections, and using the narrowest spectrum agent that is active against the targeted pathogens [5-6]. Irrational prescribing has serious health and economic effects which include under treatment, drug resistance, and spread of disease. As we know that resistance to antibiotics is a major public-health problem and unfortunately antibiotic resistance is increasing in all over the world. [7-10] Resistance to antibiotic results in increased morbidity, mortality, cost of health care and ultimately with time decrease in the rate of successful treatment. Numerous influential factors do exist during prescribing the antibiotics. Prescriber's factors such as lack of education and training, lack of objective drug information, extra and unnecessary antibiotic prescribing, inaccurate dosage or route of administration, antibiotic prescribing for non-bacterial infections, patient demands and self prescribing. However, inappropriate prescribing of antibiotics by the physicians is the most important recognized factor [11-14].

METHODOLOGY

This descriptive retrospective study conducted by collecting prescriptions from pharmacies situated nearby outpatient department of government hospitals, tertiary care hospitals, and private out-patient settings at Hyderabad city. Total 500 clearly written prescriptions

containing antibiotics were collected for a period of one year from November 2014 to November 2015. Afterwards collected prescriptions were evaluated for rational prescribing and use of antibiotics on the basis of authentic drug references i.e. Drug Information Handbook[15]. British National Formulary (Britain 2012)[16], and WHO standards for prescription writing [17]. The appropriate data regarding age and weight of patient, dose of antibiotics, dosing frequency, duration of therapy, directions to patient, diagnosis, laboratory tests investigation was collected by direct observation and entered in a specially designed proforma.

Statistical Method

All data was evaluated by statistical software, IBM SPSS statistics 22.0. For analysis all observed information from prescription was transferred to SPSS 22.0 to calculate the frequencies and percentages and finally results were presented in tables.

RESULTS

In this study about irrational prescribing total 500 clearly written prescription containing antibiotic were randomly collected. In these 500 collected prescriptions it was observed that quinolones were prescribed in 193 (38.6%) prescriptions, cephalosporins were prescribed in 144 (28.8%) prescriptions followed by penicillins and macrolides in 16.4% and 16.2% respectively. As shown in **table 1.**

Table 1: Frequently Prescribed Antibiotics

Prescribed Antibiotics		**No: of Prescription**	**%age**	**Cumulative %age**
Valid	Cephalosporin	144	28.8%	28.8%
	Macrolide	81	16.2%	45%
	Pencilines	82	16.4%	61.4%
	Quinolone	193	38.6%	100%
	Total	**500**	**100%**	

During the evaluation of prescription it was observed that only 199 (39.8%) prescriptions were rational according to specified standards, remaining 301(60.2%) prescription were irrational as shown in **table 2**.

Table 2: Prescribing Pattern

Prescribing Pattern		**No: of Prescription**	**%age**	**Cumulative %age**
Valid	Rational	199	39.8%	39.8%

	Irrational	301	60.2%	100%
	Total	**500**	**100%**	

As depicted in **table 3**, These 500 prescriptions were written by different medical specialist. Out of these 332 prescriptions of general physicians, 64 of pediatrician, 58 of gynecologist, remaining 19, 10, and 09, of dentist, urologist, ENT specialist and skin specialist respectively.

Table 3: Prescriber Specialty

Prescriber's Specialty		**No: of Prescription**	**%age**	**Cumulative %age**
Valid	Dentists	19	3.8%	3.8%
	ENT Specialist	9	1.8%	5.6%
	Gynecologist	58	11.6%	17.2%
	Pediatrician	64	12.8%	30%
	Physician	332	66.4%	96.4%
	Skin specialist	8	1.6%	98%
	Urologist	10	2%	100%
	Total	**500**	**100%**	

Number of antibiotics prescribed to a patient per prescription is specified in **table 4**. About 70% prescriptions contained only one antibiotic, but in 30% prescriptions two antibiotics were prescribed to patients.

Table 4: Number of Antibiotic Prescribed Per Prescription

No: of Antibiotic/prescription		**Frequency**	**Percent**	**Cumulative Percent**
Valid	Only one	347	69.4%	69.4%
	Two	153	30.6%	100%
	Total	**500**	**100%**	

Diagnosis on prescriptions is specified in **Table 5**. Out of 500 prescriptions 90 prescriptions with UTI, 53 prescriptions with fever 51 with flue, 44 with pneumonia, 43 prescription with abdominal pain, 37 prescription with diarrhea, 32 prescriptions with RTI, 29 prescriptions with bronchitis, remaining 23,15,12and 8 with vaginal infections, throat infection, tooth ache and acne respectively.

Table 5: Diagnosis on Prescription

Diagnosed Parameters		**No: of Prescription**	**%age**	**Cumulative %age**
Valid	Abdominal Pain	43	8.6%	8.6%
	Acne	8	1.6%	10.2%

	Bronchitis	29	5.8%	16.0%
	Cough	37	7.4%	23.4%
	Diarrhea	33	6.6%	30%
	Fever	53	10.6%	40.6%
	Flu	51	10.2%	50.8%
	Pneumonia	44	8.8%	59.6%
	RTI	32	6.4%	66%
	Throat pain	15	3%	69%
	Toothache	12	2.4%	71.4%
	Typhoid	30	6%	77.4%
	UTI	90	18%	95.4%
	Vaginal Infection	23	4.6%	100%
	Total	**500**	**100%**	

As far as patient's information is concerned, Age of patient was written only on 377 (75.4%) prescriptions, while 123 (24.6%) prescriptions were lacking this information. Furthermore weights of patient were recorded only in 208 (41.6%) prescriptions. As shown in **table 6 and 7**.

Table 6: Age of the Patient

Age		**No: of Prescription**	**%age**	**Cumulative %age**
Valid	Absent	123	24.6%	24.6%
	Present	377	75.4%	100%
	Total	**500**	**100%**	

Table 7: Weight of the Patient

Weight		**No: of Prescription**	**%age**	**Cumulative %age**
Valid	Not-recorded	292	58.4%	58.4%
	Recorded	208	41.6%	100%
	Total	**500**	**100%**	

As Depicted in **table 8 and 9**, that dose of antibiotics were not appropriate in 185 (37%) prescriptions while only 67% prescription dose was correct. in addition to dose, dosing frequency were inaccurate in 225 (45%) prescriptions.

Table 8: Dose of Antibiotic

Dose of drug		**No: of Prescription**	**%age**	**Cumulative %age**
Valid	Correct	315	63%	63%
	Incorrect	185	37%	100%
	Total	**500**	**100%**	

Table 9: Dosing Frequency

Dosage Interval		No: of Prescription	%age	Cumulative %age
Valid	Inaccurate	225	45.%	45.0%
	Accurate	275	55.%	100%
	Total	**500**	**100%**	

Along with dose and dosing frequency, other parameters like duration of therapy and directions to patient were not provided properly. As shown in **table 10 and 11**. Duration of therapy were mentioned only in 248 (49.6%) prescription, while it is not mentioned in 252 (50.4%) of total prescription. Moreover directions to patient were not provided in 152 (30.4%) prescriptions.

Table 10: Duration of Therapy

Duration of treatment		No: of Prescription	%age	Cumulative %age
Valid	Not-Mentioned	252	50.4%	50.4%
	Mentioned	248	49.6%	100%
	Total	**500**	**100%**	

Table 11: Direction to the Patient

Directions on Prescriptions.		No: of Prescription	%age	Cumulative %age
Valid	Not-provided	152	30.4%	30.4%
	Provided	348	69.6%	100%
	Total	**500**	**100%**	

DISCUSSION

In this study it was observed that the prescribing pattern of antibiotic is irrational and the format of the prescription were not in support of the rational prescribing because 60.2% prescription were irrational in sense to contravene the official standards for rational prescribing of medicines. Results of our study at Hyderabad are higher than previous studies conducted in Karachi,[18-19]

It is very necessary to diagnose the disease prior to prescribe the antibiotics, but in this study it is observed that 93% antibiotics were prescribed without Laboratory test investigations these results are matching with previously conducted study at Raheemyar khan[20] In this study it was also found that the dose of antibiotic therapy was wrong in 37% prescription which may cause treatment failure, microbial resistance, and other serious consequences.

Moreover prescriptions fails to demonstrate the direction to the patient may create harm to the patient because for rational therapy it is very important to take antibiotic as directed by the health practitioner our study claims that direction to the patient were missing in 30% antibiotic prescriptions. Our study also resulted that, In 50% prescriptions duration of therapy were not mentioned and these results are matching with other study conducted by Shumaila et al.[21] In case of antibiotic therapy prolonged use of antibiotic will cause the antibiotic resistance[22] Writing the whole patient's information like age, weight etc on prescription is also very necessary as it may reach to clinical pharmacist to intervene the prescription in a systemic way, it will also helpful to pharmacist in dispensing the medicine with accurate dose calculation, right duration of therapy and proper selection of dosage form, in current study weight of the patient found absent on 58.4% prescriptions and age was not written in 24.6% prescriptions.

CONCLUSION

The current study showed high rate of irrational prescribing, and prescription format does not support the rational prescribing. Rational prescribing can be improved by implementing quality health monitoring system in health facilities on routine bases. This study emphasize the role of pharmacist and prevent the society from antibiotic resistance, as pharmacist is the person who can review the prescription order before dispensing the medicine and it will be beneficial to reduce the irrational use of antibiotics.

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