Contents list available at Science Letters

Science Letters

journal homepage: http://www.scienceletters.org/

A Prospective Cross Sectional Study on Antibiotic Prescribing Patterns among Admitted Patients in a Teritary Care Hospital, Bangalore

Rashi L[a]*, Sushma Muchukota[a], Karishma Parveen[a], Dinesh M. C[a], Hamin Jahan[a], Vinutha Yadav[a] Priyanka Dey[a], Yousuf Ahmed[a]

[a] *Department of Pharmacy Practice, Gautham College of Pharmacy, Bangalore, Karnataka, India.*

ARTICLE INFO

Article History:
Received 8 February 2020
Revised 29 April 2020
Accepted 6 May 2020
Available Online 7 May 2020

Keywords:
Prospective,
Antibiotic prescribing patterns,
Cross sectional,
Cephalosporins,
Pencillins,
Polypharmacy

ABSTRACT

Antibiotics are potent medicines that fight next to certain infections also can prevent further infections and save lives when used properly in therapeutic dose. They both prevent bacteria from reproducing and destroy them. Antibiotics are one of the most significant discoveries in the field of medicine. The purpose of the current study was to know the prescribing pattern of antibiotics in admitted patients in a tertiary care hospital in Bangalore. The objective of the study was to figure out the average number of antibiotics prescribed per prescription to identify the indication for which the antibiotics were frequently prescribed. There was A Cross sectional, observational study with 228 patients who were prescribed antibiotics, were included in this research with age between 15 to more than 65 years. The study was carried out for period of 6 months inpatient department from August 2019 to January 2020. The study reveals that out of 228 patients with antibiotics in the prescription is 81% , 49% of them are prescribed with at least one antibiotic and distribution of Broad spectrum antibiotics accounted for 61% and most of antibiotics prescribed are in 23% general medicine department and commonly given route is oral 60% i.e., cephalosporins 26% and penicillin's 19.6%. This study concluded that appropriate and sustainable interventions should be implemented that will ease the threat of antibiotic resistance. This emphasizes the need to provide training about antibiotic prescription patterns for rational use and avoid Polypharmacy across healthcare settings to improve patient care development and provide better quality of life.

1. Introduction

Antibiotics are described as the medications that can inhibit the growth of bacteria either by selectively killing or inhibiting the development of disease-causing bacteria so as to prevent further infections and complications (European Centre for Disease Prevention and Control report and, Leekha et al., 2011).

At present, it is found that diverse microbes most frequently available and effective first line agents, primarily due to inappropriate prescribing practices (Anong *et al.,* 2018; Llor *et al.,* 2014). Irrational use of antibiotics may increase the cost of treatment, hospitalization, drug-drug interactions and also causes severe ADR's. Polypharmacy is a common practice to prescribe multiple medications in a single prescription paper. As per the latest estimates, the uneven death rate due to infections in India is around 416.75 deaths per 100,000 persons (Laxminarayan et al., 2016). According to centers for disease control (CDC) and prevention report on antibiotic resistance threats in the many countries, it is expected that antibiotic resistance is responsible for more than 2 million infections and 23000 deaths every year.

* Corresponding Author: Rashi L
E-mail Address: rashil81098@gmail.com
DOI: 10.46890/SL.2020.v01i03.003

2. Material and Methods

2.1. Study Sample

228 patients with age group of 15 to > 65 years were considered into the study. [N=228 Patients.]

2.2. Study Design

It is A Hospital-based, prospective, cross-sectional and observational study was conducted in diverse departments at Tertiary care Hospital, Bangalore.

2.3. Study Period

The present study was conducted for a period of 6 months from August 2019 to January 2020.

2.4. Study Site

The present study was conducted in ESI Hospital Indiranagar, Bangalore, Karnataka. India.

2.5. Study Criteria

2.5.1. Inclusion Criteria

All patients who are willing to participate in the study with any infections admitted in hospital were included.

Age groups above 15 to more than 65 years were included in the study.

Prescriptions without antibiotics were considered into the study.

2.6. Exclusion Criteria

The patients who are not willing to participate and who are not suffering from any disease and out patients were excluded.

2.7. Source of Data

2.7.1. Method of Collection of Data

All the patients satisfying the inclusion criteria were selected after explaining the study to the subjects then included in the study. Informed Consent was taken from each and every patient. Tool of data collection are case sheets and patient interview was taken to collect data.

2.7.2. Statistical Tools

Data were collected from the patient's chart and was subjected to analyze by performing descriptive statistics. The obtained data tabulated and analysed in terms of objectives of the study, by using inferential and descriptive statistics.

3. Results

Table 1(a). *Distribution according to age group*

Age	No of people[N=228]	Percentage
15-25	15	6.5%
25-35	20	8.7%
35-45	56	24.56%
45-55	55	24.12%
55-65	63	27.63%
>65 years	15	6.5%

Table 1 (b). *Distribution according to gender*

Gender	No of people [N=228	Percentage
Male	150	66%
Female	78	34%

Table 1 (c). *Distribution according to educational status*

Education status	No of people	Percentage
Educated	80	35%
Uneducated	148	64.91%

Table 1 (d). *Distribution according to occupation*

Occupation	No of people	% of people
Student	12	5.2%
Job holder	48	21%
House wife	20	8.7%
Farmer	80	35%
Others	68	29%

Table 1(e). *Distribution according to residence*

Data	No of people	% of people
Rural	98	42%
Urban	130	57%

Table 2. *Distribution according to no of antibiotics prescribed*

No of antibiotic prescribed	Number	Percentage %
1	80	49%
2	50	32%
3	22	13%
4	8	4%

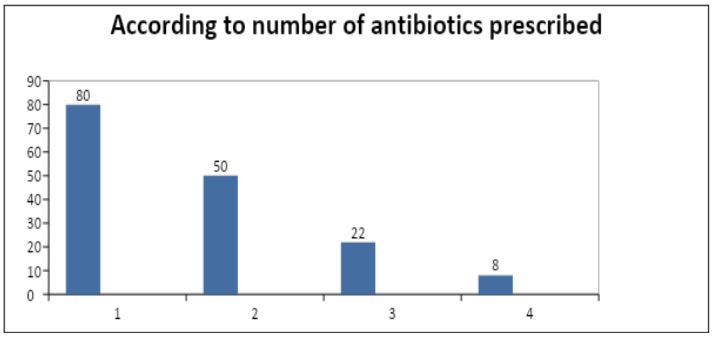

Figure 1. *Distribution according to number of antibiotics prescribed*

Table 3. *Distribution according to category of Antibiotics*

Category of antibiotic	Number	Percentage %
Penicillin	26	19.6%
Cephalosporin	30	26%
Amino glycosides	24	10.42%
Tetracycline	24	3%
Macrolide	18	12.2%
Quinolones	22	1.8%
Fluroquinolones	19	14.7%
Metronidazole	19	11.6%

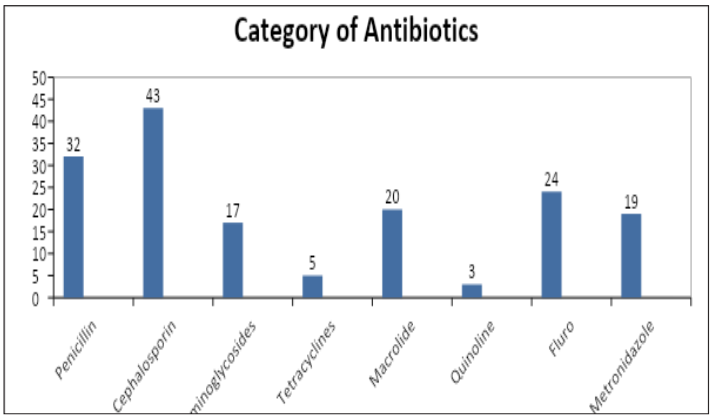

Figure 2. *Distribution according to category of Antibiotics*

Table 4 : *Distribution based on prescription*

Prescription	Number	Percentage %
With antibiotics	185	81%
Without antibiotics	43	18%

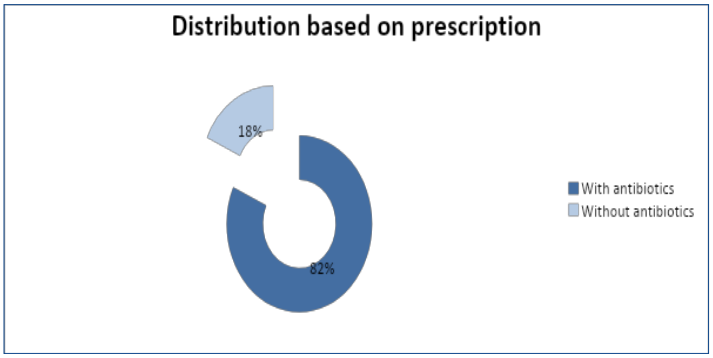

Figure 3. *Distribution based on prescription*

Table 5 . *Distribution based route of administration of antibiotics*

ROA of antibiotics	Number	Percentage %
Oral	98	60%
Parenteral	65	39%

Table 6 . *Distribution based on diagnosis mention R_x*

Diagnosis mention in R_x	Number	Percentage %
Yes	155	67%
No	73	32%

Table 7. *Distribution based on Antibiotic spectrum*

Antibiotic spectrum	Number	Percentage %
Broad	100	61%
Narrow	63	38%

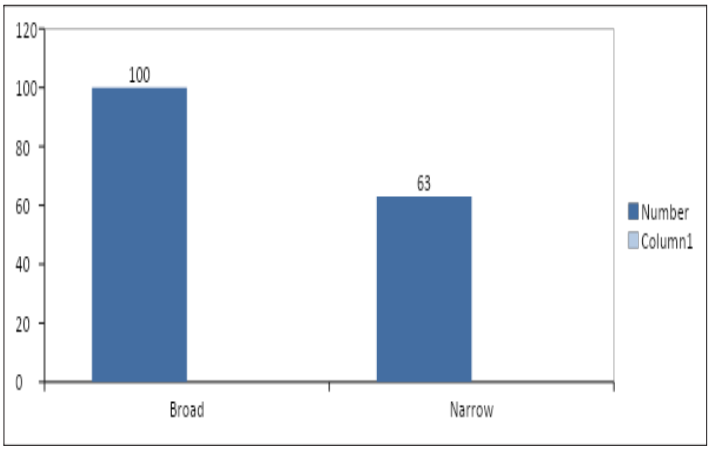

Figure 4. *Distribution based on Antibiotic spectrum*

Table 8. *Distribution based on department involved*

Department involved	Number	Percentage %
General medicine	54	23%
ICU	37	16%
Surgical department	41	17%
Causality	47	20%
Pediatrics department	15	6.5%
OBG	20	8.7%
Orthopedics	14	6.148%

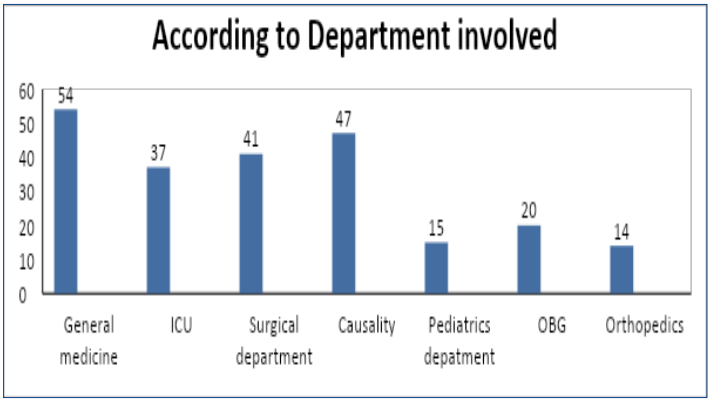

Figure 5. *Data Distribution based on department involved*

Table 9. *Distribution based on no of days hospital (In stay)*

No of days hospital(In stay)	Number	Percentage %
3 or < 3 days	80	35%
3 -5 days	95	41%
5-7 days	29	12.7%
>7 days	24	10%

Table 10. *Distribution based on Infection involved*

Infection	Number	Percentage %
Respiratory infection	63	38%
Viral infection	40	24%
G.I infections	18	11%
UTI	27	16%
Injuries	10	6%
Others	6	3%

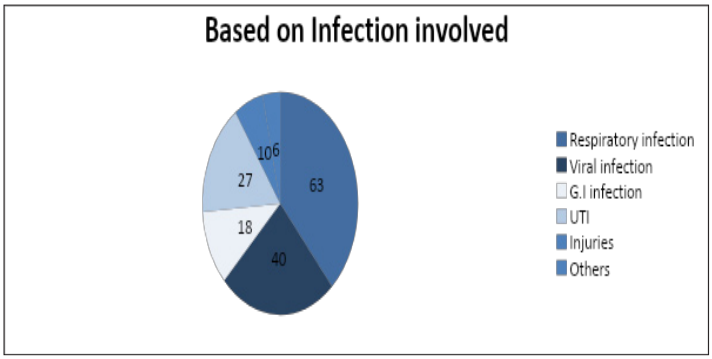

Figure 6. *Distribution based on Infection involved*

Table 11. *Distribution based on Antibiotic type*

Antibiotic Type	Number	Percentage %
Amoxicillin	27	16.56%
Ceftriazone	23	14.1%
Ciprofloxacin	20	12.26%
Clavlonic acid	14	8.5%
Azithromycin	20	12.26%
Metronidazole	19	11.6%
Gentamycin	17	10.4%
Cefixime	6	3.6%
Norfloxacin	4	2.4%
Cloxacillin	3	1.8%
Penicillin	2	1.2%

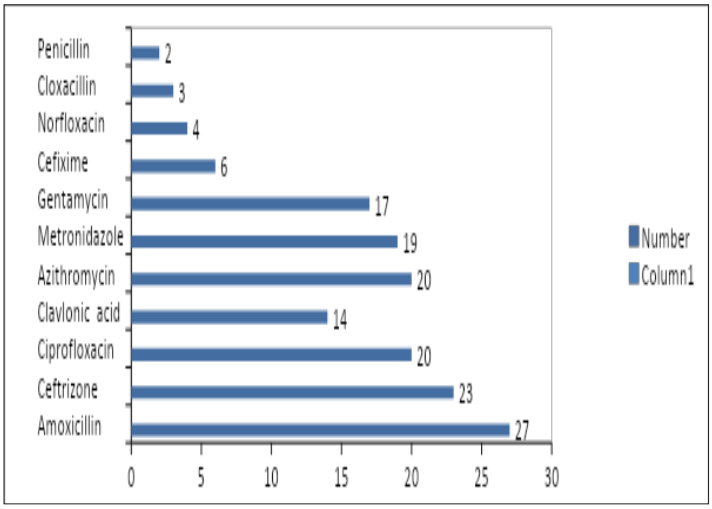

Figure 7. *Distribution based on Antibiotic type*

4. Discussion

Antibiotics are the majorly, often prescribed drugs in hospital, developed countries approximately 30% of the hospitalized patients are treated with this drug .A study of antibiotic prescription pattern in patients referred to tertiary care center (Van der *et al.,* 2001). A considerable prescriptions (>65%) were that of broad spectrum antimicrobials such as amoxicillin, clavulanic acid, ceftriaxone, ciprofloxacin. This can be expected as 100% patients in the study cohort were sorted on empirical antibiotics therapy (Kaur *et al.,* 2018). In this study, cephalosporins were the most recurrently prescribed classes of antibiotics(26%) followed by pencillins (19.6%) and flouroquinolones(14.7%). This result was consistent with a parallel study conducted in Bangladesh, which reported that cephalosporins were the most regularly prescribed groups of antibiotics followed by macrolides (Ata *et al.,* 2018; Fatima *et al* 2019). In this study the most familiar indications for antibiotic prescription was respiratory infection (38%) followed by viral infection (24%) and UTI infection (16%).The percentage of drugs prescribed from the essential drugs list was 81%. The lower the number of drugs prescribed without antibiotics in the prescription, it is positive sign of good prescribing practice. It reduces poly pharmacy which minimize drug –drug interactions and adverse drug reactions and related complications so as to provide better quality of life to patients.

5. Conclusion

The study concludes that there was lack of knowledge regarding antibiotics and its severity. Efforts are needed to advances in the prescribing pattern of medicine and healthy feeding habits as well as health education is also very necessary regarding the management of the drugs and disease. Antibiotics consumption is unnecessarily observed in mutually public and private sector of the society without proper prescription. Broad spectrum and newer antibiotics are highly used. Good Patient care development interventions should be implemented compulsory to promote rational use of antibiotics and provide quality of life. The present research there is need to provide training about antibiotic prescription patterns for rational use and avoids Polypharmacy across healthcare settings to improve patient healthy outcome.

Limitations of The Study

The study was conducted only in ESI hospital, Indiranagar Bengaluru, The data were collected only by checking the prescription paper ; registry book , does not include , interviews with patients and does not assess interviews with patients and does not assess factors contributing to the practice.

Acknowledgments

This work was supported by ESI Hospital, Indiranagar, Bengaluru. The authors are grateful to the dean of the hospital

and doctors, nurses and others for their co –operation and support.

Funding: No funding source

Conflict of interest: None declared

Ethical approval: The study was accepted and approved by the Institutional Ethics Committee.

6. References

[1] 1. European Centre for Disease Prevention and Control Report. Factsheet for experts—antimicrobial resistance. https://www.ecdc.europa.eu/en/antimicrobial-resistance/facts/factsheetsexperts. antibiotics-bacteria.

[2] 2. Leekha, Surbhi, Christine L. Terrell, and Randall S. Edson. "General principles of antimicrobial therapy." *Mayo Clinic Proceedings*. Vol. 86. No. 2. Elsevier, 2011.

[3] 3. Anong, Damian Nota, and Jane-Francis KT Akoachere. "Prescribing patterns and associated factors of antibiotic prescription in primary health care facilities of Kumbo East and Kumbo West Health Districts, North West Cameroon." *PloS one* 13.3 (2018): e0193353.

[4] 4. Llor, Carl, and Lars Bjerrum. "Antimicrobial resistance: risk associated with antibiotic overuse and initiatives to reduce the problem." *Therapeutic advances in drug safety* 5.6 (2014): 229-241.

[5] 5. Laxminarayan, Ramanan, and Ranjit Roy Chaudhury. "Antibiotic resistance in India: drivers and opportunities for action." *PLoS medicine* 13.3 (2016): e1001974.

[6] 6. Centers for Disease Control and Prevention. Antibiotic resistance threats in the United States. https://www.cdc.gov/drugresistance/pdf/ar-threats-2013-508.pdfhttp://apps.

[7] who.int/medicinedocs/documents/s23172en/s23172en.disease-united states

[8] 8. Van der Meer, J. W. M., and I. C. Gyssens. "Quality of antimicrobial drug prescription in hospital." *Clinical Microbiology and Infection* 7 (2001): 12-15.

[9] 9. Kaur, Amritpal, et al. "A study of antibiotic prescription pattern in patients referred to tertiary care center in Northern India." *Therapeutic advances in infectious disease* 5.4 (2018): 63-68.

[10] 10. Ata, Maliha, et al. "Antibiotics prescribing pattern at outpatient department of a tertiary medical college hospital." *Chattagram Maa-O-Shishu Hospital Medical College Journal* 17.2 (2018): 36-39.

[11] 11. Fatima, Sana, et al. "Analysis and evaluation of penicillin production by using soil fungi." *Biocatalysis and Agricultural Biotechnology* 21 (2019): 101330.