

A study of the prescribing pattern of antimicrobial agents in a Tertiary care teaching hospital of Andaman & Nicobar Island

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Abstract

Background and Objectives: Antimicrobial agents are one of the greatest discoveries in recent times, and are also being used somewhat irrationally for various diseased states. It has led to the development of resistance; increase in the number of Adverse Drug Reactions (ADR's), also the health of the patient is being compromised especially when antibiotics are prescribed irrationally. This study was done with the aim of assessing the antibiotics usage in a tertiary care teaching hospital in Port Blair, Andaman & Nicobar Island.

Materials & method: Auditing of the prescription from various clinical departments was done over a period of 8 months, from August 2016 to March 2017 was done to assess the use of antimicrobials. Total 3852 prescriptions were analyzed for average number of drugs prescribed, antimicrobials prescribed by generic name or brand name, percentage of antibiotics among the prescribed drugs. And the data was analyzed in percentage and proportions.

Observations: A total of 3852 prescriptions from the Outdoor Patient Department of the hospital were analyzed in this study and out of those patients, male patients were 2000(51.9%) and female patients were 1852(48.1%) with male: female ratio of 1.07:1. The most common age group which was prescribed antibiotics was 21-40 years, followed by 1-20 years age group. Out of the 3852 prescriptions, 2360(61%) patients were prescribed 2 drugs in the prescription, followed by 1120(29%) patients with 3 drugs in a prescription. Generic name of the drugs was used in 2910(75.5%) prescriptions and brand name in 942(24.5%) prescriptions. 1698(44%) prescriptions containing antibiotics were prescribed empirically on the basis of provisional diagnosis. Amoxicillin- Clavulanic acid was prescribed in 1437(37%) patients, followed by Azithromycin in 862(22%) patients.

Conclusion: Stress must be laid towards the rational use of Antibiotics before it's too late as already there is worldwide emergence of antibacterial resistance, moreover the irrational use of antibiotics is increasing side effects and total cost of treatment as well.

Keywords: Audit, Prescription, Antibiotics, Rational use.

1. Introduction

Antimicrobial agents (AMA) have given an upperhand to the physicians over the disease as the power of drugs nowadays is more than most of the disease states. Antimicrobial agents are amongst the common drugs which are being used nowadays for various conditions ranging from simple bacterial infections to various life threatening conditions. This is highly significant in the developing

countries like India, where the infections and infective diseases are more prevalent.[1] AMA are a double edged sword, hence their indiscriminate & inappropriate has already lead to the emergence of resistant strains of many bacteria, lack of efficacy, increased side effects.[2] Infectious diseases are much more prevalent in developing countries thus accounting for more usage of antimicrobial agents & this injudicious use is leading to the development

of drug resistance.[3] More & more emphasis is being laid nowadays on promoting the rational & judicious use of antibiotics.[4,5] The word rational means if the AMA's are given by appropriate route, dose, frequency and also the appropriate duration for the infection. This rationality in the use of antibacterial agents will surely control the emergence of antibiotic resistance, also it will curb the side effects and the total cost of treatment.[6,7]

Therefore this study was carried out in Andaman & Nicobar Island, which is a relatively untouched population, so as to assess the extent of rationality in the use of Antibiotics & also to suggest the adequate measures to strengthen the rational use of Antimicrobial Agents.

2. Materials & methods

The Current study was a prospective cross sectional study which was conducted in Andaman & Nicobar Islands Institute of Medical sciences, Port Blair, India from august 2016 to march 2017. Prescriptions from all the clinical departments of ANIIMS were analyzed & Data obtained was entered in the case record forms with prior approval from institutional ethics committee. Prescriptions of the patients fulfilling the inclusion Criteria were enrolled in the study.

2.1 Inclusion Criteria

1. Prescriptions containing one or more Antimicrobial Agents.

2.2 Exclusion Criteria

1. Pregnant & Lactating females
2. Cancer Patients

The Data thus Obtained was entered in the Microsoft Excel software, was expressed the percentage & Proportions.

3. Observations

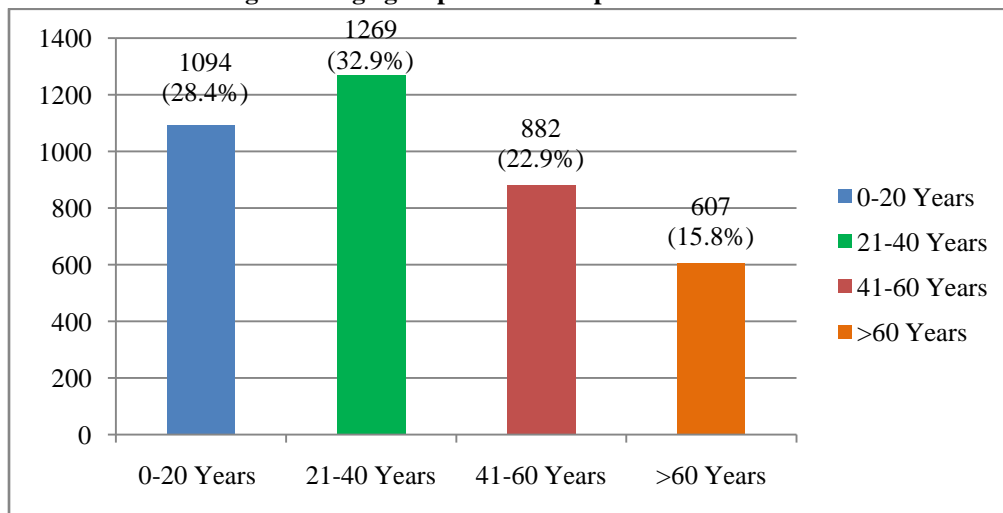
In the present study, a total of 3852 prescriptions were analyzed, out of these prescriptions there was a marginal male preponderance, as 2000(51.9%) prescriptions were of male patients and 1852(48.1%) were of female patients with male: female ratio of 1.07:1.(Table-1)

Table 1: Distribution of patients based on gender

S. No	Gender	No. of patients	Percentage
1	MALE	2000	51.9%
2	FEMALE	1852	48.1%
Total		3852	100%

In this study most common age group which was prescribed AMA's was 21-40 years as, 1269(32.9%) prescriptions were of the patients in this age group, followed by 1094(28.4%) prescriptions in 1-20 years of age group, followed by 41-60 years age group having 882(22.9%) prescriptions, and the least prescribed age group with antibiotics was > 60 years with 607(15.8%) prescriptions.(Figure 1)

Figure 1: Age groups which was prescribed AMA's



In this study, the most number of prescriptions were containing 3 drugs accounting for 2360(61%) prescriptions, followed by 1120(29%) prescriptions with 4 drugs, followed by 300(8%) Prescriptions with 2 drugs and least number were of prescriptions containing more than 4 drugs with 72(2%) prescriptions, and all these prescriptions were containing at least 1 AMA.(Table 2)

Table 2: Distribution of patients based on total number of drugs in a prescription

S. No	No. of drugs in a prescription	No. of prescriptions	Percentage
1	2 Drugs	300	8%
2	3 Drugs	2360	61%
3	4 Drugs	1120	29%
4	>4 Drugs	72	2%
Total		3852	100%

This study included the prescriptions with antibiotics only, along with the antibiotics Non Steroidal Anti-inflammatory drugs (NSAIDS) were prescribed in 1429(37%) prescriptions, followed by antacids & Proton pump inhibitors (PPI) in 1230(32%) prescriptions, and Paracetamol in 385(10%) prescriptions. Antibiotics were prescribed with generic name in 2910(75.5%) prescriptions and with the brand name in 942(24.5%) prescriptions. (Table-3)

Table 3: Distribution of patients based on drug details

S. No	Drug Details	No. of prescriptions	Percentage
1	AMA+ NSAIDS	1429	37%
2	AMA+ Antacids/PPI	1230	32%
3	AMA+ Paracetamol	385	10%
4	AMA+ Miscellaneous	808	21%
Total		3852	100%

In the current study, most commonly used antimicrobial agent was Amoxicillin- clavulanic acid in 1437(37.3%) prescriptions, followed by Azithromycin in 862(22.3%) prescriptions, and the least used AMA was Ofloxacin- Ornidazole combination in 60(1.5%) prescriptions.(Table-4)

Table 4: Distribution of patients based on type of AMA used

S. No	Anti microbial agent	No. of prescriptions	Percentage
1	Amoxicillin-Clavulanic acid	1437	37.3%
2	Azithromycin	862	22.3%
3	Metronidazole	431	11.2%
4	Sulfonamide & Trimethoprim	310	8.0%
5	Ciprofloxacin	258	6.7%
6	Nitrofurantoin	242	6.3%
7	Levofloxacin	89	2.4%
8	Chloroquine	61	1.5%
9	Ofloxacin-Ornidazole	60	1.5%
10	Others	100	2.8%
Total		3852	100%

4. Discussion

Antimicrobial resistance is at an alarming rise, if not stopped now will be a major health problem in the coming times. Contributors to the antimicrobial resistance may be unnecessary and inappropriate doses, less/more than adequate duration of their use. Therefore this study was done to know the extent of problem in an island population and to suggest measures to the physicians to improve the quality of prescriptions containing inappropriate anti microbial agents usage. Average number of drugs per person in a prescription should be kept to minimum. Multiple medications commonly called as polypharmacy should be avoided as it may lead to drug- drug interaction,

increased adverse effects, bacterial resistance, overall cost and patient's trust towards the physician as well.

In this study most commonly prescribed anti microbial agent was amoxicillin- Clavulanate in 1437(37%) of the patients which coincides with the findings of the other studies done by Khan FA *et al*[8] & Das BP *et al*[9].

In this study we found that most of the Anti microbial agents were prescribed with generic name in 2910(75.5%) prescriptions and some with the brand name in 942(24.5%) prescriptions, which is similar to the studies done by Sharma R & Khajuria B[10] and Babalola CP *et al*[11]. Also some of the studies suggest the common use of Brand names of Antimicrobial agents as in the studies done by Saurabh MK *et al*[12] and Patel V *et al*[13], thus in contrast with the present study.

It is high time now that all the physicians must be aware of the various pathogens and resistance patterns in their hospital and should develop a good judgment in use of the antibiotic regimens.[14] Now a days, stress is also being laid on the Hospital Antibiotic Policy which should be made mandatory by the regulatory bodies. By means of Drug utilization studies and prescription auditing, data can be generated pertaining to the use/misuse of anti microbial agents and accordingly necessary steps can be taken to prevent it.

5. Conclusion

Antibiotics are a boon to the human society but their misuse has led to the development of antibiotic resistance, increased adverse drug reactions, it has also very badly affected the patient's trust towards his physician, & has also increased the overall cost of the treatment. Therefore misuse of Antimicrobial agents should be stopped at the earliest in the interest of mankind.

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Conflicts of Interest- None

References

- [1] Tripathi KD. Antimicrobial drugs, Essentials of Medical Pharmacology.7th Edition, 12. New Delhi Jaypee Brothers Medical Publishers, 2013; 688-703.
- [2] Woldu MA, Suleman S, Workneh N, Berhane H. Retrospective study of the pattern of antibiotic use in Hawassa University Referral Hospital Pediatric Ward, Southern Ethiopia; *J App Pharm Sci*; 2013;3(02):93-8.
- [3] World Health Organization Financing of Health in India Available from: http://www.ino.searo.who.int/Linkfiles/Other_Content_WHD11-Seminar_Presentation-WR.pdf.

- [4] Amane H, Kop P. Prescription analysis to evaluate rational use of antimicrobials. *Int J Phar. ma and Biosci* 2011; 2(2); 314-319.
- [5] Ernest J.S. Resistance to antimicrobials in humans and animals. *BMJ*; 2005; 331:1219-20.
- [6] Goossens H. Antibiotic consumption and link to resistance. *Clin Microbiol Infect.* 2009 Apr; 15 Suppl 3:12-15.
- [7] MacDougall C, Polk RE. Antimicrobial stewardship programs in health care systems. *Clin Microbiol Rev*; 2005 Oct; 18(4): 638-56.
- [8] Khan FA, Singh VK, Sharma S, Singh P. Prospective Study on the Antimicrobial Usage in the Medicine Department of a Tertiary Care Teaching Hospital. *Journal of Clinical and Diagnostic Research*; 2013; 7(7): 1343-46.
- [9] Das BP, Sethi A, Rauniar GP, Sharma SK. Antimicrobial utilization pattern in outpatient services of ENT department of tertiary care hospital of Eastern Nepal. *Kathmandu Univ Med J. (KUMJ)* 2005; 3:370-75.
- [10] Sharma R, Khajuria B. Prescribing practices of doctors in rural and urban India. *J Clin Diag Res* 2009; 3; 1480-82.
- [11] Babalola CP, Awoleye SA, Akinyemi JO, Kotila O. Evaluation of prescription pattern in Osun State (Southwest) Nigeria. *J Public Health Epidem* 2011; 3:94-8.
- [12] Saurabh MK, Jaykaran, Yadav AK, Jyoti N. Study of prescribing pattern and assessment of rational use of drugs in tertiary hospital, Rajasthan. *J Pharm Res* 2010; 3(3):474-7.
- [13] Patel V, Vaidya R, Naik D, Borker P. Irrational drug use in India: A prescription survey from Goa. *J Postgrad Med.* 2005; 51:9-12.
- [14] Hanssens Y, Ismaeili BB. Antibiotic prescription pattern in a medical intensive care unit in Qatar. *Saudi Med J* 2005; 26:1269-76.