

A questionnaire base survey on the knowledge, attitude and practices about antimicrobial resistance and usage among the faculty and resident doctor of teaching tertiary care hospital, Chittoor, India

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ABSTRACT

Background: 10million could die every year due to antibiotic resistant infections by 2050 unless the threat is addressed. Irrational use of antibiotic use is a global phenomenon. So, 50% all anti bionics are prescribed, sold are dispensed inappropriately, while 50% of patients are not taking antibiotics correctly (WHO 2004).

Methods: This was a cross section study it was a conducted in RVS institute, tertiary care teaching hospital. Chittoor. The questionnaire was distributed along the faculty resident doctors and senior faculty of this RVS institute Where their knowledge, attitude, practice regarding antibiotic prescription and resistance was assessed by a five point likert scale, whose response ranged from strongly agree to disagree. Some questionnaire were of useful or nor useful and yes or no.

Results: Irrational prescription of antibiotics is worldwide problem and also in India was known to most of the physicians in our institute (n=95%) of participants. 80% subjects answered that prescription writing influenced by senior faculty and medical representatives. 50% subjects answered that antimicrobial resistance is a problem in daily practice.80 % subjects answered that most of the antibiotics available as over the counter drugs (OTC).

Conclusions: This study concludes, prescription writing influences by senior faculty and medical representatives. It's important to monitor and auditing prescription writing based on WHO Antibiotic guidelines to prevent resistance. Strict vigilance of OTC sales of antibiotics to prevent resistance.

Keywords: Antibiotic resistance, Irrational prescription, Rational prescription

INTRODUCTION

AMR has assumed greater importance in health-care settings. The presence of compromised individuals in an environment with a variety of infectious agents which are continuously under heavy antibiotics pressure results in the emergence and spread of resistant organisms to other patients in the form of cross-infection. The size of the ageing population is also on the rise, leading to an increasing number of individuals living with immunocompromised states. Such people spend more and more amounts of time in hospitals or long-term care

facilities. These patients will be at risk for morbidity and mortality associated with HAI.¹ In an analysis of 10 studies undertaken at teaching hospitals worldwide, 40%-91% of antibiotics prescribed by physicians were inappropriate. The potential dangers associated with inappropriate use of antibiotics are the dissemination of resistant microorganisms, and significant adverse effects such as, increase in the duration of hospitalization, increase in hazard of drug toxicity, and a significant increment in the cost.² The development of antimicrobials not only conquered the management of infectious diseases but also raised the average life expectancy and quality of life for

humanity. Therefore, this outstanding achievement led to the belief that “infectious diseases would be conquered shortly.”³ The main aim of this project is to know the physicians use of antibiotics in their prescription to know whether there is an excessive use of antibiotics present. The objective of the project is to determine the use of antibiotics in a tertiary care hospital from the qualified physicians to detect whether there is an over prescribing of antibiotics in health care centre as because there is a hypothesis that there is over prescription of antibiotics in the country . The study can reveal the updated rational use of antibiotic knowledge of the physicians.

METHODS

The study was prospective cross-sectional study.

Study design and setting

The study uses a quantitative descriptive approach with a purposeful sampling of qualified medical physicians with diverse degree of work record. Medical practitioners’ knowledge, attitude and practice of antibiotic prescribing and its resistance was assessed. Data is to be collected from different administrative divisions of Anil Neerukonda Hospital. Medical physicians were visited at tertiary healthcare center.

Study instrument

A pre-validated questionnaire is to be used as instrument. Influences to develop questionnaire is developed from earlier study. Questions about demographic characteristics are to be asked at the beginning. There are 3 sections in the questionnaire. The first section A deals about the demographics. The section B deals about Beliefs and Attitude of the physicians. The section C deals about the knowledge of the physician.

Study population

More than 100 Qualified medical physicians in different administrative sections are going to be involved in this project.

Selection criteria

Medical physicians practicing in out-patient department in Anil Neerukonda Hospital.

Systemic sampling

Systemic sampling is to be done from a complete list of medical physicians in tertiary health care facility, Anil Neerukonda Hospital, Sangivalasa, Visakhapatnam.

The questions to medical physicians are to be asked in cabins of the physicians when the physician is alone i.e., not in meeting hall, in the presence of patients.

Plan of analysis

Statistical analysis is done through SPSS office based on the information obtained. The study used the quantitative descriptive approach with a purposeful sampling of medical doctors. Medical practitioners’ knowledge, attitude and a practice of antibiotic prescribing and its resistance was assessed.

Study instrument

A pre-validated 28-item questionnaire was used as the instrument. Influences to develop the questionnaire were drawn from an earlier study.

Study sample and data collection

The questionnaire survey was conducted in December 2017 on faculty and resident doctors of the tertiary care hospital existing clinical departments. No formal ethical approval was sought from institutional ethics committee but to maintain the confidentiality of one’s identity, participants were not asked to write their name on the questionnaire for identification and analysis purpose, questionnaire was only marked as resident or faculty. The questionnaire was circulated to each participants individually, instructions regarding filling the questionnaire was delivered on the spot. Participants was purely voluntary completed questions were collected and data were analyzed data were expressed in number as well as percentage

RESULTS

Demographic and practice characteristics

A total of 150 physicians in RVS institute of medical sciences were approached and only 100 respondents took part in the study with a response rate of 66.6%. Among the participants, 20 were women and 70 were men. Most of the participants were above 30 years old as shown Table 1.

Table 1: Demographic characteristic and general information of prescribers in RVS institutions.

Demographic variables	n (%)
Gender	
Female	20 (20%)
Male	80 (80%)
Age	
>30	98 (98%)
<30	2 (2%)

In this study most of the physicians (70%) having working experience between 4-6 years and 10% of physicians having more than 7 years’ experience, 10% physicians having between 1-3 years , even 10 % physicians having less than year experience as shown Table 2.

Table 2: Working experience of physicians after their graduation.

Working experience of physicians after their graduation	N (%)
I am a trainee in medicine	0 (0%)
Less than one year	10 (10%)
1-3 years	10 (10%)
4-6 years	70 (70%)
7 years and more	10 (10%)

Table 3: How often physicians prescribe antibiotics.

How often physicians prescribe antibiotics	N (%)
Once daily	10 (10%)
3-5 times a week	50 (50%)
1-2 times a week	30 (30%)
Less than once a week	10 (10%)

These results shows 50% of subjects prescribe antibiotics 3-5 times a week, 30% subjects 1-2 times prescribe antibiotics in a week, 20% subjects prescribe antibiotic s once or less than once a week as shown Table 3.

Knowledge of antibiotics

Most of the respondents 94% agreed that antibiotic resistance is an important problem Worldwide an especially in India.

About 60% of the respondents agreed that antibiotics are overused in the community with 50% who strongly agreed that it is a major problem in their own daily practice.

More than half 80% of the respondents disagreed that antibiotics can be used to treat viral infection and 50% of

the respondent also disagreed that antibiotics will speed up the recovery of cold and similar conditions.

The majority 80% agreed that antibiotics are available on medical stores like non-prescription medicines and 45% of the respondents agreed that efficacy will be better if the antibiotics are newer and the price is higher.

Attitude towards antibiotics prescribing

The majority 98% of the respondents strongly agreed that antibiotic resistance rate is important to know and 70% strongly agreed that cultural sensitivity test is also important before prescribing.

However, this can only be done by the support of microbiology laboratory. According to our results, there were very few doctors who performed the culture sensitivity test. The findings are summarized in Figure 2. The majority of the respondents from all departments admitted that it is important to know the resistance rate of bacteria in local settings and cultural sensitivity test is important for prescribing. Most of the respondents disagreed that selection of antibiotics is influenced by the availability of antibiotics. Respondents from all doctors agreed that patients demand for antibiotics is the major reason that contributes toward the abuse of current antibiotics.

Majority of respondents disagreed that antibiotics that are available locally are of bad quality and for antibiotics selection, local guidelines are more useful than international guidelines. All respondents were interested in a training program to be initiated. 94% of subjects accepted Anti-microbial resistance is a Worldwide Problem same subjects accepted Antimicrobial resistance is a problem in India.

Table 4: Questionnaire of knowledge of antibiotics.

Questionnaire of knowledge on antibiotics	Number of Respondents		
	Strong Agree/ Agree	Neutral	Strong disagree/Disagree
Anti-microbial resistance is a Worldwide problem?	94	5	1
Antimicrobial resistance is a problem in our country?	94	5	1
Antibiotics are overused in our institute?	10	10	80
Antimicrobial resistance is a problem in my daily practice?	50	30	20
I find it hard to select the correct antibiotic?	30	30	40
Can antibiotic be used to cure infections caused by viruses?	10	10	80
Do you think the use of antibiotic will spread up the recovery of cold, cough and other diseases?	30	20	50
Is Antibiotic available OTC at stores or pharmacies?	80	15	5
Is the efficacy better if the antibiotics are newer and the price is higher?	45	15	40

Table 5: Questionnaire on attitude of antibiotic prescription.

Questionnaire on attitude of antibiotic prescribers	Number of Respondents		
	Strong Agree/ Agree	Neutral	Strong disagree/Disagree
It is important into know the resistance rate of the bacteria in the local setting?	98	1	1
My choice of prescribing antibiotics is more influenced by the availability of antibiotics than by the cause of infection?	45	15	40
Cultural sensitivity test is important for Prescribing?	70	20	10
Patients demands for antibiotics contributed to the overuse of antibiotics in the institution?	98	1	1
Locally available antibiotics are of bad quality?	80	15	5
I welcome the implementation of a training Program about antibiotics?	75	10	15
For antibiotics selection local guidelines are more useful than international guidelines?	80	10	10
There is an abuse of the current antibiotics?	60	20	20

The 80% subjects disagreed antibiotic over use or over prescription in our institute. 50% subjects agreed Antimicrobial resistance is a problem in my daily practice.

There was 40% subjects who complaining sometimes hard to select antibiotic choice and subjects agreed that prescription of antibiotics reserved to bacterial infections. There were 45% of subjects disagreed that efficacy better if the antibiotics are newer and the price is higher cause molecule will be the same so that there may not difference and 40% subjects disagree with that arguing brand products which are expensive have better efficacy as shown Table 4 and Figure 1.

This study provides a detailed information of knowledge and practices regarding antibiotic use among registered medical practitioners practicing in RVS institute of medical sciences, Chittor. Due to male dominance (more than 65% of the registered medical practitioners were men), more data was obtained from male practitioners.

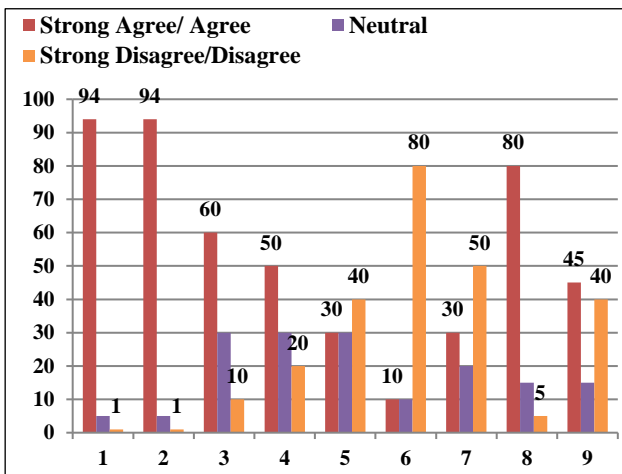


Figure 1: Knowledge of antibiotic prescribers (N=100).

DISCUSSION

Antibiotics in India is reportedly sold as OTC (over the counter) medications in pharmacies. This has not been reported first time in this study but a number of previous studies have documented the same.⁴ A previous study in India reported that 75% of pharmacy clients take their decision of antibiotics purchasing based on the experiences of their peers with antibiotics prescribed by a senior medical doctor.⁵ Another issue worth mentioning is that the physicians instead of using narrow or single spectrum antibiotics prefer wide spectrum ones, even if these antibiotics have no indication.⁶ The government encourages the use of generic medicines for prescriptions and procurements, however; the negative perceptions among the doctors, pharmacists and even the general public about the quality and efficiency of generics as reported in a systematic review, might be the reason that discourages the practitioners from prescribing the generics.⁷ Similarly, there have been concerns over the generic medication ingredients coming from possible sources with less oversight, such as India and china.⁸ As reported in a 2005 study, 20% of generic ciprofloxacin eye drops purchased in India were of low potency, and some preparations of the antibiotic content were low enough to negatively affect the treatment outcomes.⁹

In our study none of the respondents performed or advised for the culture sensitivity test which is consistent with earlier studies conducted in India whereby culture sensitivity testing was non-existent and in Bangladesh reporting that 90% of antibiotics were prescribed without laboratory findings.¹⁰ This practice of not conducting culture sensitivity test may exacerbate the problem of antibiotic resistance in Pakistan as the sensitivity analysis is one of the various means to minimize the occurrence of antibiotic resistance and promoting rational prescription of antibiotics (CDC, 2014). A report from Trinidad suggested

that doctors did not usually demand laboratory analysis as they felt that culture sensitivity tests are useless and time-consuming.¹¹

Demand and pressure from the patients were reported to be one of the predominant factors driving the irrational prescribing of antibiotics which is consistent with the finding from low and middle-income countries. For example, a surgery of pediatricians and patients' care gives in Venezuela discovered that approximately 87% of the physicians felt pressured by patients in prescribing antibiotics; half of the patients said that they had demanded antibiotics and one-quarter admitted that they had attained a prescription.¹² Many studies conducted on other developing countries such as the one conducted in Tamilnadu state of India revealed that antibiotics are often overprescribed and misused by health providers and one of the important reasons behind this was patient desires and satisfaction issues that lead to inappropriate antibiotic use.¹³

Similarly, among the reasons causing antibiotic resistance, patient-related problems (self-medication) existed more often. A number of recent studies conducted in Pakistan have presented that similar findings and the common reasons for such practices included low socio-economic status and level of education, previous experience, and ease of purchasing antibiotics from pharmacies without prescription.¹⁴ This is also consistent with a French study which stated that parents generally preferred self-medication for mild pathologies in their children.¹⁵ Many studies in developing countries presented that antibiotics are used most commonly in everyday practice, whereas the most common symptom of the use of antibiotics was fever. Management of fever with antibiotics without microbiological investigations has been considered as a primary factor of irrational drug use in the developing countries.¹⁶ Similarly, more than half of the respondents agreed that if antibiotics are administered at lower than the required doses that may cause the antibiotic resistance which is in line with the findings from Congo.¹⁷ Such findings suggest that sincere measures need to be taken to educate people on the appropriate use of antibiotics.

A large number of the respondents stated that they referred to the information provided by pharmaceutical companies. A number of earlier studies concluded that advertising activities promoted the random supply of antimicrobial agents in some cultures.¹⁸ Numerous studies have reported that the marketing tactics of pharmaceutical industries play an important role in increasing the prescribing and sale of certain drugs.¹⁹ A regression analysis conducted on data from selected cities of Pakistan exposed that the promotional tools of pharmaceutical companies had a substantial impact on physicians' prescribing practices.²⁰ The fair information available about antibiotics is a requirement intended for suitable antibiotic suggesting (World Wide Organization, 2012). Information from pharmaceutical industries was graded highest inaccessibility. Although lower most valued for

effectiveness, this approves the prominent part of pharmaceutical companies to affect the prescribing practices in developing countries.²¹

The finding that the majority of the respondents had not received any formal training on antibiotic prescribing describes the mismatch between knowledge and practice as reported in this study. This coupled with the willingness of the respondents to attend such training if offered suggests that as a part of continuing professional development (CPD), workshops or seminars on how to prescribe antibiotics should be organized on a routine basis by the health department.

The importance of treatment guidelines cannot be denied as a good number of respondents agreed that antibiotic guidelines must be followed for antibiotic prescribing. This relates to the surveys from other countries in which the antibiotic guidelines ranked high by the participants with a demand to develop local antibiotic guidelines.²² Similarly, when prescribing antibiotics, there was a little tendency to consult colleagues.²³ Today, several countries like Netherlands and Britain are concentrating on public education so as to promote the rational use of antibiotics in the local community in order to minimize the development of resistance to antibiotics.²⁴ Although it has been proposed that public education alone may not improve the tendency to abuse and misuse antibiotics in the society.²⁵

Our study has important limitations. Basically, the findings of this study cannot be generalized for the whole state or country as the study conducted in our institute. Furthermore, in recent years, RVS institute has made significant improvements by conducting Continuous Medical Education, Workshops on rational prescription of antibiotics, in RVS institute further limits the generalizability of the findings and our study also encourage and guiding tool for conducting similar studies in other medical colleges. Secondly, there might be variations among the study participants in terms of their experience with antibiotics based on the type of specialty they were working in. However, the aim of the study was to draw an overall picture of practitioner's experience with antibiotics and we did not categorize our participants based on the clinical specialty. Thirdly, the ingrained limitations of survey research such as recall bias, potentially dishonest answers from the respondents and systematic and random errors were unavoidable. Nevertheless, survey research is a cost-effective and efficient mean of collecting information about a population.

The study has some noteworthy implications on policy and practice. The findings indicate that there is a need to monitor the quality of antimicrobial prescription even the use of standard treatment guidelines, one needs to monitor their application. Training to the prescribers and educate the masses to ensure the rational use of antibiotics should be continued and encourage to attend the practitioners. On the policy front, more stringent strategy is required to minimize the sale of antibiotics as OTC

medications so as to minimize the occurrence of antimicrobial resistance. Further work to recognize and appreciate the full degree of antibiotic usage and irrational prescribing in other provinces and rural areas of the country is warranted.

CONCLUSION

Generally qualified medical physicians have good knowledge on the use of antibiotic usage. Our study assess that the practitioners generally had a good level of knowledge about antibiotics. But some shortcomings were observed in the prescribing pattern. Bacterial culture sensitivity test, though recognized by the respondents as an important strategy to minimize the chances of resistance, was not a common practice. The practitioners generally relied on information from treatment guidelines and pharmaceutical companies. Nonetheless no formal training sessions were attended by the majority of the prescribers due to lack of time due to busy practice. Hence, the study highlights the need to regulate the prescribing of antibiotic and enhance or encourage the practitioners to attend training programmes and prescription auditing are indispensable and effective tool to improving antibiotics prescribing behavior of medical doctors in our institute.

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