

Knowledge, attitude and practice about antimicrobial use and their resistance in health care professionals at civil hospital, Ahmedabad

Hardik Patel*, Prakruti Patel, R. K. Dikshit, Anuradha Gandhi

Department of Pharmacology, B. J. Medical College, Ahmedabad, Gujarat, India

Received: 12 December 2015

Accepted: 7 January 2016

***Correspondence to:**

Dr. Hardik Patel,

Email: patelhardik8795@gmail.com

Copyright: © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT

Background: Antimicrobial resistance (AMR) is a global threat which challenges the current treatment of infectious diseases. Rational prescribing can help to limit this. Therefore, a KAP-survey regarding antimicrobial use and their resistance was conducted among health care professionals at Civil Hospital, Ahmedabad (CHA).

Methods: A validated questionnaire was given to participants and data was analysed using appropriate statistical tests. A total of 164 participants were interviewed from various medical specialties.

Results: Fifty seven participants (34%) prescribed antimicrobial agents (AMAs) regularly. The most common conditions for prescribing AMAs were upper respiratory tract infections (64%) and other viral illnesses (34%). Most common antimicrobial agent prescribed was azithromycin (43%). Antimicrobials were most commonly prescribed empirically for treating emergency cases. The common sources of information were textbooks (80%) and internet (54%). Most participants agreed that antimicrobial resistance is a local as well as global problem. Common causes of AMR were cited to be incomplete treatment (83%) and excessive use of AMAs (60%). Majority (75%) of the participants agreed that antisepsis was the best way to decrease incidence of nosocomial infections. About 75% of the participants were aware about the existing hospital antimicrobial policy and prescribed AMAs accordingly.

Conclusions: The study highlights the poor knowledge of the interns regarding use of AMAs, common causes of antimicrobial resistance and measures that can be adopted to reduce the resistance. Moreover, though the knowledge and attitude were good in post graduates and faculty members they were of the opinion that the unavailability of antibiogram and shortage of time make the practice poor. We opine that a comprehensive training regarding use of AMAs during internship can help in rational prescribing in future practitioners.

Keywords: Antimicrobials, Antimicrobial resistance, KAP-survey

INTRODUCTION

Infectious diseases remain a major cause of death and debility and are responsible for worsening the living conditions of millions of people around the world.¹ Antimicrobial agents (AMAs) were viewed as a miracle cure for these infections but today every major class of antimicrobial confronts a significant resistance.² It is estimated that about 20% to 50% of AMAs are used either unnecessarily or inappropriately.³ An excessive use of AMA and insufficient infection control policies favours the spread of antimicrobial resistance (AMR).⁴ Poor clinical practice may further escalate the problem of drug resistance. Prevention of AMR, although not easy, is

achievable. Rational use of antimicrobials is the main strategy in the prevention of AMR which can be achieved by changes in prescribing behavior.⁵ Among core groups, health care workers play a leading role to decrease the AMR. Hence, it is important that they have necessary knowledge about the appropriate use of AMA in a given condition.

This study was, therefore, conducted among health care professionals of a tertiary care teaching hospital to evaluate their knowledge, attitude and practice regarding the use of AMAs and antimicrobial resistance.

METHODS

This was a continuous, cross-sectional, prospective, observational and single centre study. It was carried out at different departments of a tertiary care teaching hospital in B.J. Medical College, Civil Hospital, Ahmedabad between June to October, 2012. A questionnaire was developed in consultation with expert health care professionals (pharmacologists and clinicians). A pilot study was carried out thereafter, following which the questionnaire was modified and validated. It included questions about the professional profile of the participants and frequency of antimicrobial agents (AMAs) prescribing, their awareness about the current scenario of antimicrobial resistance (AMR), sources of information and continuing education about AMAs, factors influencing decisions around AM prescription and the acceptability and appropriateness of potential interventions. Most questions used a 5-point Likert scale, which included answers that ranged from “strongly disagree” to “strongly agree” or answers that ranged from “never” to “always”.

The questionnaire was administered to interns, post graduate students (residents) and faculty members (consultants) in June 2012. It was collected after a period of 2 weeks. The participants who did not return the questionnaire were excluded from the study. The responses were analysed using chi square test and graph pad software Instat 3 demo version. A p value of < 0.005 was considered to be significant.

RESULTS

The questionnaire was administered to a total of 181 health care professionals. Among them, 164 participants returned it which included 31 faculty members (consultants), 101 post graduate students (residents) and 32 interns. Maximum participation among consultants was from surgery (9), followed by medicine (7), paediatrics (6), orthopaedics (4), obstetrics and gynaecology (2), otorhinolaryngology (2) and ophthalmology (1). Thirty six post graduate students from the department of surgery (36) participated in the study, which is the highest. Other post graduate students participating in the study belonged to the departments of medicine (28), paediatrics (12), orthopaedics (10), obstetrics and gynaecology (7), otorhinolaryngology (5) and ophthalmology (3). The ratio of male to female participants was found to be 1.44: 1 (Table 1).

The most common source of information (about antimicrobials) was textbooks (80%) followed by internet (54%). About 25% of interns, 65.34% of post graduate students and 83.87% of faculty members believed that the most important cause of antimicrobial resistance is the excessive use of antimicrobials. Among all participants, 52% believed that prolonged use of antimicrobials was also important cause of AMR. Poor aseptic precautions (49%) and inadequate dose of antimicrobials (47%) were the other important causes of AMR. The factors

mentioned to decrease transmission of nosocomial infections were proper aseptic precautions (76%), use of additional barrier precautions like gloves, gowns, masks in high risk patients (48%) and use of disposable needles, syringes, scalpels etc (47%) (Figure 1).

It was observed that 81% of interns, 68.32% of post graduates and 40.26% faculty members prescribed more than 1 antimicrobial agent (AMA) per day. Treatment of infectious diseases was cited as the most common reason for AMA prescribing by 78.3% interns, 84.2% post graduate students and 91% faculty members. Antimicrobial agents were inappropriately prescribed for viral illness (84.67% interns, 31% post graduates and 7.25% faculty members) and sometimes even on patient demand (76.13% interns, 30.78% post graduates and 6% faculty members). Upper respiratory tract infection (72.86% interns, 68.92% post graduates and 66.34% faculty members) was the commonest indication for antimicrobial prescribing which was followed by urinary tract infection (43.7% interns, 46.81% post graduates and 39.6% faculty members) and viral illness (68.6% interns, 34% post graduates and 12.6% faculty members). Azithromycin (32% interns, 38.56% post graduates and 59.8% faculty members) and amoxicillin (28% interns, 31.52% post graduates and 40.8% faculty members) were the most frequently prescribed antimicrobial agents.

Nearly fifty percent (47%) of the participants believed that polytherapy gave better results than monotherapy. About 92% respondents agreed that antimicrobial resistance was a global problem while 84% agreed or strongly agreed that they confronted the problem on a regular basis during their practice. Incomplete course of treatment was thought to be the major cause for antimicrobial resistance by 74% participants. About 70% post graduate students believed discussion with senior colleagues was helpful while 45.16% interns believed it to be true. This difference of opinion between interns and the post graduate students was statistically significant ($p=0.003$). About 87% interns, 50% post graduates and 64% faculty members agreed that empirical treatment was more beneficial than pathogen targeted therapy. Most common conditions where empirical treatment is preferred are emergencies (73%).

About 50% participants prescribed empirically, 27% preferred to prescribe after complete blood counts and 11% sought some laboratory investigation as per a particular condition. Majority of the participants (82%) were aware about an antimicrobial policy existing in their own hospital (Figure 1). However, awareness about this among interns was poor as compared to post graduates and faculty members. None of the participants, however, actually used the antimicrobial policy. Educational methods employed by participants were workshops (35%), web based learning (31%), lectures and informal discussions in clinical setting (29%). Majority of the participants (97%) agreed that training in rational antimicrobial prescription was important to prevent antimicrobial resistance. Some of the interns (9%)

thought that training cannot lead to rational AMA prescribing.

Table 1: Participant’s demographic characteristics (n = 164).

Demographic characteristics	Number of participants (n, %)
Male: Female	1.44: 1
Interns	32 (22%)
Postgraduate students	101 (55%)
Faculty members	31 (23%)
Total	164

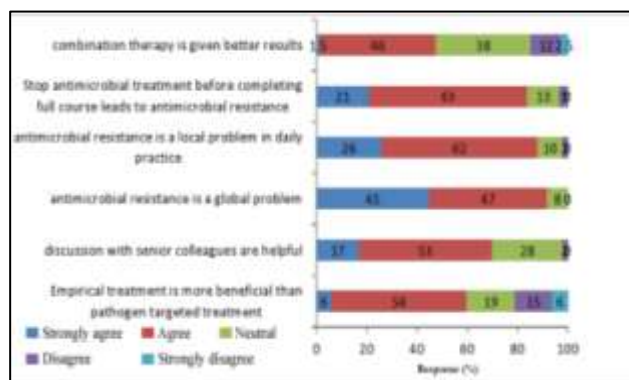


Figure 1: View point of health care professionals on antimicrobial therapy.

DISCUSSION

The present study describes the results of a KAP-survey among 164 health care professionals (faculty members, post-graduate students and interns) working at a tertiary care, teaching hospital. Because of rotation posting in interns and busy schedule of faculty members, number of participants in the study was less. It was noticed that about 35% practitioners prescribe the antimicrobial agents (AMA) every day which was significantly higher as compared to a similar study done in UK.⁹ An important reason for a greater use of AMA in our study may be a high patient load particularly from rural areas. Upper respiratory tract infections (64%) were the most common condition for which the AMAs were prescribed in our study which differs from another study done by Sivagnanam G, 2004 where lower respiratory tract infections were the most common condition.⁶ This difference may be due to the inclusion of interns in our study. AMAs were prescribed also for viral infection by interns who show a poor knowledge in this group. The reasons ascribed to prescribe a broad-spectrum antibiotic usually were non- availability of antibiogram, time pressure and cost. The interns believed that empirical treatment was more beneficial than pathogen targeted treatment. Similar findings regarding usage of broad spectrum antimicrobials were also recorded by Sivagnanam G, 2004. According to present study, the

common sources used for getting information were textbooks (80%) and internet (54%). Pocket books (73%) were commonly used sources in the study by others (Srinivasan A, 2004)⁷ while pocket-based AMA prescribing guidelines (69%) and internet sources (62%) were commonly employed in yet another study (Brinsley KJ, 2005)⁸. Most (70%) participants in our study agreed that discussion with senior colleagues was helpful. This belief was significantly more in post graduate students and faculty members compared to interns. Overall interns were responsible for most of the inappropriateness in AMA use and that the post-graduates as well as consultants were responsible for it to a much lesser extent. Most of participants (97%) agreed that training in rational antibiotic prescription was helpful to improve the knowledge in this area. The awareness of antimicrobial resistance (AMR) was very high among the participants of our study. Also most of participants agreed that excessive and inappropriate use of AMAs was responsible for AMR. Less number of participants was limitation of the study. However this baseline study can give us an idea about future interventions that can be done to improve rational antimicrobial prescribing specially in the interns.

CONCLUSION

To conclude with, the study highlights the poor knowledge of the interns regarding use of antimicrobial agents, common causes of antimicrobial resistance and measures that can be adopted to reduce the resistance. Moreover, though the knowledge and attitude were good in post graduates and faculty members they were of the opinion that the unavailability of antibiogram and shortage of time make the practice poor. We opine that a comprehensive training regarding use of AMAs during internship can help in rational prescribing in future practitioners.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee of Civil hospital, B. J. Medical college, Ahmedabad

REFERENCES

1. Pulcini C, Cua E, Lieutier F, Landraud L, Dellamonica P, Roger PM. Antibiotic misuse: a prospective clinical audit in a French university hospital. *Eur J Clin Microbiol Infect Dis.* 2007;26:277-80.
2. Davies J, Davies D. Origins and evolution of antibiotic resistance. *Microbiol Mol Biol Rev.* 2010;74(3):417-33.
3. Cofsky R, Vangala K, Haag R, Recco R, Maccario E, Sathe S et al. The cost of antibiotic resistance: Effect of resistance among *Staphylococcus aureus*, *Klebsiella pneumoniae*, *Acinetobacter baumannii*, and *Pseudomonas aeruginosa* on length of hospital

- stay. *Infect Control Hosp Epidemiol.* 2002;23(2):106-8.
4. WHO. WHO's first global report on antibiotic resistance reveals serious, worldwide threat to public health. Available at www.who.int/mediacentre/releases/2014/amr-report/en. Accessed on 12 Dec 2015.
 5. WHO. Antimicrobial resistance: a global threat. *Essent Drugs Monit.* 2000. Available at <http://www.who.int/medicines/library/monitor/EDM2829en.pdf>. Accessed on 25 Nov 2015.
 6. Sivagnanam G, Thirumalaikolundusubramanian P, Mohanasundaram J, Raaj AA, Namasivayam K, Rajaram S. A survey on current attitude of practicing physicians upon usage of antimicrobial agents in southern part of India. *Med Gen Med.* 2004;6:1-5.
 7. Srinivasan A, Song X, Richards A, Sinkowitz-Cochran RL, Cardo DM, Rand CA. A survey of knowledge, attitudes, and beliefs of house staff physicians from various specialties concerning antimicrobial use and resistance. *Arch Intern Med.* 2004;164:1451-6.
 8. Brinsley KJ, Sinkowitz-Cochran RL, Cardo DM. Assessing motivation for physicians to prevent antimicrobial resistance in hospitalized children using the health belief model as a framework. *Am J Infect Control.* 2005;33:175-81.
 9. Thriemer K, Katuala Y, Batoko B, Alworonga J, Devlieger H, Van Geet C, et al. Antibiotic prescribing in DR Congo: a knowledge, attitude and practice survey among medical doctors and students. *PLoS one.* 2013;8(2).

Cite this article as: Patel H, Patel P, Dikshit RK, Gandhi A. Knowledge, attitude and practice about antimicrobial use and their resistance in health care professionals at civil hospital, Ahmedabad. *Int J Basic Clin Pharmacol* 2016;5:70-3.