

Knowledge, attitude and practice study of surgical prophylaxis of antibiotics in teaching staff and post-graduate residents

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Abstract

Background: Nowadays antibiotic drugs are the main line of treatment in clinical practice. At the same time, there is an unnecessary or inappropriate use of antibiotics is also increased which significantly contributed to the problem of antibiotic resistance. The teaching staff and postgraduate students play a key role in the prevention of transmissions of resistant bacterial infections and promotion of its awareness among patients and communities. Very few studies of knowledge, attitude and practice of health care professionals are published regarding antibiotics resistance. **Aims and Objectives:** To explore the perceptions of knowledge, attitude and practice of antibiotic use and its resistance in teaching staff and postgraduate students in a tertiary teaching care center. **Material and Methods:** This is a cross-sectional quantitative questionnaire based study in which 200 persons including teaching staff and post graduate students were given a 20 item pretested self-administered questionnaire. The survey questions focused on key topics related to antibiotic knowledge, attitude and perceived practices pertaining to antibiotic usage. The response rate was 100%. **Results:** In the present study the survey done among 110 male and 90 female health professionals. Study group from 21 to 30 years of age group were consists of maximum 82 respondents of survey. Response to all 20 questions were elaborated thoroughly and analyzed in tabulated form. **Conclusion:** Antimicrobials being the most commonly used drugs. There is a need of anti-microbial agents usage guidelines and restriction policies for the rational prescribing of antimicrobials.

Key Word: Drug Resistance, Antibiotics, MICU, RICU.

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INTRODUCTION

Nowadays antibiotic drugs are the main line of treatment in clinical practice. At the same time, there is an unnecessary or inappropriate use of antibiotics is also increased which significantly contributed to the problem of antibiotic resistance.¹ As antibiotic resistance is a

major threat to health care in clinical practice. Similarly treatment of lethal bacterial infections has become very difficult due to the rapid spread of antibiotic-resistant bacteria.² This scenario is seen to be worse in developing countries because of over-the counter sales of antibiotics, self-medication without prescription, inadequate regulation of antibiotics, high cost of medical consultations due to which patients avoid the consultation and choose inappropriate antibiotics on their own.^{3,4} Studies explained that more than 50% of antibiotics worldwide are bought without prescription.^{5,6} Various factors just like prescribing on patient's demand, drug promotional practices, prescribers knowledge and experience, diagnostic uncertainty, seniors as a role model, overload of patients and negligence of proper prescribing also contribute in the antibiotic resistance.⁷ Thus to curtail antibiotic resistance we have to assess first the knowledge and perceptions and prescribing pattern of

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the health care providers. The teaching staff and postgraduate students play a key role in the prevention of transmissions of resistant bacterial infections and promotion of its awareness among patients and communities. Very few studies of knowledge, attitude and practice of health care professionals are published regarding antibiotics resistance. So, we aimed to do this study to highlight the knowledge, attitude and practice of antibiotic usage among teaching staff and postgraduate students at the tertiary care center.

AIMS AND OBJECTIVES

To explore the perceptions of knowledge, attitude and practice of antibiotic use and its resistance in teaching staff and postgraduate students in a tertiary teaching care center.

RESULT

In the present study we studied questionnaire answered by 200 health care professionals i.e. teaching staff and post graduate students. The result is tabulated and analyzed.

METHODOLOGY

The present study was conducted during a 1 year period between June 1st 2017 to May 31st 2018 at the tertiary care center, Govt. Medical College, Solapur, Maharashtra, India. It is a questionnaire-based cross-sectional survey among the teaching staff and postgraduate students. The questionnaire was self-structured and pre-validated by the subject experts for its content and relevance. The questionnaire comprised of 20 questions of knowledge, practice and attitude. Some questions were yes or no type and some were multiple choice questions. The questionnaire was distributed to 200 medical health professionals and asked to complete the questionnaire.

Table 1: Demographic characteristics of participants.

| Parameters | | Number | Percentages (%) |
|---|----------|--------|-----------------|
| Sex wise distribution | Male | 110 | 55 |
| | Female | 90 | 45 |
| Age wise distribution in years | 21-30 | 82 | 41 |
| | 31-40 | 62 | 31 |
| | 41-50 | 39 | 19.5 |
| | 51-60 | 12 | 6 |
| | >60 | 5 | 2.5 |
| | 0 to 5 | 75 | 37.5 |
| Years of experience of clinical practice | 6 to 10 | 80 | 40 |
| | 11 to 15 | 25 | 12.5 |
| | 16 to 20 | 12 | 6 |
| | >20 | 8 | 4 |

Table 2: Number and Percentage of respondents.

| Questionnaire | Number | Percentage (%) |
|---|--------|----------------|
| 1. Which is the preferred antibiotic for most of the surgeries for surgical prophylaxis ? | | |
| (a) Vancomycin | 55 | 27.5 |
| (b) Gentamicin | 65 | 32.5 |
| (c) Cefazolin | 45 | 22.5 |
| (d) Clindamycin | 35 | 17.5 |
| 2. An antibiotic having the narrowest antibacterial spectrum is used | | |
| (a) True | 127 | 63.5 |
| (b) False | 173 | 86.5 |
| 3. Antibiotics prophylaxis is to be continued until surgical drains have been removed | | 0 |
| (a) True | 189 | 94.5 |
| (b) False | 11 | 5.5 |
| 4. According to CDC definitions for surgical site infection surveillance, the surgical site infection means an infection that occurs at or near a surgical incision within days after the operation or within years, if implant is in place. | | |
| (a) 30 days ; 1.5 years | 25 | 12.5 |
| (b) 45 days ; 6 months | 12 | 6 |
| (c) 30 days ; 1 years | 160 | 80 |

| | | |
|--|-----|------|
| (d) 45 days ; 10 months | 3 | 1.5 |
| 5. Surgical antibiotic prophylaxis is defined as the use of antibiotics to prevent infections at the surgical site | | |
| (a) True | 192 | 96 |
| (b) False | 8 | 4 |
| 6. Is administration of post-operative antibiotic important or necessary for surgical prophylaxis ? | | |
| (a) Yes, very important | 102 | 51 |
| (b) No, doses of antibiotics after incision are necessary | 80 | 40 |
| (c) Not sure | 18 | 9 |
| 7. What is the optimal window for pre-operative antibiotics administration prior to incision for surgical prophylaxis ? | | 0 |
| (a) ≈ 15-45 minutes prior to incision | 42 | 21 |
| (b) ≈ 120 minutes prior to incision | 128 | 64 |
| (c) ≈ 0-30 minutes prior to incision | 26 | 13 |
| (d) Not sure | 4 | 2 |
| 8. In practice do you withheld the prophylactic antibiotics in patients where cultures are obtained intra-operatively ? | | |
| (a) Yes | 125 | 62.5 |
| (b) No | 75 | 37.5 |
| 9. Which antibiotics would you like to administer in the patients having beta-lactam allergies ? | | |
| (a) Clindamycin | 68 | 34 |
| (b) Gentamicin | 46 | 23 |
| (c) Cefazolin | 56 | 28 |
| (d) Vancomycin | 30 | 15 |
| 10. Which route of administration do you prefer for antibiotics prophylaxis ? | | |
| (a) Intramuscular | 32 | 16 |
| (b) Intravenous | 149 | 74.5 |
| (c) Oral | 19 | 9.5 |
| (d) Subcutaneous | 0 | 0 |
| 11. Do you re-dose antibiotics intraoperatively in cases of prolonged procedures | | |
| (a) Yes | 8 | 4 |
| (b) No | 192 | 96 |
| 12. In practice, do you administer the antibiotics like Vancomycin and Fluoroquinolones which require prolonged infusion time to be given within 120 minutes before surgical incision ? | | |
| (a) Yes | 152 | 76 |
| (b) No | 48 | 24 |
| 13. I consider giving prophylactic antibiotic before surgery , as important | | |
| (a) Yes | 187 | 93.5 |
| (b) No | 13 | 6.5 |
| 14. I will choose the following antibiotics amongst the two having equal Antibacterial spectrum, efficacy, toxicity and ease of administration | | |
| (a) Moderately expensive | 39 | 19.5 |
| (b) Less expensive | 121 | 60.5 |
| (c) Expensive | 0 | 0 |
| (d) Not sure | 40 | 20 |
| 15. I consider asking patients about Beta-lactum allergy as | | |
| (a) Important | 188 | 94 |
| (b) Not so important | 12 | 6 |
| (c) Not sure | 0 | 0 |
| 16. I regularly refer CDC guidelines for surgical prophylaxis | | |
| (a) Yes | 126 | 63 |
| (b) No | 0 | 0 |
| (c) Will start to refer | 74 | 37 |
| 17. I regularly review the surgical antibiotics prophylaxis protocols of hospital, as both the cost and hospital antibiotic resistance patterns may change | | |

| | | |
|---|-----|------|
| (a) Yes | 111 | 55.5 |
| (b) No | 0 | 0 |
| (c) Will start to | 89 | 44.5 |
| 18. Which is the most predominant organism in clean-contaminated surgical Procedures ? | | |
| (a) Gram negative rods bacteria, enterococci and skin flora | 124 | 62 |
| (b) Coagulase negative Staphylococci | 58 | 29 |
| (c) E.coli only | 12 | 6 |
| (d) Not sure | 6 | 3 |
| 19. Increased and additional or inappropriate use of antibiotics may lead to increase in the emergence of antimicrobial resistance | | |
| (a) True | 180 | 90 |
| (b) False | 0 | 0 |
| (c) Not sure | 5 | 2.5 |
| (d) May be | 15 | 7.5 |
| 20. Timing of pre-operative antibiotic administration is important because it should reach the acceptable tissue concentrations prior to the incision time in order to be effective. | | |
| (a) True | 112 | 56 |
| (b) False | 0 | 0 |
| (c) Not sure | 59 | 29.5 |
| (d) May be | 29 | 14.5 |

DISCUSSION

The results from our study clearly show that the knowledge, attitude and practice of teaching staff and postgraduate students regarding antibiotic resistance and side effects are needs to be updated as per recent guidelines. Different studies were done in U.A.E.⁹ and Jordan¹⁰ where the surveyed population believed that antibiotics should be routinely available at home and already stored antibiotics at home without a prescription.¹⁰ The rationale of healthcare professionals with formal training in prescribing and dispensing antibiotics, positively minimizes the chances of antibiotic resistance.¹¹ The study done by Borg *et al.* in conclusion advised that better education and training of healthcare professionals by informing them about changes in epidemiological trends in critical pathogens and identifying antibiotic consumption practices is necessary for good clinical practices.¹² Studies done by Yanhong Hu *et al.*¹³, Alemnesh Jifar *et al.*¹⁴, Badar V. *et al.*⁰⁷ shows similar results. Some studies established a good knowledge healthcare professional encouraging the importance of better knowledge for better health practices.¹¹ Attitude regarding AMA resistance, prevention and selection of necessary AMA was observed satisfactorily positive. The clinical effectiveness of antibiotics depends on their correct use i.e. 4R Right diagnosis, Right dose, Right drug, Right duration.¹⁵ Physicians decisions might be influenced by multiple factors like pressure from patients, lack of updated information, incorrect dose- underdoses / overdoses; incorrect duration of treatment, prolonged post-surgical use of antibiotics or stoppage of antibiotics

as soon as relief is obtained; unnecessary use of drug combinations, imprecise diagnosis- medication is given to cover all possible causes of illness-blanket covering.¹⁶ On the other side, the patient-related factors also encourage resistance like demand for higher antibiotics, incomplete schedule, improper use- small doses, self-medications insistence of rapid recovery.⁰⁷

CONCLUSION

The awareness of antibiotic resistance is the first step towards curtailing its progress. Important aspects like restrictions on schedule H1 and X, hand hygiene uses should be studied thoroughly. Prescription audits and data collection from manufacturers, prescribers and bulk users of antibiotics should be routinely monitored. Adequate training of updated drug schedules should be given to health professionals.

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