

Internship Training

at

International Institute of Health Management Research

To assess knowledge and attitude of medical doctors about antibiotic resistance

by

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**International Institute of Health Management
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COMPLETION OF DISSERTATION

The certificate is awarded to

Dr Kanika Singhal

in recognition of having successfully completed her dissertation with effect from March 15, 2021 and
has successfully completed her Project on

to assess knowledge and attitude of medical practitioner about antibiotic resistance

At

IIHMR, Delhi

Dr Nitish Dogra

TO WHOMSOEVER IT MAY CONCERN

This is to certify that **De Kanika Singhal** student of PGDM (Hospital & Health Management) from International Institute of Health Management Research, New Delhi has undergone internship training at IIHMR, New Delhi from **15th March to 15th June.**

The Candidate has successfully carried out the study designated to him during internship training and her approach to the study has been sincere, scientific and analytical.

The Internship is in fulfilment of the course requirements.

I wish her all success in all his/her future endeavours.

Dr. Nitish Dogra
Associate Professor
IIHMR, New Delhi

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IIHMR, New Delhi

CERTIFICATE OF APPROVAL

The following dissertation titled **“to assess the knowledge and attitude of medical practitioner about antibiotic resistance”** at **“International Institute of Health Management Research, New Delhi”** is hereby approved as a certified study in management carried out and presented in a manner satisfactorily to warrant its acceptance as a prerequisite for the award of **PGDM (Hospital & Health Management)** for which it has been submitted. It is understood that by this approval the undersigned do not necessarily endorse or approve any statement made, opinion expressed, or conclusion drawn therein but approve the dissertation only for the purpose it is submitted.

Dissertation Examination Committee for evaluation of dissertation.

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Signature

CERTIFICATE FROM DISSERTATION ADVISORY COMMITTEE

This is to certify that **Dr Kanika Singhal**, a graduate student of the **PGDM (Hospital & Health Management)** has worked under our guidance and supervision. She is submitting this dissertation titled **“To Assess the knowledge and attitude of medical practitioner about antibiotic resistance”** at **“IIHMR., New Delhi”** in partial fulfilment of the requirements for the award of the **PGDM (Hospital & Health Management)**.

This dissertation has the requisite standard and to the best of our knowledge no part of it has been reproduced from any other dissertation, monograph, report or book.

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Associate Professor

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INTERNATIONAL INSTITUTE OF HEALTH MANAGEMENT RESEARCH, NEW DELHI

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Name of the Student:

Dissertation Organisation:

Area of Dissertation:

Attendance:

Objectives achieved:

Deliverables:

Strengths:

Suggestions for Improvement:

Suggestions for Institute (course curriculum, industry interaction, placement, alumni):

Signature of the Officer-in-Charge/ Organisation Mentor (Dissertation)

Date:

Place:

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List of abbreviations

1. AR: antibiotic resistance
2. BDS: bachelor of dental surgery
3. MBBS: bachelor of medicine and bachelor of surgery
4. MS/MD: master of surgery/ doctor of medicine

1. INTRODUCTION

Antimicrobial resistance (AMR) has emerged as a major threat to public health estimated to cause 10 million deaths annually by 2050. The era of antibiotics has changed the pattern of treatment and outcomes of infectious diseases. But at the same time, irrational use of antibiotics has created a havoc of antibiotic resistance. Worldwide spread of the antibiotic resistant organisms has gradually created the threat of antimicrobial insufficiency. Patients infected with these antibiotic resistant organisms are likely to face long durations of hospital stay and require treatment with second- and third-line drugs, which may be more toxic and less effective. The misuse of antibiotics is particularly striking in India, which is ranked as one of the world's largest consumers of antibiotics for human health. Poor public health infrastructure, a high burden of disease, and unregulated sales of antibiotics have contributed to a rapid rise in resistant infections in India. The medical practitioners are frontline fighters against antimicrobial resistance, by rationally prescribing the antibiotics and promoting patient awareness. Lack of knowledge of healthcare professionals, malpractice in community pharmacies and Pharmaceutical industry are the main contributors of this resistance saga. Medical doctors may modify their practice only when their attitudes, skills, beliefs and knowledge are integrated with each other potentially resulting in a decrease in antibiotic resistance. Between 20% and 50% of antibiotic use is either unnecessary or inappropriate, and decreasing it is a necessary first step to curb antibiotic resistance.

There is a need to change the antimicrobial prescribing behavior of doctors to reduce the magnitude of the problem of antimicrobial resistance. This can be ensured through the appropriate knowledge and training of next generation doctors and medical students through in a formal way. But, before planning or strengthening any teaching or training program for any target group, it is required to have conclusive evidence about baseline knowledge and attitude. With this background, this study was planned with the objective to assess the knowledge, attitudes of medical practitioner in India with respect to antibiotic resistance.

2. OBJECTIVE

The purpose of this study is to assess the medical professionals' knowledge, attitude antibiotic resistance

Specific objectives:

- To assess the knowledge of medical doctors over the antibiotics, dosage and resistance susceptibility.
- To evaluate the attitude of medical doctor over the antibiotic resistance.

3. Literature review

Literature from various countries has shown that over the years, excessive antibiotic prescribing resulted in antibiotic resistance which requires improvement, yet the ideal methods to deal with this problem remain vague (Amabile-Cuevas, 2010a; WHO 2012; Thriemer et al., 2013; Sebsibie and Gultie, 2014; Ahmad et al., 2015). Such type of improvement always requires vital changes in medical doctor's behaviour through their awareness and perceptions regarding antibiotic resistance (Wester et al., 2002; Giblin et al., 2004; Srinivasan et al., 2004). Medical doctors may modify their practice only when their attitudes, skills, beliefs and knowledge are integrated with each other potentially resulting in a decrease in antibiotic resistance (Wester et al., 2002; Giblin et al., 2004). The first step to achieve this is administering KAP surveys which are used to evaluate knowledge (K), attitudes (A) and practices (P) of medical practitioners (Thriemer et al., 2013). The bacterial resistance to available antibiotics is a serious problem in India. A sensitivity analysis may help in preventing unnecessary antibiotic prescription thereby decreasing the chances of resistance (CDC, 2014). However, the majority of antibiotics are being prescribed without culture sensitivity testing in India.

4. METHODOLOGY

Study design and setting:

The study was quantitative descriptive study done via Google survey. Medical practitioners' knowledge, attitude of antibiotic resistance was assessed.

Study instrument

A pre-validated questionnaire containing 20-items was used as the instrument. The survey was a self-administered questionnaire which will be distributed and collected.

Along with objective of study, informed consent was mentioned before the study.

Study sample:

Estimating the number of doctors in India is approximately 10 lakhs of medical doctors in practice. For calculation of sample size, 5% margin of error and 95% confidence interval was selected. Based on this the calculated sample size is 384. Data were collected from may25' 2021 to June 5' 2021. Before completion of the questionnaire, the respondents were explained about the aim and nature of the study and verbal consent was taken. No incentives were given to the respondents.

Inclusion criteria:

The doctor should have a MBBS or BDS degree.

The person should be currently practicing medicine.

Exclusion criteria:

4.4.2 The doctors with BAMS or BHMS qualifications.

4.5.2 The doctors practicing outside India.

Limitations:

Due to lack of resources the sample has been limited to people responded until June 5'2021. The survey only addressed medical doctors, whereas in practice also nursing staff prescribe Abs.

ETHICAL CONSIDERATIONS

The aim of the study will be included in the Google form along with information consent form. The anonymity of the participants will be maintained and no personal details will be collected.

Data analysis:

Findings were presented as numbers and percentages in the form of tables and bar-charts.

5. RESULT

Demographic

- 74 respondents participated in the survey.

Education	No of participants
BDS	14
MBBS	38
MD/MS	22

Fig1: qualifications of participants

51%of participants were MBBS doctors.

42% of participants had 3-5 years of clinical experience.

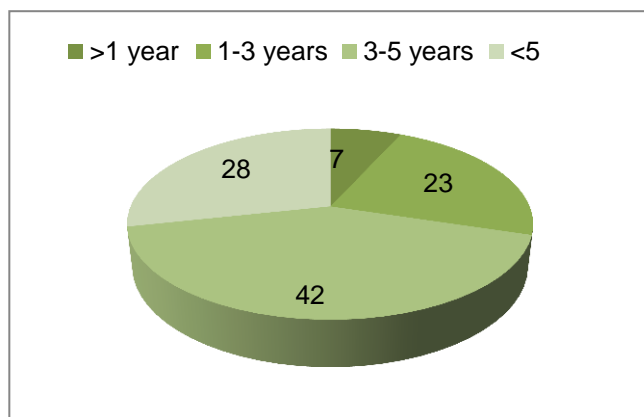


fig2: graph depicting years of practice

Knowledge on Antibiotics

Most of the respondents (91.8%) agreed that antibiotic resistance is an important problem worldwide and especially in India. About 73% of the respondents agreed that antibiotics are overused in the community with 56% who agreed that it is a major problem in their own daily practice. Less than half (37%) of the respondents disagreed that antibiotics can be used to treat viral infections and 13% of the respondent also disagreed that antibiotics will speed up the recovery of cold and similar conditions. 41% of the respondents agreed that efficacy will be better if the antibiotics are newer and the price is higher

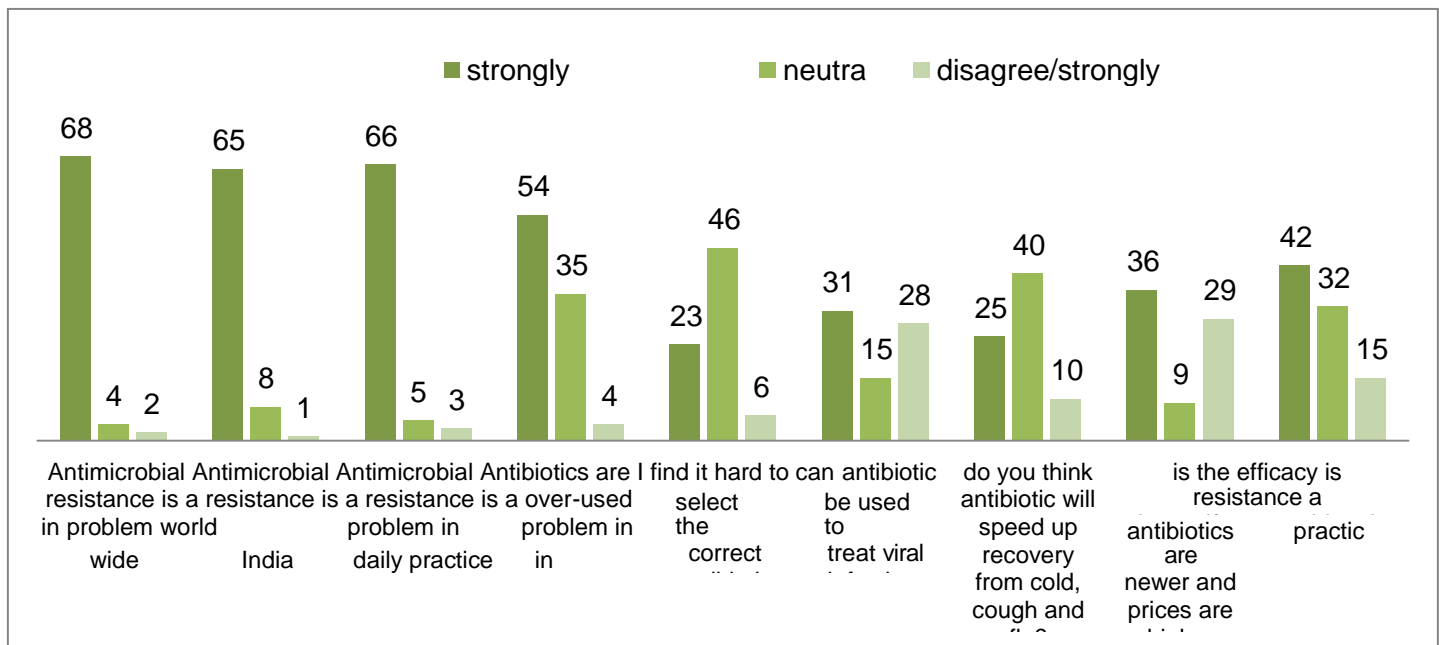


Fig3: knowledge of medical practitioners about antibiotic resistance

Attitude on antibiotics

The majority (60%) of the respondents strongly agreed that antibiotic resistance rate is important to know and 42% strongly agreed that cultural sensitivity test is also important before prescribing. However, this can only be done by the support of microbiology laboratory. The majority of the respondents admitted that it is important to know the resistance rate of bacteria in local settings and cultural sensitivity test is important for prescribing. Respondents disagreed that selection of antibiotics is influenced by the availability of antibiotics. Respondents agreed that patients demand for antibiotics is the major reason that contributes toward the abuse of current antibiotics. Respondents agreed that local guidelines are more useful than international guidelines. A major part of respondents were interested in a training program to be initiated

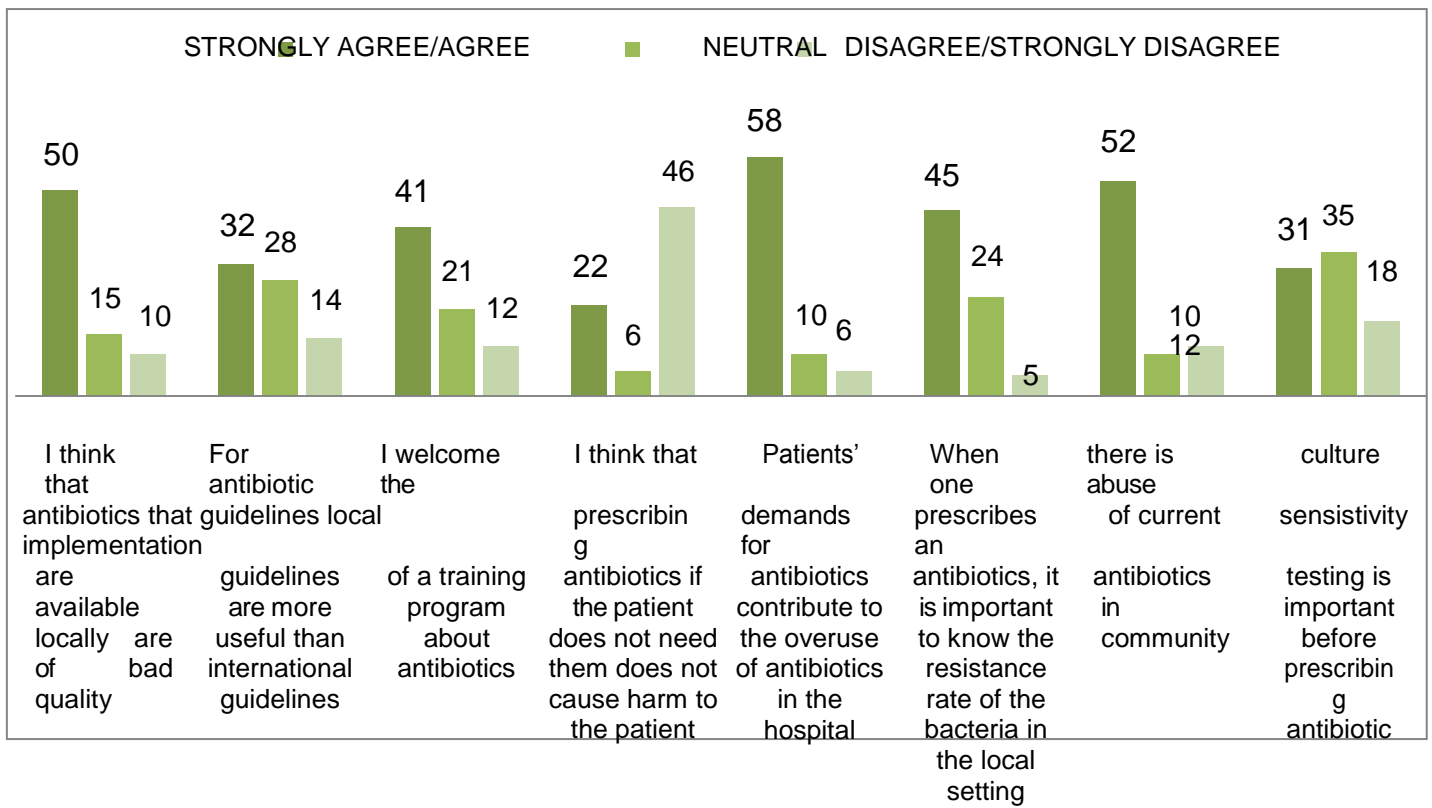


Fig4: attitude of medical practitioner about antibiotic resistance

6. Discussion

This study provides detailed information of knowledge and attitude regarding antibiotic resistance among registered medical practitioners. Knowledge was identified as satisfactory, however the attitude of medical practitioner requires attention. 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 (Dua et al., 1994; Livorsi et al., 2015). 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 indications (Khan et al., 2013). 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 (Colgan et al., 2015). Similarly, there have been concerns over the generic medication ingredients coming from possible sources with less oversight, such as India and China (Chu and Hamp, 2012). 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 (Weir et al., 2005). The practice of not conducting culture sensitivity test may exacerbate the problem of antibiotic resistance 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 (Mohan et al., 2004). 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 findings from low and middle-income countries. For example, a survey of pediatricians and patients' caregivers 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 (Britten and Ukoumunne, 1997). Many studies conducted in other developing countries such as the one conducted in Tamil Nadu 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 (Fluit et al., 2001; Madani et al., 2001; Smith and Coast, 2002; Pedersen et al., 2007; Shahid et al., 2017).

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 the 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 (Naveed et al., 2015; Hameed et al., 2016; Hanif et al., 2016). 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 (Istúriz and Carbon, 2000). 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 (Thriemer et al., 2013).

Numerous studies have reported that the marketing tactics of pharmaceutical industries play an important role in increasing the prescribing and sale of certain drugs (Wolffers, 1987; Haak, 1988; van Staa, 1993; Ijoma et al., 2010; Workneh et al., 2016). 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 (Ali et al., 2015). The fair information available about antibiotics is a requirement intended for suitable antibiotic suggesting (World Health 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 (Amabile-Cuevas, 2010b).

7. CONCLUSION

The study helped to provide a picture about the knowledge and attitude of medical doctors about antibiotic resistance. Although 88% of our sample viewed antibiotic resistance as a national problem, only 54% believed that resistance was a problem in their practice. Culture sensitivity test, though recognized by the respondents as an important strategy to minimize the chances of resistance, was not a common practice. The availability of antibiotics without prescription and failure of the patients to complete their antibiotic course were regarded as the most common contributing factors to antibiotic resistance. The practitioners generally relied on information from internet, treatment guidelines and pharmaceutical companies, however; no formal training sessions were attended by the majority of the prescribers. Finally, local guidelines and continuous education of general health professionals would be an essential step to promote rational use of antibiotics. The knowledge level of medical professionals regarding antibiotics and its resistance was satisfactory but require attention towards the issue. In order to limit the issue, there should be programs and regular trainings should be held among the professionals.

More attention over antibiotic resistance is required across the globe in order to fight the public health threat. Not only the medical practitioners but also, patients should be counseled about the concern. Special attention is also required to non-medical aspects for antibiotic resistance prevention as non-medical causes contribute to 30% of human antibiotic resistance via consumption of poultry products, vegetable infused with antibiotics etc.

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9. Appendix

1. How many years have you been working after you graduated from medical school?
 - >1 year
 - 1-3 years
 - 3-5 years
 - <5 years
2. You are prescribing antibiotics to whom?
 - patients at out-patient department
 - hospitalized patients
 - patients in out-patient department and hospitalised patients
3. Antimicrobial resistance is a problem world wide
 - I strongly agree
 - I agree
 - neutral
 - I disagree
 - I strongly disagree
4. Antimicrobial resistance is a problem in India
 - I strongly agree
 - I agree
 - neutral
 - I disagree
 - I strongly disagree
5. Antimicrobial resistance is a problem in my daily practice
 - I strongly agree
 - I agree
 - neutral
 - I disagree
 - I strongly disagree
6. Antibiotics are over-used in the community in India
 - I strongly agree
 - I agree
 - neutral
 - I disagree
 - I strongly disagree
7. How confident are you about your knowledge of antibiotics?

- very confident
- confident
- neutral I have no idea
- a bit confident
- not at all confident

8. I find it hard to select the correct antibiotic

- I strongly agree
- I agree
- neutral
- I disagree
- I strongly disagree

9. can antibiotic be used to treat viral infections

- I strongly agree
- I agree
- neutral
- I disagree
- I strongly disagree

10. do you think antibiotic will speed up recovery from cold, cough and flu?

- I strongly agree
- I agree
- neutral
- I disagree
- I strongly disagree

11. is the efficacy better if antibiotics are newer and prices are higher

- I strongly agree
- I agree
- neutral
- I disagree
- I strongly disagree

12. culture sensitivity testing is important before prescribing antibiotic

- I strongly agree
- I agree
- neutral
- I disagree
- I strongly disagree

13. there is abuse of current antibiotics in community

- I strongly agree
- I agree
- neutral
- I disagree
- I strongly disagree

14. During the past years, how many courses or trainings did you receive about antibiotics?

- 0
- 1-3

- 4-6
- 6-10
- >10

15. When one prescribes an antibiotics, it is important to know the resistance rate of the bacteria in the local setting

- I strongly agree
- I agree
- neutral
- I disagree
- I strongly disagree

16. Patients' demands for antibiotics contribute to the overuse of antibiotics in the community

- I strongly agree
- I agree
- neutral
- I disagree
- I strongly disagree

17. Patients' demands for antibiotics contribute to the overuse of antibiotics in the hospital

- I strongly agree
- I agree
- neutral
- I disagree
- I strongly disagree

18. I think that antibiotics that are available locally are of bad quality

- I strongly agree
- I agree
- neutral
- I disagree
- I strongly disagree

19. For antibiotic guidelines local guidelines are more useful than international guidelines

- I strongly agree
- I agree
- neutral
- I disagree
- I strongly disagree

20. I welcome the implementation of a training program about antibiotics

- I strongly agree
- I agree
- neutral
- I disagree
- I strongly disagree

21. I think that prescribing antibiotics if the patient does not need them does not cause harm to the patient

- I strongly agree
- I agree

- neutral
- I disagree
- I strongly disagree