

Confidence, Perception, and Attitude towards Prescribing Antibiotics among Medical Students and Interns in Jeddah, Saudi Arabia

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ABSTRACT

Background: According to the World Health Organization, antibiotics are the most frequently prescribed drugs worldwide. The development of antibiotics has successfully overcome the threat of infectious diseases, but they are often misused, leading to the spread of resistant bacteria strains. This study aimed to assess the perception and attitude toward antibiotic prescription among medical students and interns in Jeddah, Saudi Arabia, in both governmental and private medical colleges.

Methods: This was a cross-sectional multi-site study involving 249 participants, comprised of sixth year medical students and interns sampled using a convenience sampling technique. Data were obtained using a validated questionnaire used in a previous study to assess the perception and attitude toward antibiotic prescribing and antimicrobial resistance.

Results: Out of 249 respondents, 92.4% said they would like more education on antibiotic selection, 81.5% believed that prescribing inappropriate or unnecessary antibiotics was professionally unethical, 66.3% felt confident in their ability to make an accurate infection diagnosis, and 54.4% were not confident about correct dosages and administration intervals. In all, 79.1% of the participants thought that antibiotic resistance is a nationwide problem, and 46.8% believed the problem does exist in their hospital.

Conclusion: Medical students in Saudi Arabia seem to have problems with their confidence, perception, and attitude toward using antibiotics. More rigorous training on antibiotic prescription is needed for sixth year students and interns in Saudi Arabia, and a standardized curriculum should be considered for private and governmental medical colleges.

Keywords: antibiotics, antibiotic resistant, bacteria strains, infectious diseases.

INTRODUCTION

According to the World Health Organization (WHO), antibiotics (ABs) are the most frequently prescribed drugs worldwide^[1]. The development of antibiotics has successfully overcome the threat of infectious diseases, leading to a global increase in the average life expectancy and quality^[2], but they are frequently misused, causing the spread of numerous resistant bacterial strains^[1].

The WHO defines antimicrobial resistance (AR) as "the change in a microorganism that causes it to become resistant to an antimicrobial drug that was previously effective against it"^[2]. AR has become a global public health problem, with a significant economic and clinical burden estimated at 25,000 deaths per year in European hospitals alone, and costing about 1.5 billion Euros^[1].

Research has shown that a significant percentage of AB prescriptions was not based on scientific evidence, and most of them were unnecessary or questionable^[3,4]. Physicians have been known to breach the principles of excellent clinical practice when concerned about complications of infection, or when desiring to achieve patients' expectations^[1,5]. Such practices might be factors in the development of AB resistance.

Several studies have been conducted to evaluate the perception and attitude of medical students

towards prescribing ABs. One study was set in seven European countries, while others were carried out in China, the Democratic Republic of Congo, India, the United States of America, Bangladesh, and Jordan^[6-13]. Most of these studies indicated a lack of information on prescribing and using AB.

In the Arab Gulf region, previous studies on AB prescription have demonstrated a crucial knowledge problem among the Arab population^[14]. In Saudi Arabia, ABs are prescribed excessively and are often available over the counter^[15]. In fact, ABs can be accessed so freely in Saudi Arabia that the self-directed use of these drugs and its adverse effects might put the entire population at risk^[16,9]. To the best of our knowledge, only one study has been conducted in Riyadh to assess the knowledge and attitudes toward AB drugs among physicians, and research focusing on medical students and interns is lacking^[17]. This is a major omission, considering that they comprise the future healthcare workforce. This study thus aimed to assess the knowledge, perception, and attitude towards AB prescription among medical students and interns in Jeddah, Saudi Arabia.

Methodology

This research was a cross-sectional study that took place in the Faculties of Medicine at Batter-

jee Medical College, Ibn Sina Medical College, and King Abdulaziz University in Jeddah, Saudi Arabia. Study participants were interns and sixth year medical students sampled using a convenience sampling technique. Data collection started in October 2016 using a validated questionnaire that had been employed in a previous study to assess the knowledge, perception, and attitude towards antimicrobial resistance [7].

Participants were given 10 minutes to complete the questionnaires anonymously after lecture time. Research assistants supervised data collection to minimize the possibility of missing data. Each questionnaire consisted of 19 questions. Demographic questions were posed first, and the remaining items sought to assess the respondents' confidence in prescribing ABs, perception about factors leading to AR, and attitude towards AB prescription.

The study was done after approval of ethical board of Batterjee Medical College.

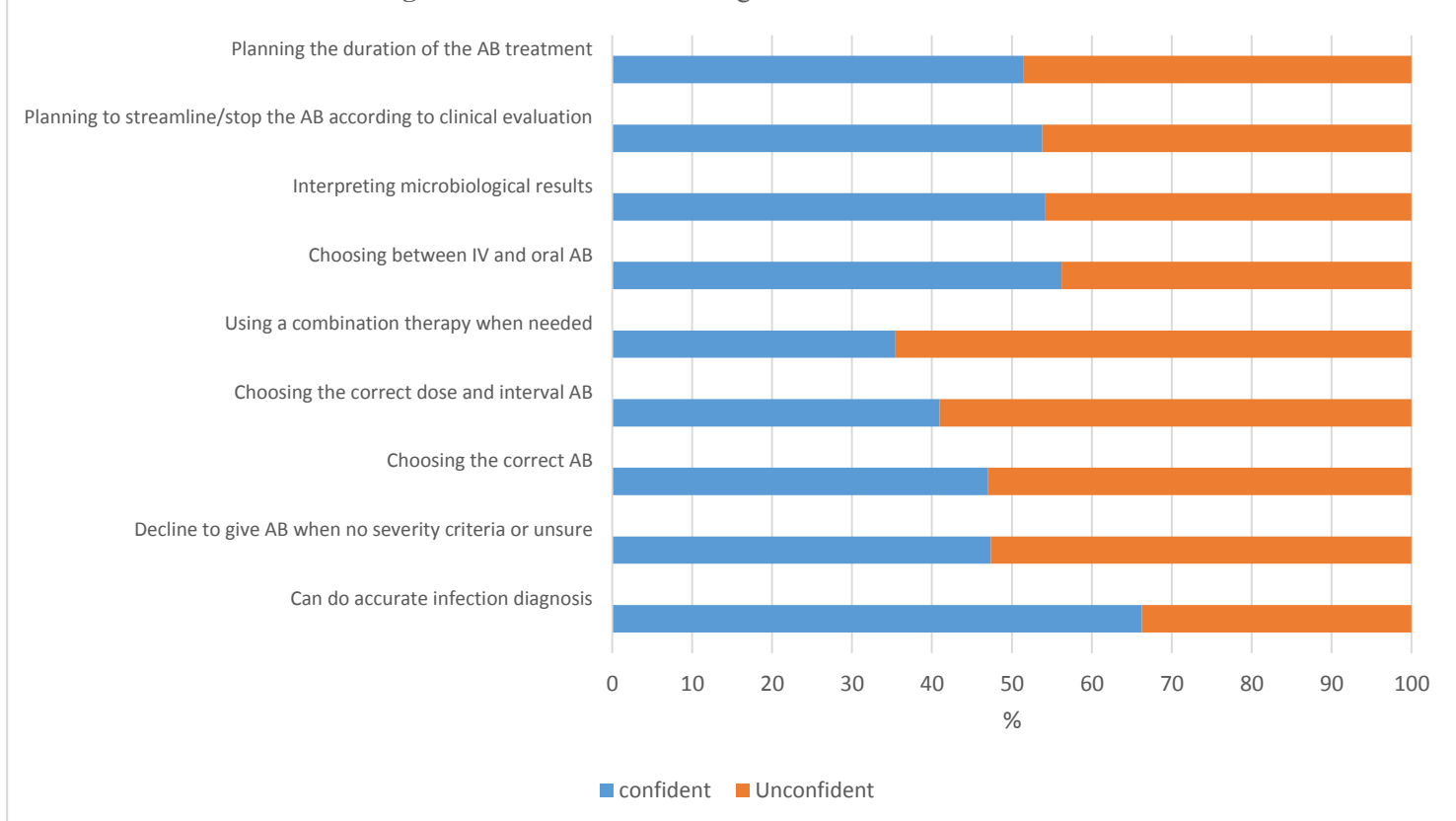
Data were analyzed using SPSS V.21. Descriptive statistics were obtained for each question, and chi-square tests were used to compare items related to confidence, perception, and attitude between private and governmental colleges. Missing values were replaced using the expectation maximization (EM) method, and data entry was performed using a private password-protected computer that was only accessible to the research team and data collectors.

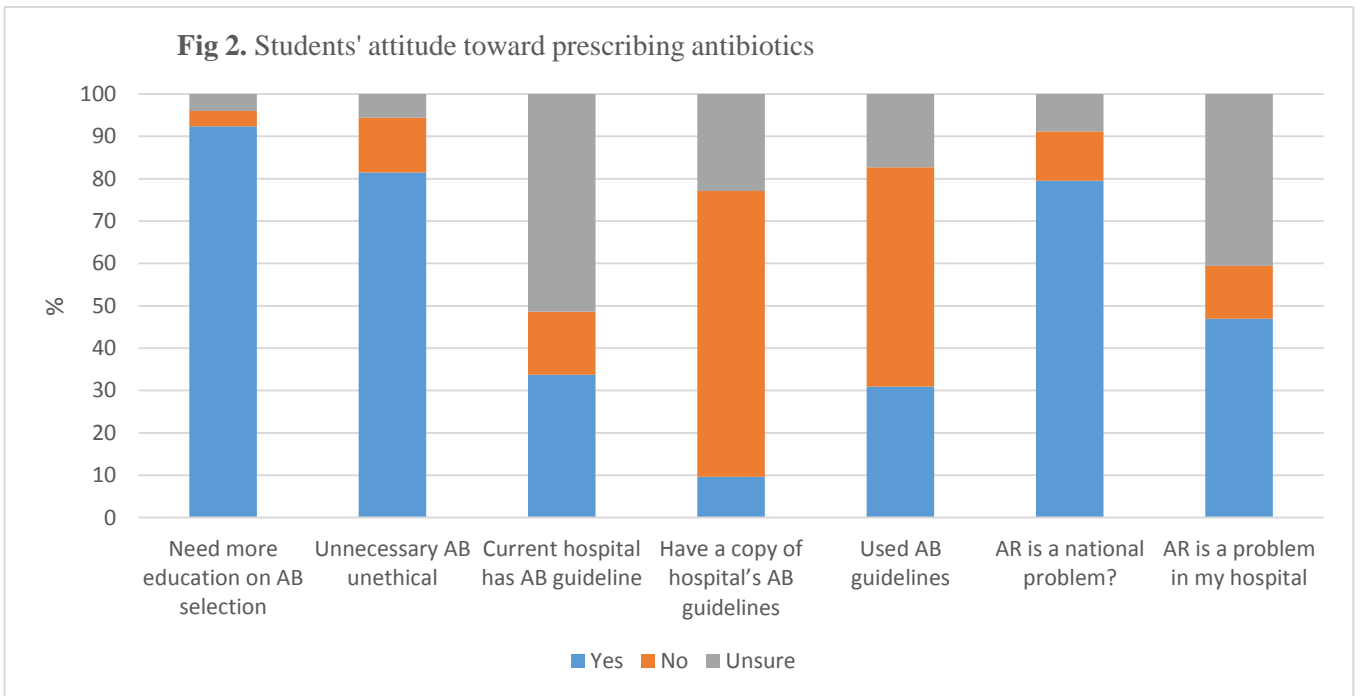
RESULTS

The study included 249 participants (27.3% male, 72.7 %female) with a mean age of 23.92 years (SD=2.04). 74.3% of the participants were sixth year medical students, 25.7% were interns, 31.49% went to private colleges, and 28.5% attended governmental colleges.

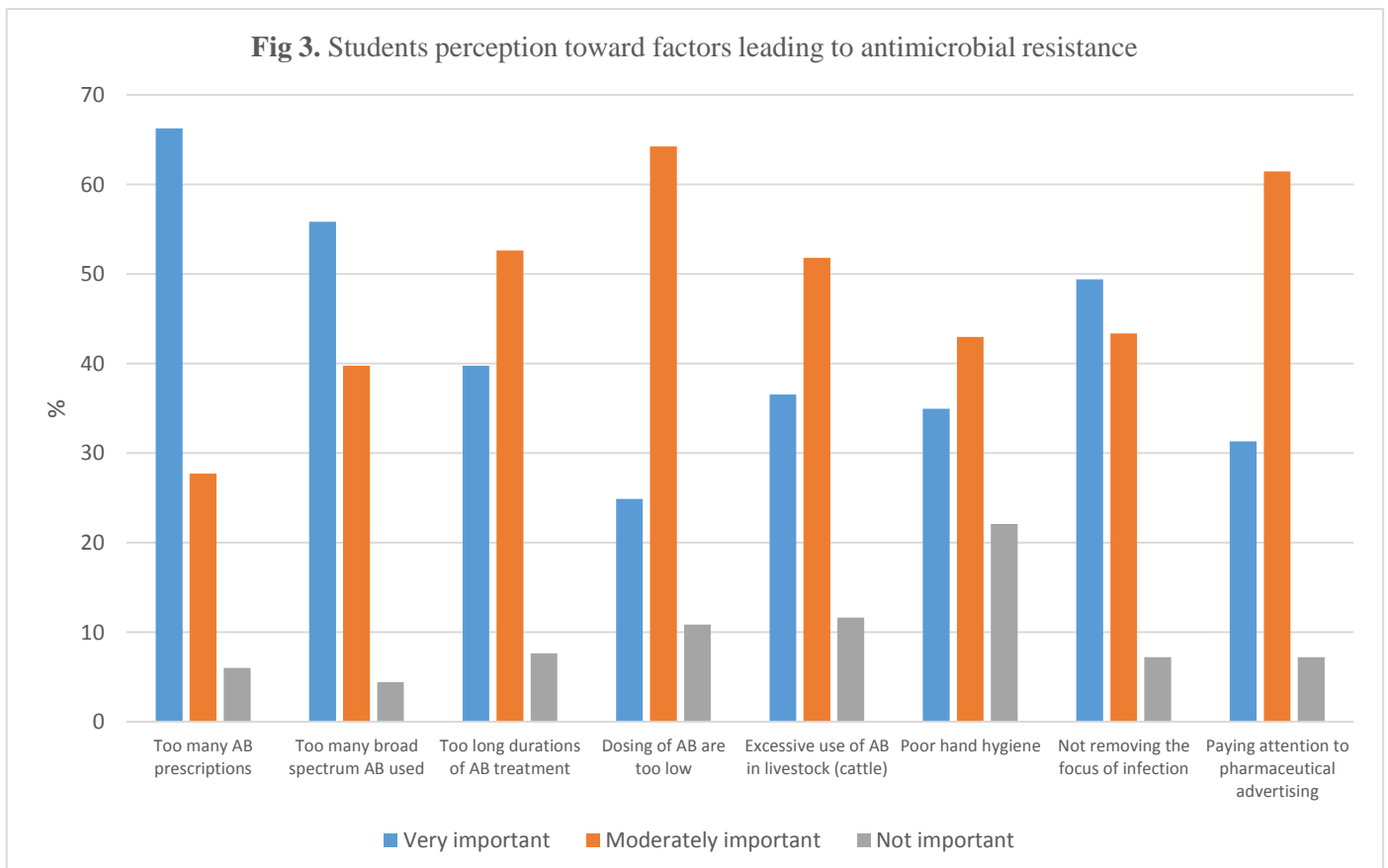
Figures 1, 2, and 3 illustrate the respondents' levels of confidence in prescribing ABs, attitudes toward prescribing ABs, and perception about factors that lead to AR, respectively.

Fig1. Students' medical training confidence to use antibiotics





Using the chi-squared test, half of the items about attitudes toward prescribing ABs were significantly different between private and governmental colleges, including the existence of AB guidelines ($p= 0.006$), using AB guidelines ($p= 0.001$), and considering AR a nationwide problem ($p= 0.008$). Most items related to students' confidence in prescribing ABs were also significantly different between private and governmental colleges, including using the correct AB ($p<0.001$), dosage and interval ($p<0.001$), AB combination ($p<0.001$), IV or oral ABs ($p<0.001$), planning according to clinical evaluation ($p=0.001$), and planning AB therapy duration ($p<0.001$).



DISCUSSION

This study found that students have 35.34–66.26% confidence in the measured confidence items when it comes to prescribing ABs, which indicates that most participants were unsure about their AB prescribing practices. There was more variety in the attitude items, with “yes” answers ranging between 9.63% and 92.36%, but most answers about AB guidelines and usage indicate that the respondents were either not following guidelines or they’re unsure about them.

Almost all of Medical student and intern in our study and other similar studies world wide showed that they would like more education on AB selection During their period of study at medical school^[13,7,2]

There was also a variation in the perception of the importance of factors leading to AR, with the percentage ranging between 24.9 and 66.26.

Participants believe that too many AB and too many broad-spectrum antibiotics use are the strongest causes of developing Antibiotic resistance. Similar finding was found in

studies conducted in different parts of the world.^[2,18,19,20]

Noticeably, 34.94% of participants believed that poor hand hygiene has no relation to AR, which indicates that a sizable segment of current medical students are not aware of a main AR factor.

Inferential statistics indicate a significant difference between governmental and private medical colleges in many of this study’s items. This probably reflects the need to standardize the Saudi medical curriculum and training programs, so students could have comparable knowledge, confidence, attitudes, and perception about prescribing ABs while avoiding AR.

CONCLUSION

Medical students in Saudi Arabia seem to have problems with their confidence, perception, and attitude toward using AB. More rigorous training on theoretical and clinical aspects of antibiotic prescription is needed for sixth year students and interns in Saudi Arabia. Furthermore, a more standardized curriculum should be considered for private and governmental medical colleges.

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