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ORIGINAL RESEARCH ARTICLE

KNOWLEDGE, ATTITUDE AND PRACTICE ABOUT ANTIBIOTIC USE, SELF-MEDICATION AND ANTIBIOTIC RESISTANCE AMONG FINAL YEAR MEDICAL STUDENTS AND INTERNS AT A MEDICAL COLLEGE IN LALITPUR, NEPAL

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ABSTRACT

Background:Antibiotic resistance is a global crisis posing a considerable threat, especially, to developing countries and can cause 10 million deaths by 2050. Medical students as future doctors play an essential role in promoting the rational use of antibiotics. The objectives of this study were to evaluate the respondents' knowledge, attitude and practice (KAP) regarding antibiotic use, antibiotic self-medication, and antibiotic resistance and compare the KAP among different subgroups of respondents at KIST Medical College, Lalitpur, Nepal.

Methods: A cross-sectional study was done among final year medical students and interns from September to October 2019. A structured questionnaire with 22 statements for assessing knowledge, 13 statements for attitude and 12 statements for practice was used as a data collection tool. Differences in the KAP scores among different subgroups were studied using appropriate statistical tests.

Results: A total of 131 respondents participated, and 76(58%) were female. Most were from the Brahmin ethnic group 54(41.2%) while 82(62.6%) had relatives in the medical field. Ninety-three (71%) were final year medical students and 38(29%) were medical interns. The knowledge scores were high (76) among most subgroups of respondents. The attitude score was 58 out of 65 and practice score was 6 out of 12. Knowledge scores were higher among female respondents, and practice scores were higher among interns (p=0.002).

Conclusions: The study showed good knowledge and attitude regarding antibiotics among the final year medical students and the interns. Interns were found to have a better practice than the final year students for using antibiotics rationally.

INTRODUCTION

Antibiotic resistance is a global crisis posing a threat to many people especially in developing countries and can cause 10 million deaths by 2050.[1-3] Microbial resistance to antibiotics is a multifactorial phenomenon.[4,5]

Availability of antibiotics as over-the-counter (OTC) medicines in developing countries lead to these being used by medical students and interns as self-medication.[6,7] A study from Nepal showed that the prevalence of self-medication among final year medical students was 76.6%.[10] Another study conducted in Slovenia has shown that antimicrobials were most commonly used as self-medication among final year medical students.[8] This study highlights the vital role of medical students as future prescribers towards promoting the rational use of antibiotics.

The present study was done to evaluate the respondents' knowledge, attitude and practice (KAP) regarding antibiotic use, antibiotic self-medication, and antibiotic resistance and to compare the KAP among different subgroups of respondents at KIST Medical College, Lalitpur, Nepal.

METHODS

A cross-sectional study was done from September 2019 to October 2019 at KIST Medical College and Teaching Hospital, Lalitpur, Nepal. Purposive sampling was used, and all the final year students and interns were invited to participate in the study. Final year students were selected as they have been trained theoretically for the rational use of antibiotics during the first and second year of studies and have also been exposed to use of medicines among patients during their clinical postings.

Medical Interns are future prescribers, and this was the reason for their selection in this study. A structured questionnaire was used as a data collection tool. The questionnaire was developed by examining the literature and consulting with the content experts. The face and content validation of the questionnaire was done by consulting with experts in the field. The questionnaire had 22 statements for assessing knowledge, followed by 13 statements for attitude and 12 statements for practice. Four statements for knowledge in the questionnaire were negatively worded, and one statement for attitude was negatively worded, and the scores were reversed for calculating the scores for knowledge, and attitude.

A five-point Likert scale (1 = strongly disagree with the statement, 2= Disagree with the statement, 3= Neutral, 4= Agree with the statement, 5= strongly agree with the statement) was used for knowledge and attitude responses. At the same time, the practice questions had either a "Yes" or "No" response. Maximum scores for knowledge, attitude and practice were 110, 65 and 12, respectively. The scores were categorized as good, average and poor scores for knowledge. Similarly, attitude scores were categorized as positive and negative and the practice scores as good and bad. The scores below 36 were categorized as poor knowledge. Average scores for knowledge were from 36 to 74 and more than 74 were taken as a good knowledge scores. Attitude scores were categorized as positive for scores more than 33 and negative for below 33. Practice scores were moderate for the scores till 6 and below six were taken as bad practice scores.

Knowledge, attitude and practice scores were checked for normality using Shapiro-Wilk test, and non-parametric statistical tests (Mann-Whitney and Kruskal-Wallis test) were used to compare knowledge, attitude and practice scores across background characteristics of the respondents.

Written Informed consent was obtained from all the participants in the study. The ethical approval was obtained from the Institutional Review Committee (IRC) at KIST Medical College & Teaching Hospital (Reference number: 2076/77/22). The data were entered into SPSS software version 16.0 for carrying out the statistical analysis. Beyond the description of demographic parameters, the KAP scores among different groups were compared using appropriate statistical tests. A *p*-value of less than 0.05 was considered statistically significant.

RESULTS

The response rate was 70.35% among final year medical students and 61.29% among the interns. A total of 131 respondents, including 93(71%) students from the final year and 38(29%) interns participated in the study, among which 76(58%) were females. Majority of the respondents were from Brahmin ethnic group 54(41.2%), and 82(62.6%) had first or second-degree relatives in the medical field. Table 1 describes the demographic features of respondents. Ninety-three respondents were final year medical students, and 38 (29%) were medical interns from the attached teaching hospital.

The knowledge score was good to high (76, maximum possible score 110) for different subgroups of respondents. Similarly, the attitude score was good (58, maximum possible score 65) and practice was moderate (6, maximum possible score 12) for all the respondents from various subgroups. Table 2 describes the Median knowledge, attitude and practice scores among final year medical students and interns.

It was seen that the knowledge and attitude scores were not significantly different among the final year students and the interns. However, the scores for practice were significantly higher among interns (*p*-value=0.020). One hundred and eleven (84.7%) respondents stored antibiotics for future use, and 20 (15.26%) gave it to someone else who needed it. None of the respondents discarded antibiotics.

Table 1: Demographic features of the respondents (n=131)

Characteristics	Number (%)
Age	
Less than 24 years	61 (46.6)
Greater than or equal to 24 years	70 (53.4)
Gender	
Male	55 (42.0)
Female	76 (58.0)
Type	
Final year students	93 (71.0)
Interns	38 (29.0)
Ethnicity	
Brahmins	54 (41.2)
Chetris	48 (36.6)
Newars	24 (18.3)
Others	5 (3.9)
First or second degree relatives in the medical field	
Yes	82 (62.6)
No	49 (37.4)

Table 2: Median knowledge, attitude and practice scores among final year medical students and interns

Variables	Final Year	Interns	*p*-value
Total Knowledge scores	80 (53-97)	80 (55-97)	0.843
Total Attitude scores	53 (31-63)	51 (31-63)	0.891
Total Practice scores	**5(1-9)**	**6(3-12)**	**0.020**

DISCUSSION

Using antibiotics, irrationally has become a global problem. Inappropriate use and consumption of antibiotics may have many unwanted reactions, including adverse effects and resistance. One of the primary reasons for the emergence of antibiotic resistance is the overuse and misuse of antibiotics.

Final year students were selected as they have been trained theoretically for the rational use of antibiotics during the first and second year of studies and also been exposed to use of antibiotics among patients during their clinical postings. Interns are future prescribers and this was the reason for their selection in this study.

Hence, proper training and education regarding the rational use of antibiotics should be provided to future doctors to increase their awareness of the problem of antibiotic resistance. Educational interventions should therefore be targeted towards these future healthcare professionals for addressing this problem.[9]

Among the 22 statements for assessing knowledge (maximum possible score of 110), the score was 80 among some subgroups

of respondents and 76 overall. The knowledge scores were higher among female respondents. The findings are better than other studies, where the knowledge was found to be 54% and 61% among the students.[10,11]

The interns were showing similar scores for knowledge as compared to the final year medical students. This may be due to the effectiveness of the medical course towards increasing knowledge about the use of antibiotics. Both interns and final year medical students are also in continuous contact with other senior healthcare professionals to guide them about the appropriate choice of antibiotics for treating patients. Many studies from various countries have shown that students are using antibiotics irrationally due to the inadequate knowledge about the development of antibiotics resistance.[12-15] Final year students have read and understood most of the theoretical aspects of antibiotics and their use. They also learn about personal-drug selection during pharmacology small group sessions on selecting p drugs for diseases like typhoid fever and malaria. They have also been exposed to the use of medicines among patients during their clinical postings. Self-medication is also very commonly seen among medical students, and the availability of antibiotics without prescription can be a factor promoting this condition.[6,7]

Antibiotics in Nepal are categorized as prescription-only drugs. As per the drug act in Nepal, antibiotics are classified under category 'B', meaning they are drugs only to be sold with a prescription.[16] World Health Organization (WHO) has classified antibiotics into three subgroups as access, watch and reserve groups. Access group denotes the antibiotics which should be used for a variety of infections, watch group is to be recommended as first or second choice treatments, and reserve are to be considered as last option groups and should be recommended only for most severe infections.[17] Antibiotics should not be available as over the counter drugs, but, the scenario is different in Nepal.[18] People can go and buy antibiotics without a prescription and can use them for self-medication.[19] Additionally, lack of adequate public healthcare system with sufficient supplies of the essential medicines in developing countries can force many people to purchase medicines on their own.[20]

In this study, there were 13 statements for assessing attitude. The total score for attitude was 53. The scores were indicating a good attitude among respondents. The scores for final year medical students were 53, and it was 51 for interns. This difference in the scores was not significant. A study had shown that senior medical students had a positive attitude about the use of antibiotics as compared to the lower grade medical students.[13] Studies from Egypt and Sudan have also shown similar results.[21,22]

Since the knowledge scores were good for all students, it can have a positive impact on attitude. Studies have shown that awareness campaigns are needed to promote the rational use of antibiotics among younger generations of medical students.[23] Research has shown that using educational interventions like games can also be a powerful tool for the students in which they can play roles of doctor consulting patients, and this improved the knowledge of antibiotics prescribing.[24]

Attitude can be considered as good (positive) and poor (negative). Positive attitudes are responsible for improving practice, while negative attitudes can also cause harm. Practice assessment is considered as a standard protocol of KAP surveys, but many studies do not present results about attitude and practice correctly. The reason behind this can be a difficulty among people while interpreting their thoughts, beliefs and understandings towards any specific topic. This can result in a direct impact on an individual's thought and hence the results.[25]

However, there is always an area for improvement. More interventions can be planned for improving the use of antibiotics. For interns, education sessions for further improving understanding of the situation can be conducted. They can learn more about preventive measures of antibiotic resistance from doctors and other healthcare professionals during their internships.

The practice scores for interns were significantly better than those of final year students. Results from another study have shown that the practice for first-year medical students was inappropriate as compared to the senior students of 4th year. This study also showed that even students from the medical field do have irrational practices.[26]

The physicians and clinicians can emphasize acceptable prescribing practices of antibiotics during internships. Students can improve their knowledge and practice under the guidance of senior doctors provided that the clinicians follow the guidelines for rational prescribing and safe medication practices.[27] There should be appropriate guidelines for prescribing antibiotics. The antibiotic guidelines framed by the government should be followed, and regulatory authorities should restrict over the counter access of antibiotics.[21,23]

Students learn about antibiotics during the first two years of MBBS course. One of the reasons for inappropriate practice can be due to their forgetting about the uses of antibiotics and their pharmacological characteristics. Less exposure and fewer revisions about antibiotics in their curriculum in later years may be another reason for the deficient practice. The findings of similar studies done among students have suggested preparing them for tackling the problem of AMR and its related issues. [28,29]

Regarding left-over antibiotics, it was found that 111(84.7%) respondents stored antibiotics for future use and 20 (15.26%) gave it to someone else who needed it. None of the respondents discarded antibiotics. A study from Nepal has shown that left-over medicines can be a reason for self-medication.[20] Presence of many pharmacies near the college premises can also ease the process for self-medication for the students. [20,30]

Students can be familiarized with these issues by conducting seminars, workshops and awareness programs for antibiotics. Government agencies and related stakeholders can promote rational use of antibiotics through different methods such as the strict implementation of guidelines for antibiotics use, updating curriculum in universities including course for public health and also conducting awareness programs using mass

and social media.

A reasonable response rate was the strength of the study. The study also had limitations. The study was done only in one medical college among final year students and interns. More students from other medical colleges could be included for obtaining a bigger picture of the antibiotic use, self-medication and resistance among medical students and interns. This was the limitation of this study.

CONCLUSION

The practice scores for interns were significantly better as compared to the final year medical students. Knowledge scores were higher among female students. Drug regulations should be enforced, and this can eventually reduce the purchase of antibiotics without a prescription. Educational interventions should be tailor-made, and continuous medical education can promote judicious prescribing of antibiotics. Future doctors must be trained about the rational use of antibiotics and strategies to reduce resistance.

CONFLICT OF INTEREST: None

FINANCIAL DISCLOSURE: None

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