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Knowledge, Attitude and Practice on Antibiotics Use and Resistance among the Undergraduate Students in Tertiary care hospital of Nepal

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Abstract

Introduction: Antibiotics are the drugs to treat bacterial infections and their resistance is one of the major public health issues. Irrational use of antibiotics in human and agriculture are the main causes of antibiotic resistance. The study aims to evaluate knowledge, attitude and practice (KAP) regarding antibiotics use and resistance among undergraduate students.
Materials and Methods: An institution based descriptive cross-sectional study design was conducted to assess KAP of antibiotics use and resistance among the undergraduate students purposively in Gandaki Medical College Teaching Hospital and Research Center (GMCTHR).
Results: Out of 170 respondents 91 were males and the rest females. The majority of them (96.8%) believed that antibiotics are the drug of choice for bacterial infection. Antibiotics are prescription only drugs however, 60.6% of students still believed that antibiotics are obtainable from the pharmacies without a prescription. 94.7 % of students agreed that antibiotics are overused nationally. More than two–third (71.8%) respondents have good knowledge, 93.5% have a positive attitude regarding antibiotics use and resistance, and only 24.7% have good practice in the use of antibiotics. Despite good knowledge and positive attitude towards antibiotics use and their resistance, almost half of them buy antibiotics without prescription (45.3%) and don't complete the antibiotic course after feeling better (37.06%).
Conclusion: The majority of respondents have good knowledge and positive attitude regarding antibiotics use and resistance but the good practice is very low in the use of antibiotics. Therefore, we should focus on the rational use of antibiotics and prepare our future healthcare professionals to use antibiotics more sparingly and appropriately.
Keywords: Antibiotics, antibiotics resistance, self medication, Nepal.

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1. Introduction

Antibiotics are the most sold drugs across the world to treat bacterial infections. Globally antibiotic resistance is the major public health concern that threatens our ability to treat various bacterial infections. Irrational use of antibiotics in the hospitals and community is the prime factor to increase the risk of antibiotic resistance.[1-4] This not only leads to the problem in controlling infection but also in preventing the dissemination of the antibiotics resistance bacteria.[5] Despite the adverse consequences of antibiotics resistance and the global spread of antibiotic resistance bacteria, effective dissemination of rational prescription and appropriate use of antibiotics by healthcare professions remains challenging.[6] They must be fully aware of the rational use of antibiotics and the increasing problem of antibiotics resistance as well as better prepared to prescribe antibiotics more sparingly and appropriately since they will

be the future prescriber.[7] Therefore, it is crucial to focus on the new generation of healthcare professionals about the rational use of antibiotics. Thus, this study aimed to evaluate the knowledge, attitude and practice of students associated with the antibiotics use and resistance.

2. Materials and Methods

An institution based descriptive cross-sectional study design was conducted to assess the knowledge, attitude and practice (KAP) on antibiotics use and resistance among first and second year undergraduate students of GMCTHRC in June 2017. A structured questionnaire was prepared after reviewing the relevant studies with few modifications [8-10] which was distributed among students after briefed about the purpose of the study and instruction to fill the questionnaire. The anonymity of subjects was maintained by asking them not to write their name and students were not forced to participate during the study period. An adequate time was given to fill up the questionnaire and the filled questionnaires were collected after completion. The questionnaire was divided into 4 parts: part 1 of the questionnaire included demographic characteristics of the students: age, gender, and department. Part 2 of the questionnaire assessed the participant's knowledge by using a set of Yes and No questions. Part 3 of the questionnaire assessed the participant's attitude about antibiotics use and resistance. Part 4 of the questionnaire assessed the practice towards antibiotics use and resistance to the students. The performance was assessed by scores (0 = wrong response and 1 = correct response), and the total score was calculated. In the knowledge part of the questionnaire on antibiotics use and resistance, those who got a score between 6-8, 3-5 and 0-2 were considered as having good, moderate and poor knowledge respectively. In the attitude part of the questionnaire on antibiotics use and resistance, those who got score between 5-6, 3-4 and 0-2 were considered as having good, moderate and poor knowledge respectively. Similarly, in the practice part of the questionnaire on antibiotics use and resistance, those who got score between 4-5, 2-3 and 0-1 were considered as having good, moderate and poor practice respectively. [11,12]

2.1 Data analysis

The collected data were entered into Microsoft excel 2007 and descriptive analysis was performed.

3. Results

3.1 Socio-demographic Characteristics:

Out of the total undergraduate students of first and second year, the questionnaire was distributed only to the students who were present in the class room (170 students) during the time of data collection. Among them 91 were males and the rest females. Those absent students during the time of data collection were excluded from this study. Most of the students belong to the age group 18-20 years. All of them were single. The majority of them belonged to medical (82.3%) whereas; least of them belonged to Bachelor of Public Health groups (BPH) (1.8%). The socio-demographic characteristics of respondents are shown in table 1.

Table 1: Socio-demographic characteristics of respondents

Characteristics	Category	Frequency (%)
Age (in years)	18-20	145 (85.3)
	21-23	25 (14.7)
Gender	Male	91 (53.5)
	Female	79 (46.5)
Department	MBBS I Year	77 (45.3)
	MBBS II Year	63 (37)
	BDS I Year	14 (8.2)
	B.Sc. Nursing I Year	13 (7.7)
	BPH I Year	3 (1.8)

Abbreviation: MBBS-Bachelor of Medicine and Bachelor of Surgery, BDS- Bachelor of Dental Surgery, B.Sc. Nursing-Bachelor of Science in Nursing, BPH- Bachelor of Public Health.

3.2 Knowledge of students on antibiotics use and resistance

Among 170 students (medical-140, dental-14, nursing-13 and public health- 3) majority of them (96.8%) believed that antibiotics are the drug of choice for bacterial infection. Antibiotics are the prescription only drugs and should not be dispensed without a prescription. However, 60.6% of students still believed that antibiotics are obtainable from the pharmacies without a prescription. They are aware that frequent use of antibiotics will decrease the efficacy of antibiotics and increase the antibiotic resistance. Moreover, 84.7% of respondents agreed that an antibiotic sensitivity test should be done before prescribing the antibiotics (Figure 1). The correct answer to each question is in parenthesis.

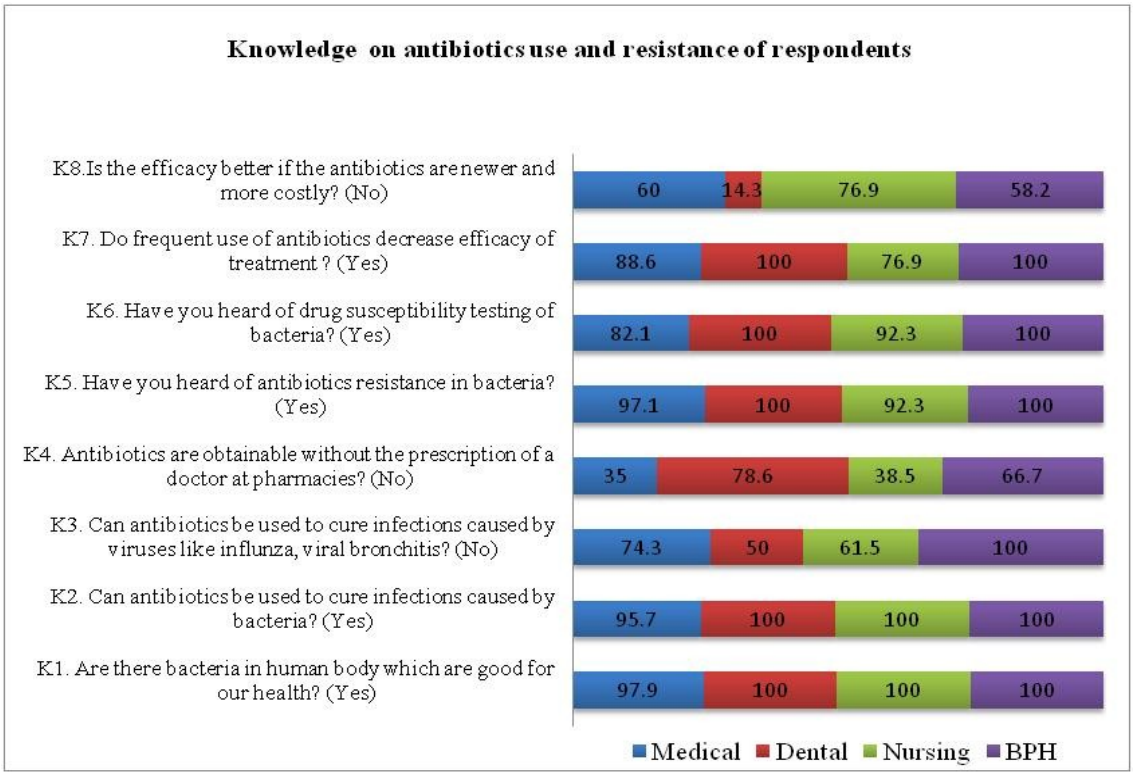

Figure 1: Knowledge on antibiotics use and resistance of respondents

3.3 Attitude of students on antibiotics use and resistance

The majority of students (91.8%) believed that currently antibiotics are abused. Moreover, 94.7% of students agreed that antibiotics are overused nationally and as a consequence inappropriate use of antibiotics could harm the patients and caused the antibiotics resistance. They accepted that prescribing broad-spectrum antibiotics when equally effective narrower spectrum antibiotics were available increased antibiotics resistance. Therefore, 97.6% of students believed that strong knowledge of antibiotics was important in their medical career (Figure 2).

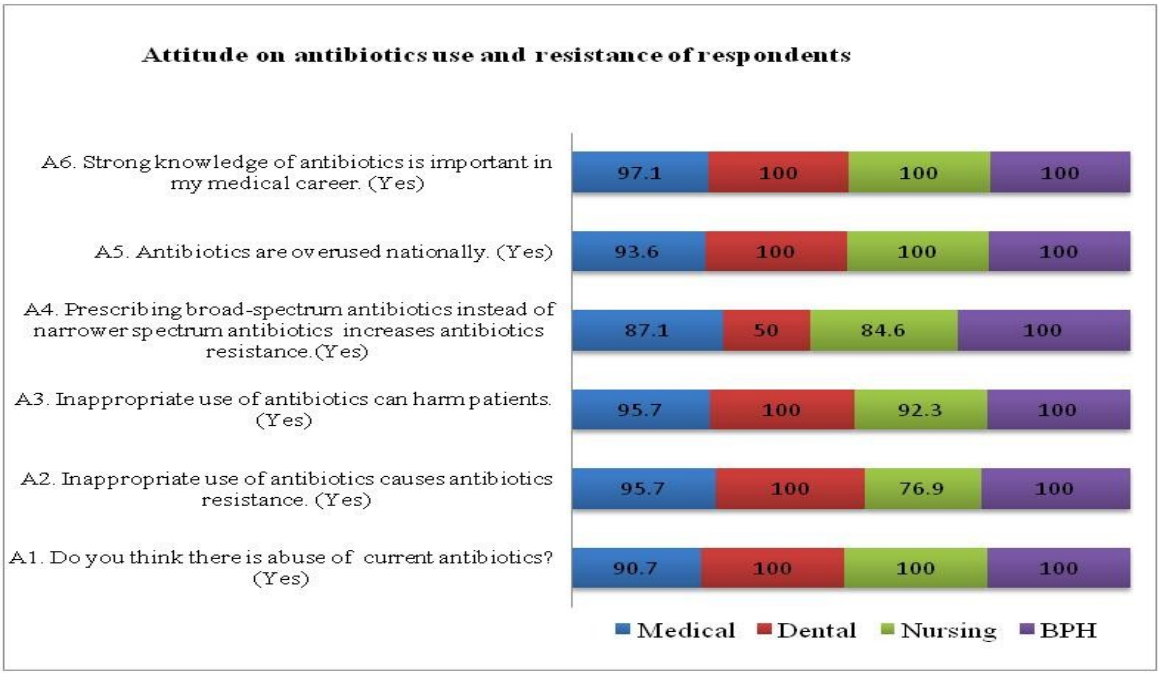

Figure 2: Attitude on antibiotics use and resistance of respondents

3.4 Practice of students on antibiotics use and resistance

The majority of students took antibiotics only when prescribed by doctors. Out of 170 students, 63 students (Medical-49, Dental-5, Nursing-8, and public health-1) usually stop taking antibiotics when they felt better. 37.1 % medical, 42.9% dental, 61.5% nursing and 33.3% public health students mentioned that there are no leftover antibiotics in their home. However, 60.6% of students still have an irregular practice of taking antibiotics. 45.3% of students bought the antibiotics without a prescription from the pharmacies. 42.4% of students usually used leftover antibiotics without consulting a doctor (Figure 3).

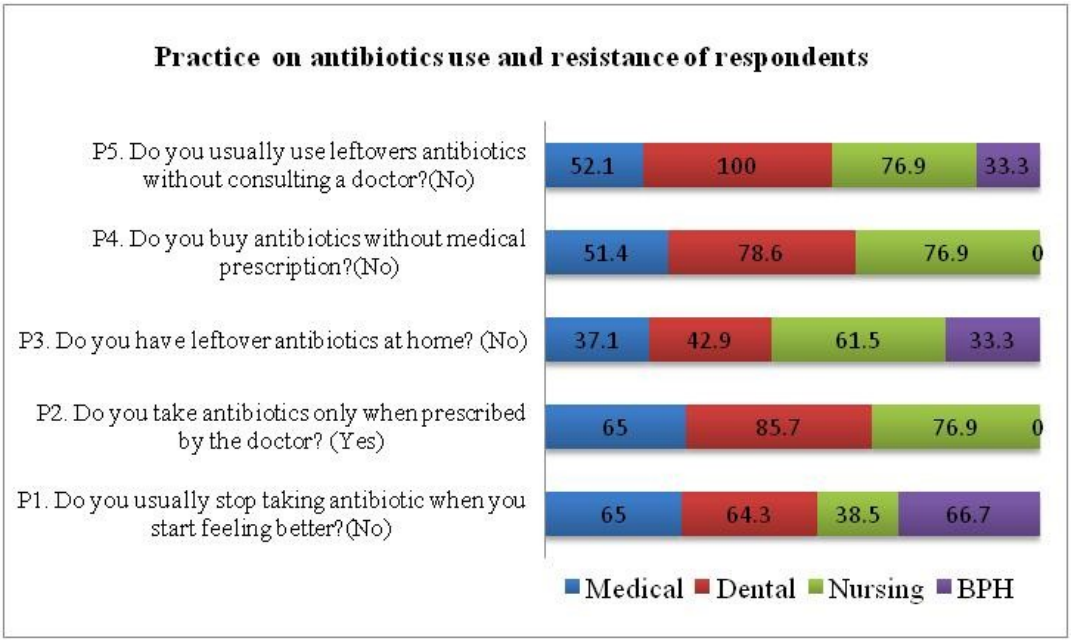

Figure 3: Practice on antibiotics use and resistance of respondents

3.5 Sources of Information on antibiotics

Among the various sources of information regarding the antibiotics most of the students rely on their standard textbooks which are shown in figure 4.

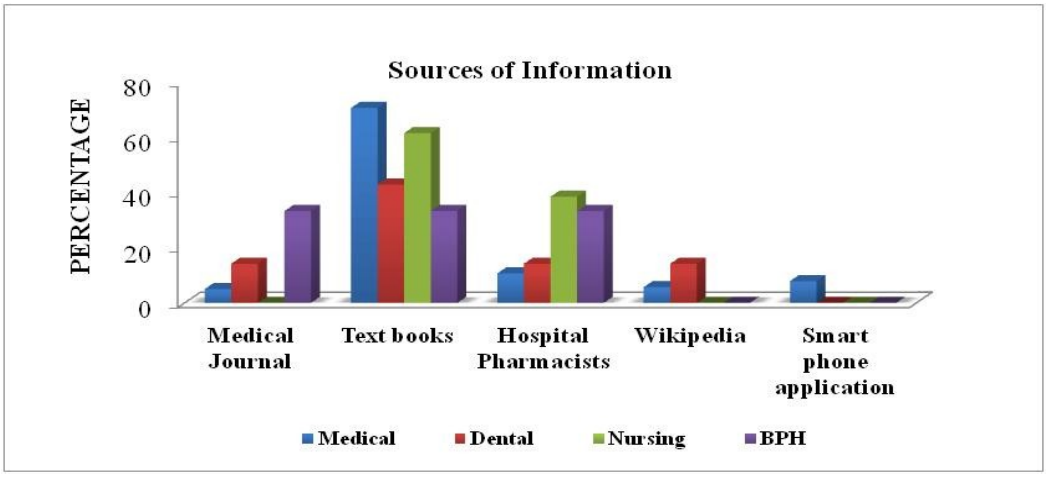

Figure 4: Sources of information of antibiotics among the respondents

3.6 KAP Study of students

The KAP study of the students was done collectively. Among 170 students 71.8% have good knowledge and 93.5% have a positive attitude regarding antibiotic use and resistance. However, 25.3% have poor practice in the use of antibiotics (Figure 5).

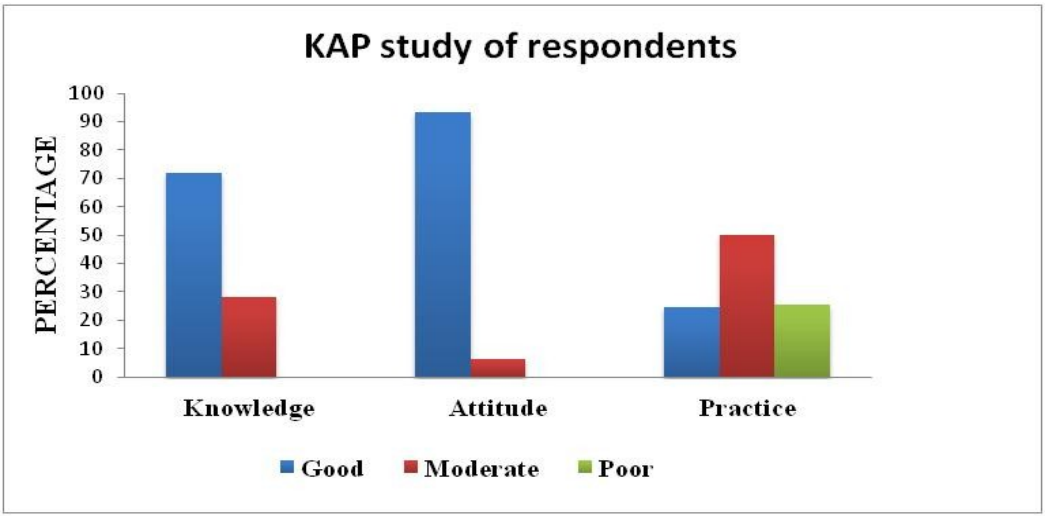

Figure 5: KAP level of respondents

4. Discussion

Antibiotics are the most commonly sold drugs in developing countries like Nepal. Overuse, misuse, self-medication and underuse of antibiotics enhance the irrational use of antibiotics. Irrational use of antibiotics in public, agriculture farming, aquaculture, low budget in the health care system, poor infection control and prevention measures lead to the antibiotic resistance. [12-17] Dissemination of antibiotics resistance bacteria will eventually decrease the therapeutic effectiveness of antibiotics and increase treatment failures leading to higher mortality and morbidity rate. [18] Therefore, many strategies have been proposed for the rational use of antibiotics such as a formulary restriction, approval requirement for prescription of antibiotics from an infectious disease specialist, education, training and feedback activities to healthcare professionals. [19]

In our study, we found that the students showed a higher level of knowledge and attitude associated with the antibiotic use and resistance. Despite good knowledge, 75.3% of students have problems in implementing their knowledge into practice. These findings indicate that students are educated regarding the antibiotics use and resistance. Therefore, now the priority area for improvement should focus on the implementation of knowledge into practice.

4.1 Knowledge regarding antibiotics use and resistance

The majority of students have good knowledge regarding antibiotics use and resistance. Most of them (96.8%) were aware of the fact that antibiotics are useful for bacterial infections. However, 28.2% of students still misbelieved that antibiotics could be used in viral infections. 60.6 % of students agreed that antibiotics could be bought from pharmacies without prescription and 41.8% of students believed that newer and costly antibiotics are more effective. A similar situation is seen in a survey conducted in university students of Kosovo and United Arab Emirates where despite good knowledge a high number of students used antibiotics without prescription. [20, 21] Antibiotics are the prescription only drugs and should not be sold without a prescription from the pharmacies.

4.2 Attitude regarding antibiotics use and resistance

The majority of students (94.7%) believed that the irrational use of antibiotics is common in developing countries like Nepal leading to a higher rate of antibiotics resistance problems. Our findings comply with similar studies conducted in medical students of Nigeria (98.4%) and India (84.06%) believed that indiscriminate uses of antibiotics cause resistance. [22-25]

The majority of them (97.6%) believed that strong knowledge of antibiotics was important in their medical career. This indicates that our future healthcare professionals have a positive attitude regarding the antibiotics use and resistance. They should be well prepared to use antibiotics more sparingly and appropriately because they are the future antibiotics prescribers. Similar findings were reported in a survey of medical students in three medical schools of USA.[9]

Furthermore, the medical school's curriculum of clinical pharmacology should include the appropriate clinical use of antibiotics and continue medical education on recent advancement and developments in the field of antibiotics therapy.[26]

4.3 Practice regarding antibiotics use and resistance

The majority of students (75.3%) need more awareness programs regarding the appropriate use of antibiotics. Most of them studied their reference textbooks regarding the antibiotics use and resistance so they had positive attitude. Despite this fact, their practice is poor (25.3%). Similar to our study, a survey done in pharmacy

students of Malaysia reported that students had sufficient knowledge in antibiotics use and resistance but had a poor attitude on antibiotic use. [27] The scenario of bad practice of antibiotics is even high in Nigeria. A similar study done in Nigeria reported that 44% students had bad practice on antibiotic uses. [20] About 39.4% students kept leftover antibiotics at home. Similar to our findings a study done from India revealed that 70% of students kept leftover antibiotics in home but 42% among them committed to taking leftover antibiotics. [28] This act of keeping leftover antibiotics encourages the self medication of antibiotics which is not safe and hence, needed to be discourage. Moreover, the Essential medicine list (EML) 2016 of Nepal consists of 48 antibacterials, 25 antivirals, 12 antiprotozoals, 4 antihelminths and 3 antifungals drugs. Therefore, it is recommended to follow the EML and national antibiotics treatment guidelines 2014 of Nepal while prescribing the antibiotics [29,30] from private and government sectors to increase rational use of antibiotics. Nevertheless, pharmacy profession should be strengthen in Nepal and only qualified pharmacists should dispense the exact quantity of drugs with proper counseling.

5. Conclusion

The majority of respondents have good knowledge and positive attitude regarding antibiotic use and resistance but the good practice is very low in the use of antibiotics. A gap between positive knowledge/attitude and practice among the students was obtained. The stewardship program like a seminar, workshop, training on the appropriate use of antibiotics and the consequences of antibiotics resistance should be conducted among students to fulfill this gap. Furthermore, future healthcare professionals should be trained towards the rational use of antibiotics.

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Conflict of interest

The authors report no conflicts of interest in this work.

Authors' contribution

The study and the initial draft of the writing manuscript are done by Bindu Malla; the supervision/ editing by Komal Prasad Malla and editing as well as data analysis by Niranjan Shrestha.

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