Self-medication with antibiotics among dental students of Kathmandu - prevalence and practice

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ABSTRACT

Self-medication with antibiotics (SMA) among dental students represents a serious threat to clinical practice in dentistry. A survey was planned to find the prevalence and practice of self-medication with antibiotics among dental students. A descriptive study was conducted among undergraduate dental students of Nepal Medical College Teaching Hospital (NMCTH), Kathmandu, Nepal from June 2015 to July 2015. The survey was conducted using a self-reported questionnaire and data on socio demographic variables, self-medication with antibiotics, reasons for self-medication and adverse drug reactions were collected. Data was analyzed using the Statistical Package of Social Sciences (SPSS) version 20.0. A total of 168 dental students were interviewed for the survey. More than two thirds (81.5%) of the students gave a positive history of antibiotic use in the past one year and among them 35.1% gave a positive history of self-medication. Compared to first year, the third year dental students had a 98 percent higher odds of being involved in self-medication behavior (OR = 0.02, 95% CI 0.006 - 0.009). Similarly, the odds of self-medicating oneself with antibiotics was 85 per cent higher among fourth year students compared to first year (OR= 0.1595% CI 0.04 - 0.490). The present study showed high prevalence of self-medication with antibiotics among the dental students of a teaching hospital. This highlights the need to strengthen the current undergraduate curriculum to make future dental professionals vigilant regarding antibiotic prescription and self-medication practices.

Keywords: Antibiotics, dental students, self-medication.

INTRODUCTION

The World Health Organization (WHO) defines self-medication as " the use of drugs to treat self-diagnosed disorders or symptoms, or the intermittent or continuous use of a prescribed drug for chronic or recurrent diseases or symptoms."[1] Studies have revealed the burden of self-medication with antibiotics to be higher in developing countries than in developed nations.[2] Self-medication practice can lead to Anti Microbial Resistance (AMR) which means a microorganism no longer responds to a drug to which it was originally sensitive. This means that standard treatments no longer work, infections are harder or impossible to control, the risk of the spread of infection to others is increased, illness and hospital stays are prolonged and with added economic and social costs. The WHO has reported that there are alarming levels of resistance to penicillin, fluoroquinolones and third generation cephalosporins among the member nations.[3-4]

It has been identified in several European countries that most antibiotics are consumed by outpatients and people without prescriptions, obtained directly from pharmacies (even in countries where it is illegal) or with leftovers from previous courses of treatment.[5-7] A study done in India also revealed that pharmacists and pharmacy attendants play an important role in fostering self-medication among the public.[8] Research of health seeking attitudes in different parts of the world reveals that self-medication (with any drug) is higher among the literate, the young and people in low and middle income countries. Research evidence also highlights that awareness among the students is high regarding harm caused by self-medication.[9-10] A study done in Portugal revealed that dispensing of unprescribed antibiotics was highest in cases of dental diseases and ailments, followed by urinary tract infections.[11]

In Nepal, the dental students will later have the right to prescribe anti-microbial drugs and also be part of medical education after completion of their study. Thus, self-medication with antibiotics (SMA) among them represents a serious threat to ethical practice in dentistry and has the potential to create public mistrust in this profession. Studies have shown that self-medication practice among doctors develops during their undergraduate training.[12]

During the literature review, we found that studies related to self-medication with antibiotics among dental students are few and no study has been conducted in the Nepalese context. Thus, we planned to conduct a survey to find the prevalence and practice of self-medication with antibiotics among the dental students of a teaching hospital in Kathmandu. This study finds relevance due to easy availability of non-prescription, anti-microbial drugs over the counter in Nepal.

MATERIALS AND METHODS

A descriptive study was conducted among first, second, third and fourth year undergraduate dental students of Nepal Medical College Teaching Hospital (NMCTH), Kathmandu, Nepal from June 2015 to July 2015. All the study participants were explained about the study objectives and undergraduate students who gave informed written consent were included in the study. The students were asked not to disclose their identity in order to maintain confidentiality. The survey was conducted immediately before their regular classes with the help of a self-reported questionnaire which was prepared from thorough literature review. Data on socio demographic variables, self-medication with antibiotics, reasons for self-medication and adverse drug reactions were collected. Members of the research team were present during the survey to provide assistance to the respondents. Data was analyzed using the Statistical Package of Social Sciences (SPSS) V. 20.0 (IBM Corp, Armonk, New York, USA). Statistical analysis was performed using descriptive statistics and Chi-squared test was used to find if there was any association of self-medication with gender and by years of study. Odds ratios were calculated and level of significance was set at 5 %.

RESULTS

A total of 168 dental students were interviewed for the survey. Sex wise distribution of dental students of CODSH-NMCTH revealed a high proportion (73.2%) of females compared to males. The average age of the students was about 21 years. (Table 1)

Table 1: Age, sex and year of study distribution of the study participants. (n = 168)

Variables	Categories	Count	Percent
Sex	Male	45	26.8%
	Female	123	73.2%
Year	First Year	40	23.8%
	Second Year	47	28.0%
	Third Year	34	20.2%
	Fourth Year	47	28.0%
Age (in years) : Maximum = 36, Minimum = 18; Mean ± sd = 20.75 ± 1.81			

As shown in Figure 1, more than four fifths (81.5%) of the students gave a positive history of antibiotic use in the past one year and among them 35.1% gave a positive history of self-medication with antibiotics

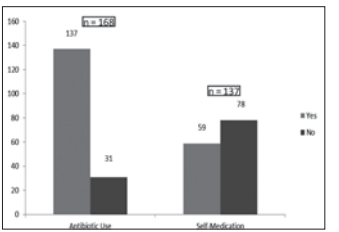

Fig. 1: Antibiotic use self-medicating behavior in the past year among dental students of a teaching hospital.

Table 2 shows that convenience (79.7%) was the most common reason for self-medication with antibiotics among dental students. The most frequent medical complaint resulting in self-medication was fever (39.0%) followed by sore throat, cough, diarrhoea and runny nose. Less than ten percent took antibiotics for vomiting, nasal congestion, skin wounds and urinary tract infection. More than ten percent also took antibiotics without prescription for toothache and swelling of oral cavity. The purchase of antibiotics was done on the basis of previous prescriptions by more than one third (42.4%) of the students. However, students also took antibiotics recommended by pharmacists (37.3%), on the basis of their own experience (25.4%) and based on the opinion of family and friends (18.7%).

The primary consideration for choosing antibiotics was indications for use (83.1%) followed by type, brand and adverse drug reactions. More than ninety percent of the students purchased antibiotics for self-medication from community pharmacies. Most of the students (39.0%) found out about the dose of antibiotics from the pharmacist while less than one third (27.1%) of the students consulted doctors regarding the dose. None of the students guessed the antibiotic dose and took them arbitrarily. Almost one quarter of the students agreed that sometimes they did change antibiotics deliberately without consulting anyone. The reasons for this change was no effect of former antibiotics (50.0%) , adverse drug reactions (35.7%) and if the antibiotics got over (14.3%).

Table 2: Practice Of Self-medication of Antibiotics: reasons, complaints and considerations.

(n = 59, multiple responses)

Knowledge and Practice variables		Count	Percent
Reasons for self-medication with antibiotics.	Convenience	57	96.6%
	I have knowledge regarding it	02	03.4%
	Cost Saving	01	01.7%
	Lack of trust in prescribing doctor	0	0
Medical complaints for use of antibiotics.	Fever	23	38.9%
	Sore throat	21	35.6%
	Cough	16	27.1%
	Diarrhoea	14	23.7%
	Runny Nose	14	23.7%
	Aches and Pains	05	08.5%
	Vomiting	05	08.5%
	Nasal Congestion	03	05.1%
	Skin wounds	03	05.1%
	Urinary tract infection	01	01.7%
Oro- dental complaint for use of antibiotics.	Toothache	08	13.6%
	Swelling in oral cavity	06	10.2%
	Gum problems	03	05.1%
	None	42	71.8%
Reason for selection of antibiotics.	Previous doctor prescription	25	42.4%
	Recommendation by pharmacists	22	37.3%
	My own experience	15	25.4%
	Opinion of family members	06	10.2%
	Opinion of friends	05	8.5%
	Recommendation by net citizens	01	1.7%
Considerations when selecting antibiotics (multiple response)	Indications for use	49	83.1%
	Type of antibiotics	11	18.6%
	Brand of antibiotics	06	10.2%
	Adverse reactions	02	3.4%
	Price of antibiotics	0	0
Place for getting antibiotics	Community Pharmacies	54	91.5%
	Health professionals who are family or friends	10	16.94%
	Online shopping/E-pharmacies	01	01.70%
	Leftover from previous prescription	01	01.70%

A large proportion (35.6%) of students self-medicated themselves with more than one type of antibiotic and more than one tenth of the students were using the same antibiotics with different names at the same time. A significant proportion (37.3%) of students stopped the antibiotic use after disappearance of the symptoms, five percent stopped before finishing the course in a few days regardless of the outcome while none of them waited for the course of antibiotics to finish. Amoxicillin (47.4%) and Metronidazole (45.8%) were the two most commonly used antibiotics by the students. The other antibiotics used by the students were Azithromycin (20.3%), Ciprofloxacin (06.7%), Amoxicillin and Clavulanic combination (03.4%), Cephalexin (01.7%), Ofloxacillin (01.7%) and Diloxanide furate (01.7%). (Table 3)

Table 3: Dosage, Stoppage and types of antibiotics used among dental students. (n = 59)

Dosage, Stoppage and Types of antibiotics		Count	Percent
Knowledge regarding dose of antibiotics (multiple response)	Consultation from a pharmacist	23	39.0%
	Previous experience	16	27.1%
	Consultation from a doctor	16	27.1%
	Checking package insert of antibiotics	08	13.6%
	Newspapers/magazines/Books/TV	03	05.1%
	Internet	03	05.1%
	Consultation from family members/ friends	02	03.4%
	Guessing the dosage	0	0
Change of antibiotics deliberately during course of treatment	Never	45	76.3%
	Yes, sometimes	14	23.7%
	Yes, always	0	0
Cause of changing antibiotics (n = 14)	Former antibiotics did not work	07	50.0%
	Reduce adverse reactions	05	35.7%
	Former antibiotics ran out	02	14.3%
	Latter one was cheaper	0	0%
Maximum number of antibiotics used in one illness	One	38	64.4%
	Two	15	25.4%
	Three	04	06.8%
	More than three	02	03.4%
Knowledge regarding use of same antibiotics with different names at the same time	Yes	09	15.3%
	No	50	84.7%
When did you normally stop taking antibiotics (multiple responses)	After symptoms disappeared	22	37.3%
	At the completion of the course	21	35.6%
	A few days after the recovery	11	18.6%
	After consulting a doctor/pharmacist	07	11.9%
	After a few days regardless of outcome	03	05.1%
	After antibiotics ran out	0	0

Adverse reactions to antibiotics were experienced by more than one fifth (20.4%) of the students and gastrointestinal symptoms like diarrhoea and gastritis were most commonly experienced by them. All the students stopped the antibiotics on experience of adverse reactions and two thirds of them consulted a doctor for it.

More than two thirds (64.4%) of students believed that self-medication was an acceptable practice and about ten per cent of students felt that it was a good practice. More than one third (35.6%) of the students also expressed confidence in successfully treating common infectious diseases with antibiotics by themselves. (Table 4)

Table 4: Adverse drug reactions and perceptions of self-medication among dental students. (n = 59)

Adverse drug reactions and perception of self-medication		Count	Percent
Experience of adverse drug reactions.	Yes	12	20.4%
	a) Diarrhoea	04	16.6%
	b) Gastritis/stomachache	03	16.6%
	c) Dizziness/Drowsiness	03	25.0%
	d) Metallic taste	01	08.3%
	e) Vomiting	01	08.3%
	No	47	79.6%
Action taken for adverse drug effects (multiple responses).	Stopped the antibiotics	12	100%
	Consulted a doctor	09	75.0%
	Switched to another antibiotics	02	16.6%
	Consulted pharmacy staff	02	16.6%
	Nothing	02	16.6%
	Consulted family members/friends	0	0
Attitude regarding self- medication with antibiotics.	Good practice	06	10.2%
	Acceptable practice	38	64.4%
	Not acceptable practice	15	25.4%

The percentage distribution revealed that self-medication was more common among female students compared to males. However, the association between self-medication and gender was not statistically significant. (Table 5)

There was a strong association between year of study and self-medicating behavior with antibiotics. Compared to first year, the third year dental students had higher odds to be involved in self-medicating behavior (OR = 0.02, 95% CI 0.006 - 0.009). Similarly, the odds of self-medicating oneself with antibiotics was higher among fourth year students compared to first year (OR 0.15 95% CI 0.04 - 0.490). (Table 6)

Table 5: Association between gender of students and self-medicating behavior with antibiotics.

Variable	Male	Female	Odds ratio	95%Confidence Interval		p value
				Lower	Upper	
Positive history of Self-medication.	18 (30.5%)	41(69.5%)	0.750	0.371	1.517	0.423

Table 6: Association between year of study and self medication behavior with antibiotics.

Year of study	Self Medication\ (+)	Self medication (-)	Odds ratio	95%ConfidenceInterval		p value
				Lower	Upper	
First Year	04 (10.0%)	36 (90.0%)	------	-------	-------	-------
Second Year	07 (14.9%)	40 (85.1%)	0.63	0.17	2.34	0.71
Third Year	28 (82.4%)	06 (17.6%)	0.02	0.006	0.009	<0.001
Fourth Year	20 (42.6%)	27 (57.4%)	0.15	0.04	0.490	0.001

DISCUSSION

More than one third (35.1%) of the dental students gave a positive history of self-medication with antibiotics over the past one year. Various studies conducted among different student populations reveal dissimilar results. A study done in eastern China revealed that 47.9% of the university students including medical students had a lifetime history of SMA.[13] Self-medication was reported by 79.9% medical students in a study done in Serbia.[14] Similarly, a large proportion (63.91 %) of undergraduate medical students reported SMA in a study done in India.[15] Self-medication with antibiotics is practiced among non-medical students as well, highlighted by a study done in Pakistan in which 47.6% non-medical students reported having taken antibiotics by themselves.[16] The reasons for self-medication in the current study were convenience, knowledge regarding its use and cost effectiveness. Mild illness, previous experience of treating similar illness and non-availability of health personnel were the reasons given by the fourth year medical students of Pokhara, Nepal.[17] In a study from India, lack of time and minor ailments were the reasons for self- medication.[18] A study from Bangladesh reported previous experience, suggestion from others and presence of knowledge regarding antibiotics as the reasons for self medication with antibiotics.[19] The most frequent medical complaint for SMA was fever (39.0%) followed by sore throat, cough, diarrhea and runny nose. The results from a study conducted among medical students in South India were similar.[18] In the current study, more than ten percent also took antibiotics without prescription for tooth ache and swelling of oral cavity. Research evidence from Romania also suggests that SMA was done mostly for respiratory and oral infections among the university students.[20] While in a study done in Portugal, pharmacists agreed that dispensing of unprescribed antibiotics was highest in the case of dental diseases followed by urinary tract infections.[11] The purchase of antibiotics was done on the basis of previous doctor prescription by more than one third (42.4%) of the students and more than ninety percent of the students of the present study purchased antibiotics for self-medication from community pharmacies. About a quarter of the students changed antibiotics deliberately without consulting anyone. Metronidazole and Amoxicillin were the two most commonly used antibiotics in the current study. Studies done in Northern Nigeria and Sudan also yielded similar results regarding commonly used antibiotics.[21-22] Use of penicillin group of antibiotic can be due to the fact that they are easily available, cheap and have a relatively broad spectrum of coverage. Adverse reactions to antibiotics were experienced by more than one fifth (20.4%) of the dental students in the present study, which was very high compared to an Indian study where only 5.4% of students experienced adverse effects.[18] In the current survey, there was no association of self-medication with gender. Similar result was shown by a study from Slovenia, while among medical students of Serbia, female respondents self-medicated about 1.4 times more frequently compared to male respondents.[14,23] Comparison among students from different years showed that the third and fourth year dental students were more likely to be involved in self-medicating behavior compared to first year students. Other studies also showed that senior students self-medicated more than junior students.[9,24] This might be due to the fact that senior students believe that they have enough knowledge to self-diagnose and self-medicate themselves. More than two thirds (64.4%) of students believed that self-medication is an acceptable practice while more than one thirds (35.6%) also expressed confidence in successfully treating common infectious diseases with antibiotics by themselves. This could be due to increased clinical exposure and confidence built by treating dental patients as they complete more years of dental school.

The current study had a few limitations. The study results are based on self-reported data about self-medication over the last one year, hence, we cannot rule out recall bias. The external validity of the study is questionable due to involvement of students from a single dental college.

Self-medication with antibiotics among dental students is a very pertinent issue. The present study showed a high prevalence of self-medication with antibiotics among the dental students of a teaching hospital which was higher among third and fourth year dental students compared to first year students. The study also showed that most of the students believe that SMA is an acceptable practice and they had confidence in treating minor ailments. This highlights the need to strengthen the current undergraduate curriculum to make future health professionals vigilant regarding antibiotic prescription and self-medication practices.

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