Research article

Assessment of knowledge, perception, and awareness about self-medication practices among university students in Nepal

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ABSTRACT

The objective of the present study was to assess the perceptions, knowledge, and awareness of self-medication practice among the university students in Nepal. This descriptive cross-sectional, questionnaire-based study was conducted on randomly selected 620 students from three different universities in Nepal. The study results revealed that 95.4% of students had reported self-medication, among which analgesics and antipyretic medications were mostly used (66 %); followed by anti-ulcerants (35.3%), antibiotics (33.9%), anti-allergic preparations (20%), and other categories (10.3%) of drugs. Study results also showed that, the major cause of self-medication was minor illness, and the prescriptions which were previously used to treat the similar disease conditions were the main source of motivation to do so. A significant portion of the respondents believed that self-medication might be acceptable to treat minor illness. Furthermore, students demonstrated variable responses regarding the doses, safety, toxicities, and health hazards towards self-medication without having appropriate knowledge of drugs. The findings of this study revealed the necessity of building awareness and strict implementation of the jurisdiction to minimize the practice of self-medication.

1. Introduction

Self-medication has traditionally been characterized as "the taking of drugs, herbs or some remedies on personal initiative, or on the advice of another person, without consulting a physician for the ailment of self-diagnosed physical illness" [1]. According to the World Health Organization (WHO), self-medication plays an integral part in daily life and has an important role in the healthcare system around the world especially in developing countries with the continued improvement of people's education and socio-economic status [2]. However, the insufficient medical facilities, lack of regulations by the authority, and high population density led to buy prescription drugs without any prescription is far more common in the South East Asia region [2, 3]. The possible reasons of self-medication may be the lack of time to consult with a medical personnel, incompetence to schedule a quick appointment, comparatively remoteness to reach the nearby hospitals and clinics, limited slots to get quick treatment from a government hospital in busy hours, and excessive consulting fees to get a service from a physician [4]. Beside these, other reasons includes; families, friends, neighbors, reuse of outdated prescription or prescription used before in a similar type of

cases, lucrative advertisements in newspapers and online sources, magazines and periodicals [5]. However, this self-medication practice may lead to serious health problems such as; incorrect diagnosis, habituation, allergic reactions, the resistance of antimicrobials, prolonged sufferings and so on [6]. According to the WHO, the substances that are extensively used in self-medication are over the counter (OTC) drugs and dietary supplements [7]. Besides these, antibiotics, anti-malarials, anti-histamines, analgesics/antipyretics, weight gain and weight reducing drugs, multivitamins, and skin bleaching steroids have also been used for self-administration [8]. Moreover, some psychotropic and addictive agents are also used for the recreational purposes by young adults to relieve the symptoms of anxiety and mental stress [9]. Therefore; in case of emergency conditions or where self-administration of medications are crucial, it's necessary to ensure a safe and effective treatment approach and to secure the rational use of medicines by proper knowledge, attitude, perceptions.

In Nepal, ease of availability to health care services is challenging and/or expensive, thus self-medication may offer an easier and cost-effective opportunity to the consumers [10]. Furthermore, in Nepal like many other countries in the South East Asia region, prescription only

medications are often dispensed by non-medical staff at medical stores without a prescription [11]. In spite of having some preferable advantages of self-medication, there are some critical issues that must be explored before promoting the potential benefits of self-medication. Numerous studies have been conducted in Nepal to understand the self-medication practices of general people [10, 12, 13, 14]. However, very limited data are available on health care facilities, comprising the practice of self-medication among freshman students in Nepal.

Considering all the information's and reports, this research aimed to assess the knowledge, attitude, and perception of self-medication among students of different public and private universities in Nepal.

2. Methods

2.1. Study design

A descriptive cross-sectional study was carried out to investigate the knowledge, perception, attitudes, and practice of self-medication among the university students in Nepal. Both qualitative and quantitative data were used in this study. This study included only those respondents who were willing to participate voluntarily. The study also designed to elicit students' perceptions and knowledge of the possible risks and benefits associated with the medications that can be used in self-medication. This study was conducted following the International Conference of Harmonization (ICH) guideline for Good Clinical Practice (GCP) [15].

2.2. Study area

To conduct the study, Tribhuwan University, Kathmandu University, and Purbanchal University students in Nepal were selected of which two are private and one public is university. The universities were chosen based on the availability and accessibility of the sampling subjects.

2.3. Study tools

A semi-structured questionnaire (supplementary file) written in English consisting of three parts were documented namely, optional part, compulsory part, and close-ended questions; respectively. The first and second part contain a set of questions for the collection of sociodemographic data and to assess the source of getting information. The third part of the questionnaire form attempts to investigate the perceptions and attitudes of the respondents on the use of some common medicine, the reasons and sources of information for self-medication; and other related questions. The questionnaire was validated using Cronbach's alpha and a value obtained 0.89 indicating a reliable tool to assess and conduct this study [16].

2.4. Study participants

A total of 620 students participated in this study on a volunteering basis. The volunteers consisted of both male and female students aged between 17-29 years. They were enrolled in different programs. The participants were well informed about the type and purpose of this study. A written consent was taken from the participants before participating in the study and they were notified about the confidentiality of taking part in this study.

2.5. Participants' eligibility criteria

This study included only those respondents who were easily accessible for data collection and willing to participate. The sampled subjects were not forced to participate.

2.6. Sampling and sample size

A stratified random sampling method was used to select respondents from various levels (both undergraduate and graduate) among students. The sample size was calculated using the single proportion formula without correction for continuity; $n = Z^2 \times P(1 - P)/d^2$ [17]. The total sample size (n) was calculated using the following assumptions; proportion (P) was taken as 0.5 (percentage picking a choice for required sample size, 0.5 is commonly used as a random value), Z statistic for 95% level of confidence (Z = 1.96), degree of precision (in the proportion of one, d = 0.05). Based on the above equation, the sample size was yielded 612. However, to confirm more representative data, we chosen a larger sample size of 620 in this study.

2.7. Data collection

The pretested, semi-structured questionnaire (supplementary file) was used and sampled over two months period. After receiving consent from participants, the principal author supplied the questionnaire and explained the clarity and purpose of this study. Any doubts and queries by the data collectors were communicated through telephone or face to face by the investigator. The questionnaire was made in such a way that can be easily understandable to the participants.

2.8. Exclusion criteria

All administrative and non-administrative staffs and post graduate students were excluded from this study. Students who did not give voluntary consent were also excluded from the study.

2.9. Ethical considerations

This study is anonymous and didn't involve any risk to the participants, therefore this study didn't require a review board approval. However, a written permission was obtained from the respective head of the departments to collect the data from the students. Moreover, informed consent was obtained from all individual participants who participated in the survey.

2.10. Statistical analysis

The graphs were plotted using Graphpad, Prism 6.0 (GraphPad Software, LaJolla, CA). All the data were analyzed using SPSS software (23.0 version) and statistical analysis was done by applying descriptive statistics. Some of the questions had multiple options to choose from; therefore, the total of percentage is not always 100%. The relationship among the different demographic characteristics and distribution patterns had been analyzed using Chi-square test, where it was necessary. A p value of <0.05 is considered significant.

3. Results

A total of 620 students participated and assessed their self-medication practice; 64.5% were male and 35.5% were female. The mean age of the participants was 23 ± 3.9 years. The prevalence of self-medication among participants was 95.4% (n = 620). Table 1 shows the detailed demographic information about the participants. The practice of self-medication between male and female, and between private and public university students was almost identical with no statistically significant differences ($p > 0.05$).

Among the participants, the majority of the students took analgesic/antipyretics (66.1%); followed by anti-ulcerants (35.3%), antibiotics (33.9%), and anti-allergic medications (20%). The detailed data were presented in Figure 1. The majority of the participants are self-medicated due to the long waiting time in the government hospitals (46.7%) (Figure 2). More than 50% of participants (67.1%) used formerly advised

Table 1. Demographic characteristics of respondents.

Group	Sub-group	Frequency (N)	Percentage (%)
Gender	Male	400	64.52
	Female	220	35.48
Age	17–21	215	34.68
	21–25	233	37.58
	25–29	172	27.74
Types of university	Public	384	61.94
	Private	236	38.06

Figure 1. Types of Self-medicated drugs commonly used by the university students.

Figure 2. Reasons of self-mediation by the students.

Figure 3. Factors influencing self-medication practice.

prescriptions as a source of information for a similar type of illness. The detailed source of information behind the self-medication is shown in Figure 3. Only 14.6% of students stated that they knew the detailed information (i.e., dose, side effects and frequency of use); whereas, 44.9% of participants didn't have any prior idea about the drugs consumed. Figure 4 shows detailed information about commonly used medications towards the students regarding the knowledge and perception about using these medicines. Table 2 is concerned with the knowledge relating to students' perceptions about the safety and adverse events between public and private universities, and in between male and female students who had prescribed medication by themselves for treating commonly occurred diseases.

4. Discussion

Irrational use of medicines has been worst in the least developed countries, especially the trend is increasing among youths and common in university students; and is of major concern for the WHO in promoting the rational use of medicines [14]. Therefore, student's perception on self-medication practices might be studied as a major factor to evaluate the behavior on future prescription pattern of medicines.

This study reveals that the incidence of self-medication among the students was 95.4% and which is comparatively high compared to the other population groups [18]. The possible reasons of high prevalence of self-medication among university students may be overconfidence because of high level of education, and some generalized knowledge of commonly used medications. Beside these, medicine pamphlets and books, news and advertisement on social media of commonly used medications also provoke them not to consult a physician, rather to buy medicines without any prescriptions. In addition, staying in university campus dormitories may also inspire them from their friends to use medications buy themselves. Moreover, the major cause of self-medication by participants mainly due to quick and prompt symptomatic relief from illness and also, there was no statistical difference among the gender and type of university from our study. Hence, some studies suggested that female use more drugs by themselves especially during menstrual cycles and gynecological problems [19]. Our findings in this study in Nepal are comparable with different studies conducted among university students worldwide [18]. Therefore, the major dominant cause behind the greater susceptibility of self-medication might be the uncontrolled easy accessibility of all categories of medicine without prescription.

Our subgroup analysis reveals that, the most frequent health conditions in which the student self-medicated were cold, headache, sore-throat, gastrointestinal problems and vitamin supplements. 50% of the student still believe that self-medicated drugs can solve their physical
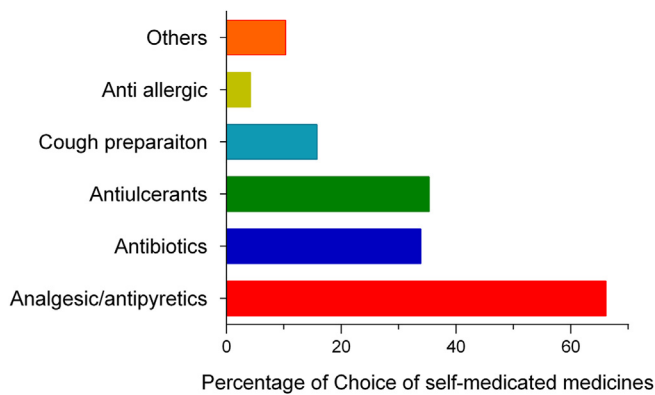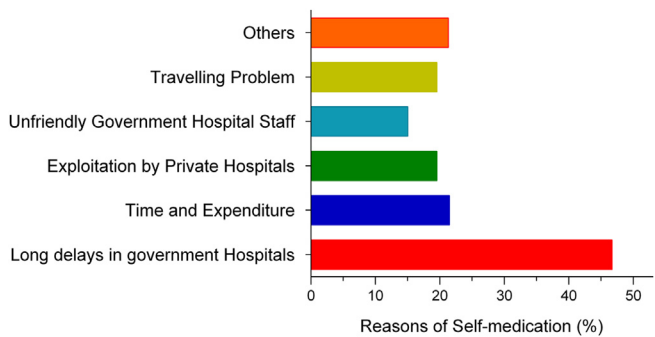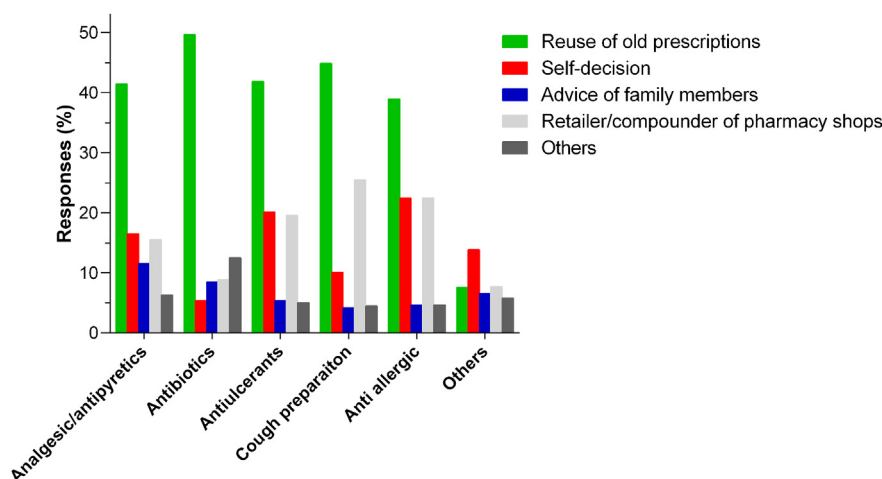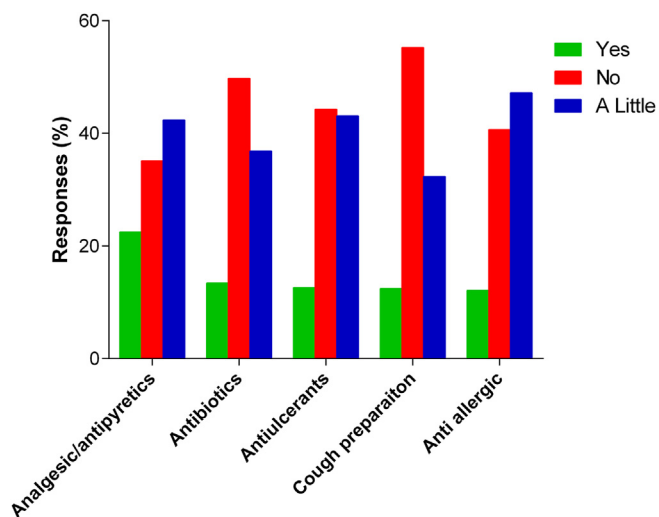
Figure 4. Knowledge about the adverse effects of self-medicated drugs.

illness. As mentioned earlier, among commonly used self-medicated drugs; analgesics and antipyretics were the mostly used by almost all respondents to treat a predisposing factor; fever and headaches. A similar type of findings of using analgesics and antipyretics were found in the survey conducted in India, Pakistan, Bangladesh, Ethiopia, and Iran [20, 21, 22, 23, 24]. As the food habit of the South East Asian population is different, as they use more spices in their foods; hyperacidity is very common in this demographic area. Another cause of hyperacidity among university students is the irregularity in their eating habits (sometimes they missed breakfast, and didn't take meal at the right time and so on). In our study, followed by analgesics and antipyretics; anti-ulcerants are the second most self-medicated drugs for quick symptomatic relief. Meanwhile, the use of antibiotics is of major concern without prescription in the essential treatments of common infections. According to the WHO, in the developing countries the major cause of antibiotic resistance is the self-medication and incompletion of the dose of antibiotics that might lead to various detrimental effects including the sensitivity of antibiotics to microbial flora, development of multidrug resistance to pathogens, and other related symptoms [25]. Therefore, the self-medication of antibiotics should be stopped immediately and must be strictly controlled and monitored by the regulatory authority [26].

In comparison with the university medical students with university nonmedical students, different research suggested that there were significant differences between these two groups as the medical students are aware and sometimes try different drugs which they may use in their future practices [21, 27]. However, the data from our study on self-medication practice among non-medical students revealed that there was no significant differences in self-medication pattern among medical students also [18], and this non-significant difference might be due to the lower per capita income in Nepal.

According to a fact sheet by the WHO (May, 2010) about the rational use of medicines, more than 50% of all medicines are not correctly prescribed, dispensed, and sold; and more than 50% of patients take their drugs incorrectly [28] in the developing countries. Virtually, all the drugs available there without prescriptions and self-medication are highly common around that areas, especially in the South East Asia region [5] whose per capita income is comparatively lower. At the same time, lower socioeconomic status could lead people to self-medicate, because they cannot afford to go to a doctor. Today, most people have easier access to drugs than before, which can be dangerous for health, especially if poor-quality and inadequate medications are used [29].

In Nepal, it is to be noted that 36.47% perceived self-medication as unacceptable practice while 47.64% said it was an acceptable practice [30]. Nepal became a WHO program member in 2006. After the promulgation of a new constitution in Nepal in 2015, the local government became also responsible for establishing a better health care system to ensure safe and effective treatment options [31]. Not only in Nepal but several studies around the world also recommended that self-medication is almost a common practice; and the higher propensity of self-medication might be due to the unregulated market and availability of medicines nearby without prescription [20, 21, 22, 23]. According to reports; headache, common cold, fever, hyperacidity, and vomiting are the common illness symptoms to university students and self-medication mentioned without the consultation of the physician to treat the above symptoms [32, 33].

In this study, it was exposed that majority of the participants lack the knowledge or a little knowledge about the safety profile of the drugs that were self-medicated which finally might modulate severe adverse events in long term use like hepatotoxicity, nephrotoxicity, hypersensitivity and finally more importantly antimicrobial resistance [1]. Thus, the response rate of the participants were reasonable and socio-demographic characteristics were found not to affect the practice of self-medication significantly. The present study notices that to protect the growing tendency of self-medication, strong regulatory policies should be applied keeping out the supply of medicines without a valid prescription.

5. Limitations of this study

The study had some restraints as we confronted some difficulties throughout the survey. Firstly, we covered only three universities owing to the lack of time and fund for the research works. More surveys need to be performed to get a more general scenario of self-medication

Table 2. Student's perception about the safety and adverse events of self-medicated medicines.

| | | Demographic behavior | | | | | | | |
| | | Types of University | | | | Gender | | | |
		Public (n)	Private (n)	χ^2	p value	Male (n)	Female (n)	χ^2	p value
Analgesics/Antipyretics	Adverse effects	382	236	14.6	<0.001	400	218	3.6	<0.05
	Overuse	380	232	11.6	<0.05	395	217	7.4	<0.05
	Hepatotoxicity/nephrotoxicity	377	233	11.3	<0.05	393	215	2.2	<0.05
Antibiotics	Resistance	365	224	4.2	<0.05	383	206	2.8	<0.05
Antiulcerants	Adverse effects	380	230	14.3	<0.05	395	215	1.5	<0.05
Anti-allergic	Adverse effects	372	231	15.7	<0.05	389	214	3.3	<0.05
Cough preparations	Adverse effects	377	235	17.6	<0.05	396	216	1.4	<0.05
	Dependency	376	235	3.2	<0.05	394	217	0.46	<0.05
Drugs with beverages/fruit juices		382	235	11.5	<0.05	400	217	0.82	<0.05

Data is represented as number. n indicates the number of respondents. χ^2, Chi-square test; p values from Chi-square or Fisher Exact tests for comparisons between types of university; and in between male and female groups.

practice in Nepal. Secondly, many participants were engaged with their examinations and lab works; therefore collecting information from them were comparatively difficult. Thirdly, students of 1st and 2 nd year were less aware with common medical terminologies therefore, sometimes, complications were made understanding the questionnaire. Finally, social allure predisposition may have affected the responses meanwhile the interviews were done individual. Additionally, the survey did not differentiate between the uses of OTC drugs in self-medication versus the prescription drugs like antibiotics and may have come about in perplexity among respondents. The study was not revalidated after translation that might create some alterations in the final results.

6. Recommendations

Although appropriate self-medication is one of the ways of self-care adopted by the WHO; hence, its irrational use is very likely to bring serious health problems as reported by this study. This research findings suggest that regulations and monitoring on drug dispensing should be strengthened by the legislative authorities. Therefore, based on the findings of this current study, we recommend the following initiatives:

i. Develop a healthcare system to incorporate about the dispensing and sale of medicines more efficiently.
ii. Provide health information on self-medication to the patients or consumers with the consequences of possible positive and negative impacts.
iii. Increase social awareness among community members on the effect of self-medication and its public health impact and educate them who are looking for self-medication.
iv. Enforce laws and regulations in dispensing the prescription medications by registered pharmacists.

7. Conclusion

The present study provides preliminary information regarding self-medication practices among the university students in Nepal. This study has revealed that self-practice of medication is very typical among university students in Nepal due to the easy availability and lack of control of medicine dispensing from the pharmacy stores. As the study was confined to only university students, further extended research might be necessary to assess the predominance of self-medication among the overall population. Furthermore, strong legislative steps and awareness program should be taken to monitor, control, and aware people about adverse events of drugs that are commonly used in self-medication.

Declarations

Author contribution statement

K. Shah: Conceived and designed the experiments; Performed the experiments.

S. Haider: Conceived and designed the experiments; Analyzed and interpreted the data; Contributed reagents, materials, analysis tools or data; Wrote the paper.

S. Halder: Analyzed and interpreted the data; Wrote the paper.

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Data availability statement

Data will be made available on request.

Declaration of interests statement

The authors declare no conflict of interest.

Additional information

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