

Assessment of knowledge, attitude, and practice of self-medication among college students in Bengaluru (East)

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ABSTRACT

Background: Self-medication is the process of obtaining and consuming medicines without medical supervision. The practice of self-medication among students has seen a drastic increase in recent years making them more prone to adverse effects and other drug-related problems associated with self-medication. The objective of this study is to assess the baseline knowledge, attitude, and practice (KAP) of self-medication among students and to study the effect of educational intervention on the KAP of students. **Materials and Methods:** A prospective, educational interventional study was conducted among 500 students across Bengaluru. The baseline KAP of students was collected using a validated questionnaire. The students were then educated about the harmful effects associated with self-medication. The effect of the intervention on the KAP was assessed. Statistical analysis was performed using SPSS 20.0 and associations were tested using Friedman test. **Results:** Out of 500 students, 406 (81.2%) reported to have practiced self-medication in the past 6 months. The knowledge of students significantly improved following intervention as given by the median of scores for pre-intervention 1 (-5, 6) and post-intervention is 4 (4, 6) at ($P = 0.001$, confidence interval [CI] = 99%). Students also showed better attitude ($P = 0.001$, CI = 99%) and the practice also reduced subsequently ($P = 0.005$, CI = 99%) following the intervention. **Conclusion:** Students lacked proper knowledge and attitude regarding the risks associated with self-medication, leading to an increase in unregulated practice of self-medication. Following the intervention, there was a significant increase in the knowledge and attitude which led to a parallel decrease in the practice of self-medication. This shows that knowledge and attitude are directly interrelated to practice.

KEY WORDS: Attitude, Knowledge, Non-medical students, Practice, Self-medication

INTRODUCTION

Self-medication comprises obtaining and consuming medicines without medical supervision, such as getting medicines without a prescription, reusing old prescriptions, taking medication advice from relatives and friends, and consuming residual medicines.^[1,2] Only serious symptoms are brought to the attention of physicians.^[3] In majority of cases, self-medication is used to treat acute pain and other such symptoms which are not serious and are instant medical treatment are not necessary. Recurrent or chronic conditions are treated using leftover medicines or by reusing old prescriptions.^[4,5] According to the WHO, responsible self-medication, in developing countries, is economical, convenient and decreases the health-care cost and waiting time associated with consulting a doctor.^[6-8] However, self-medication requires knowledge of the

medicines such as how to take the medicines, effects, and possible side effects, interactions, precautions, duration of use, and when to see seek professional advice, this information is usually not uniform and it is not readily available to the patients. In India, this is further limited due to education and language barriers.^[9] Although some drugs can be taken without a prescription, their improper use may lead to side effects causing serious implications, especially in children, elderly population, and also in patients on therapy for other conditions.^[10,11] Self-medication practices may have potential risks such also include incorrect diagnosis, delay in seeking medical treatment when needed, severe adverse reactions, drug interactions, wrong manner of administration, wrong dosage and choice of treatment, and masking of serious illness. Drug abuse and dependence, allergic reactions, and antibiotic resistance have also been reported.^[7] Trade names of drugs are common means of identification, which may lead to take the same medicine with different trade names.^[12-17] The practice of using herbal and Ayurvedic medications along with allopathic

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medications has also increased for the treatment of both acute and chronic illnesses, leading to potential drug interactions. Over the years, recent studies show that youngsters are more vulnerable and prone to practice self-medication due to their low perception of risk associated with the use of drugs, advice from peers, friends, and internet and increase in pharmaceutical advertising.^[18] Moreover, students have a busy schedule, lack of time, and patience for consultation and they have immediate access to over the counter drugs. Non-medical students who have no previous medical background are more prone to adverse effects and other drug-related problems associated with self-medication.^[19] Providing an intervention will help the students to be more vigilant toward adverse effects. It is necessary to educate students due to greater chances for knowledge transfer from students to their family, neighbors, friends, and ultimately the society. At present, there are very limited data available on the self-medication practices among non-medical students. The current study is undertaken to access the baseline knowledge, attitude, and practice (KAP) regarding self-medication among college students in Bengaluru and to access the effect of educational intervention on their KAP. The various factors influencing self-medication are also studied.

MATERIALS AND METHODS

Study Site Approval

A prospective, educational interventional study was conducted in four non-medical educational institutions in Bengaluru (East) from December 2018 to May 2019. Permission to conduct the study was taken from the respective institutes. The study was conducted on gaining approval from the Institutional Ethical Committee. Students pursuing different non-medical degrees were recruited from St. Philomena's First Grade College, Dharmasagara First Grade College, Sardar Vallabhbhai Patel First Grade College, and Krupanidhi Degree College.

Sample Size

A pilot study was conducted among 50 students to validate the questionnaire. The number of students to be included in the study was calculated using the formula for sample size estimation interventional study with quantitative outcome variables (KAP).^[20] The standard deviation was 56.4, standard normal variate for 95% level of significance is 1.96, standard normal variate for 80% power of the study is 0.84, and effect size is 10, so 500 students were recruited for the study after providing informed consent.

Inclusion Criteria

Students of either gender who have given informed consent were included in the study.

Exclusion Criteria

Medical and paramedical students are excluded from the study.

Study Procedure

A validated, self-administered questionnaire was used to collect the basic demographic details such as age, gender, course, and year of the study. The questionnaire consisted of four sections (a) Knowledge, (b) attitude, (c) practice, and (d) patterns of self-medication. Knowledge and attitude consisted of six questions each, while practice contained five questions and patterns of self-medication contained six questions. The responses for knowledge and attitude questions were framed as agree, neutral, and disagree and scoring was based on Likert's 3-point scale. They were allotted with a score of 1, 0, and -1, respectively, depending on the section. After filling the questionnaire, the investigator assessed the answers provided by participants and educated regarding rational self-medication, drug-related problems associated with self-medication, and safe use of medicine using a PowerPoint presentation. The investigator conducted to follow up for students after 30 days from the date of enrolment using the same questionnaire to study the effect of the education intervention on KAP of students.

Statistical Analysis

Statistical analyses were performed using International Business Machines – Statistical Package for the Social Sciences (IBM - SPSS) 20.0. Descriptive summary statistics are presented either as mean \pm SD or as median (minimum and maximum). The choice of descriptive and inferential statistical method was based on distribution normality as determined through the normal probability plot. Statistical significance of difference in response proportions was determined using Friedman test. This test was preferred as these were related samples and have more than two responses.

RESULTS

The mean age of the subjects was 19.34 ± 1.25 years and the age group assessed was between 17 and 24 years. Three hundred and five (61.0%) students were female and 195 (39.0%) were male. Majority of the subjects 48.0% were from Krupanidhi Degree College. About 244 (48.8%) students were from government institutions and 256 (51.2%) students were from private institutions. Bachelor of Commerce was pursued by 319 (63.8%) students. Two hundred and fifty-six (51.2%) subjects were from rural area and 244 (48.8%) were residing in urban area. The demographic parameters of the students enrolled are shown in Table 1.

Table 1: Summary of demographics (n=500)

Parameter	Number of subjects % (n=500)
Age (in years)	
17–24	19.34±1.25
Gender	
Female	305 (61.0)
Male	195 (39.0)
Educational institution	
Dharmasagara First Grade College	80 (16.0)
St. Philomena's First Grade College	16 (3.2)
Sardar Vallabhbhai Patel First Grade College	164 (32.8)
Krupanidhi Degree College	240 (48.0)
Institution type	
Government	244 (48.8)
Private	256 (51.2)
Course studying	
B. Com	319 (63.8)
BA	62 (12.4)
BBA	56 (11.2)
BCA	63 (12.6)
College year	
1 st	208 (41.6)
2 nd	163 (32.6)
3 rd	129 (25.8)
Area of living	
Rural	256 (51.2)
Urban	244 (48.8)
Allergies	
Dust	83 (16.6)
Pollen	6 (1.2)
No allergies	411 (82.2)

Knowledge Regarding Self-medication

Six questions were used to assess the knowledge of students on self-medication. A 3-point scale with responses agree (+1), neutral (0), and disagree (-1) was used. After filling the questionnaire, the students were allotted scores based on the proportion of correct response. The maximum score that can be obtained is 6 and the minimum score that can be obtained is -6. The median of scores for pre-intervention is 1 (-5, 6) and for post-intervention is 4 (4, 6). Figure 1 and Table 2 shows the effect of educational intervention on response toward knowledge questions.

Attitude Regarding Self-medication

Six questions were used to assess the attitude of students on self-medication. A 3-point scale with responses agree (-1), neutral (0), and disagree (+1) was used. Table 3 shows the proportion of correct response and the effect of educational intervention on the attitude of students toward self-medication.

Practice of Self-medication

Five questions were used to assess the practice of self-medication. About 81.2% of students reported to have practiced self-medication in the past 6 months. Table 4 shows the effect of educational intervention on the practice of students toward self-medication.

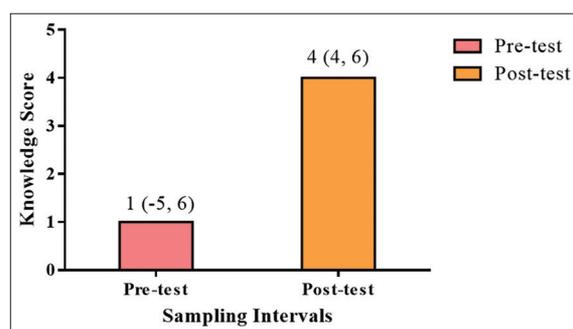


Figure 1: Effect of educational intervention on knowledge $P = 0.000$ confidence interval 95% using Wilcoxon signed-rank test

Patterns of Self-medication

Six questions were used to assess the patterns and factors influencing self-medication. Headache (37.2%), cough, cold, and sore throat (31.4%), fever (21.2%), stomach ache (6.2%), vomiting (1.2%), and diarrhea (1%), menstrual pains (0.8%), and constipation (0.4%) were the common illness, for which self-medication was practiced, while pain killers (44.6%), fever medicines (25.8%), cough syrups (23.6%), antacids (2.6%), ointments (2.4%), eye drops (0.4%), and acne medicines (0.6%) were the drugs used for self-medication. About 279 (56%) students stated that they start taking the medicines

Table 2: Effect of educational intervention on response toward knowledge questions (n=500)

S. No.	Questions	Proportion of correct response (%)		Friedman test	P value ^a
		Pre-intervention	Post-intervention		
K ₁	Self-medication is not safe	24.2	73.4	171.42	0.000*
K ₂	Self-medication can be used to treat minor illness	80.2	91.6	7.70	0.000*
K ₃	Self-medication may lead to the use of wrong medicine for wrong period of time	53.0	85.8	90.72	0.000*
K ₄	Self-medication may lead to delay in diagnosis and treatment	49.4	81.6	78.35	0.000*
K ₅	Ayurveda and herbal medicines are not safe for self-medication	12.4	69.6	235.88	0.000*
K ₆	Self-medication may lead to side effects	60.2	80.8	42.12	0.000*

^aStatistical significance of difference in response proportions was determined through Friedman test. *Represents statistically significant difference in proportion at 99% confidence interval

Table 3: Effect of educational intervention on attitude toward self-medication (n=500)

S. No.	Questions	Proportion of correct response (%)						Friedman test	P value ^a
		Pre-intervention			Post-intervention				
		-1	0	+1	-1	0	+1		
A ₁	Self-medication is part of self-care	81.2	5.6	13.2	9.8	2.4	87.8	364.64	0.000*
A ₂	Self-medication can be advised to others	64.4	12.0	23.6	12.0	3.2	84.8	270.48	0.000*
A ₃	Advice for self-medication can be taken from others	68.2	11.4	20.4	9.2	4.0	86.8	288.0	0.000*
A ₄	Self-medication is an acceptable practice	68.8	15.2	16.0	6.0	4.4	89.6	360.81	0.000*
A ₅	I am comfortable with self-medication	74.0	12.8	13.2	56.8	2.8	40.4	44.20	0.000*
A ₆	Prescription medicines can be shared with others and reused for same illness	54.8	24.2	21.0	7.2	2.8	90.0	320.38	0.000*

^aStatistical significance of difference in response proportions was determined through Friedman test at 99% confidence interval. *Represents statistically significant difference in proportion at 99% confidence interval. For the above questions response, -1, 0, and 1 represent agree, neutral, and disagree, respectively

Table 4: Effect of educational intervention on response toward practice questions (n=500)

S. No.	Questions	Proportion of correct response (%)										Friedman test	P value ^a
		Pre-intervention					Post-intervention						
		1	2	3	4	5	1	2	3	4	5		
1.	How frequently do you practice self-medication?	26.8	40.4	17.0	11.0	4.8	4.4	10.4	17.2	43.6	24.4	215.92	0.000*
2.	How frequently do you reuse the same prescription?	20.6	38.8	17.4	13.2	10.0	12.8	7.6	6.6	42.6	30.4	122.88	0.000*
3.	For how long do you take the medicines?	8.2	49.2	35.8	5.0	1.8	64.8	24.6	6.8	2.2	1.6	215.67	0.000*
4.	When a medicine has no affect what do you do?	25.0	22.0	15.8	31.8	5.4	38.8	53.4	4.2	2.2	1.4	94.75	0.000*
5.	How frequently do you check the expiry date while taking medicines?	13.6	15.6	31.4	22.8	16.6	74.4	19.4	3.2	2.0	1.0	320.81	0.000*

^aStatistical significance of difference in response proportions was determined through Friedman test at 99% confidence interval. For the above questions 1, 2, and 5, the responses 1, 2, 3, 4, and 5 represent always, most of the time, sometimes, rarely, and never, respectively. While for question number 3, the response 1, 2, 3, 4, and 5 represents 1 day, 2-3 days, 4-5 days, 6-7 days, and longer, respectively. For question number 4, the response 1, 2, 3, 4, and 5 represents stop taking medicines, consult physician, consult pharmacist, increase dose, and decrease dose, respectively

1–2 days after the symptoms appear followed by 102 (20%) students who stated that they take medicines immediately once they experience the symptoms, while 15 (3%) students reported 1 week and 4 (0.8%) students reported longer. Quick-relief (33.4%), time saving (21.4%), increased health-care cost (14%), minor illness (13%), convenient (10.6%), economical (4%), good knowledge about medicines (2%), and increased waiting time (1.6%) are the reasons for self-medication. About 207 (41%) students reported that family and friends are the common source of information for self-medication, 183 (37%) students stated pharmacy, 60 (12%) students stated old prescriptions, and 50 (10%) students reported internet and media as the common source of information for self-medication. While enquiring about the primary source of medicines to practice self-medication, 351 (70%) students reported that they obtained the medicines from pharmacies, followed by 111 (22%) students obtain from family and friends, 33 (7%) students use leftover medicines to self-medicate, and 5 (1%) students stated that they obtain medicines from online pharmacies.

DISCUSSION

Self-medication involves taking medicines without professional supervision. This study was carried out in 500 non-medical students studying in four different colleges in Bengaluru (East). The students selected had no prior medical educational background. Data for this study were collected using a validated questionnaire. The mean age range of the subjects was 19.34 ± 1.25 years and about 61% of the respondents were female. The pre-intervention data found that self-medication was widely practiced by the students. About 81.2% of students reported to have practiced self-medication in the past 6 months. This practice is comparatively less than those reported by other studies at about 95–98%.^[21–23] The baseline knowledge of students on self-medication and its effects was poor. The median score of the sample was 1 (–5, 6). Majority of the students stated that self-medication is a safe (58.8%) and 79.6% of the students believed that Ayurveda and herbal medicines are safe for self-medication practice. The students also had poor attitude regarding self-medication, about 81.2% reported self-medication to be part of self-care, while 64.4% stated that self-medication advice can be given to others. About 68.2% believed that self-medication advice can be taken from others, while 54.8% believed that prescription medicines can be shared and reused for the same illness. The students also stated that they increase to a dose of the medicine if the drug shows no effect (31.8%). The median score of post-intervention data at 4 (4, 6) shows that there was a significant increase in the knowledge of students. This shows that the students were more aware of the

ill effects of self-medication ($P = 0.001$, confidence interval [CI] = 99%). The attitude of students toward self-medication has also improved ($P = 0.001$, CI 99%) as 84.8% stated that self-medication should not be advised to others and 86.8% stated that advice for self-medication should not be taken from others ($P = 0.001$, CI = 99%). Self-medication practice has significantly decreased. About 43.6% of students stated that they stopped practicing self-medication after understanding its ill effects ($P = 0.005$, CI = 99%). An increase in the knowledge of the risks of self-medication has led to parallel decrease in its practice among students.

CONCLUSION

Self-medication practices were common among non-medical students. The pre-intervention data show that students lacked the proper knowledge of the risks associated with self-medication. The attitude of students regarding self-medication was also found to be poor and this further leads to an increase in unregulated practice of self-medication among the students. The post-intervention data showed a significant increase in the knowledge of the students and better attitude, leading to a parallel decrease in the practice of self-medication. This study shows that knowledge and attitude are directly interrelated to practice. Educating students regarding rationale self-medication are very essential to decrease the harmful effects associated with self-medication and to improve patient care. This can be accomplished through mass educational programs. Some of the limitations of this study are that the questionnaire is based on self-reporting and the respondents may tend to underestimate or overestimate the actual use of some medicines, only one follow-up was done after 30 days to collect the post-intervention data and the students were restricted to four selected educational institutions.

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