



Medical Students Perception and Practice of Self-medication: Vision of Future Practitioner in Pakistan

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Authors' contributions

This work was carried out in collaboration between all authors. Author SF designed the study. Author AS collected the data, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Author SA managed the analyses of the study. Author MD managed the literature searches. Author SB revised the final manuscript. All authors read and approved the final manuscript.

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ABSTRACT

Aims: The present study was conducted to explore self-medication among the medical students and their perception towards self-medication in four medical colleges in Abbottabad, Pakistan.

Study Design: The study was carried out as a cross sectional survey.

Place and Duration of Study: The study was carried out in four medical colleges during the period from April to September 2016 in Abbottabad, Pakistan.

Methodology: A semi structured questionnaire was developed. The questionnaire consisted of 6 sections. First and second year students were excluded from the study. The collected data of questionnaires was analyzed using the Statistical Package for Social Sciences (SPSS), version 20.

Results: A sample of 403 students completed the questionnaire with a response rate of 80.6%.

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Majority of students practiced self-medication to save time (77.7% $p < 0.001$) whereas antipyretics (90.6%) were mainly used as self-medication among those participants. Academic knowledge (80.1%) was mentioned as a main source for information on drugs. The main indication for which participants self-medicated was fever (97%).

Conclusion: The medical students' practice regarding self-medication is increasing in our population. It was concluded that in order to prevent the growing trend of this self-medication practice, policies should be deployed to prohibit the supply of drugs without prescription.

Keywords: Self-medication; Abbottabad; medical students; perception.

1. INTRODUCTION

Self-medication can be defined as use of medicines by individuals to treat self-recognized disorders or symptoms, or use of medications without prior medical consultation regarding the intermittent or continuous use of a medication [1]. Self-medication involves taking medicines without a prescription, submitting old prescriptions to purchase medicines, sharing medicines with family members or relatives, [2]. Self-medication is the fundamental part of self-care that can be defined as the primary public health supply in the health care system including self-medication, social support in illness, non-drug self-treatment, and primary aid in normal life [1].

Few studies are conducted related to health problems and health care utilization, including self-medication among the young generations. The adolescences are influenced by the media and the internet which promotes the self-medication behavior, [3]. Due to increased advertising and marketing of medicines, there is a risk of self-medication in the younger populace in general. These promotions concerns of improper self-diagnosis, drug-drug interaction, and usage of drugs other than the intended indication, [4]. Currently, there is a higher chance of misuse of medicines for the consumers due to ease of access, increase in the quantities and varieties of the pharmaceutical products globally.

A study conducted in Nigeria about self-medication has reported that self-medication is common among the group of health workers, [5]. It has been observed that self-medication was also common with physicians, [6,7]. A study conducted in four universities in Karachi, Pakistan observed that self-medication is common among undergraduate medical and non-medical students, [8].

The present study was conducted to explore self-medication among the medical students and their

perception towards the self-medication in four medical colleges in Abbottabad, Pakistan.

The objective was to collect information from medical students about self-medication, reasons, source of information and implicated drug classes. Further objective was to highlight possible means to minimize or halt medical students' self-medication.

2. METHODOLOGY

2.1 Study Setting

The study was carried out in four medical colleges during the period from April 2016 to September 2016. The four medical colleges were the Ayub medical College, Women medical College, Frontier medical College and Abbottabad International medical college in Abbottabad, Pakistan.

2.2 Study Design

The study was carried out as a cross-sectional survey.

2.3 Population

Medical students were enrolled in Bachelor of Medicine and Bachelor of Surgery-MBBS program. The study population represented all colleges located in Abbottabad, namely, Ayub medical college (government) and three other private colleges namely, Women medical College, Frontier medical College and Abbottabad International medical college. The Ayub medical college has 1000 students (200 in each of the five batches) following a five-year MBBS program. Other medical colleges have permission for 100 students from PMDC. The total number of students was approximately 2500 in the four colleges. The total number of students from the third to fifth years was approximately 1500, which constituted the target sample.

2.4 Sample Size

We used a sample size calculation depending on 1500 target population, 95% confidence interval and 5 confidence level, which was equal to 306 students needed to represent the target population of medical students. However, we exceeded this sample size by 97 students with 403 students completing the questionnaire.

2.5 The Survey Tool

A semi-structured questionnaire was developed based on similar studies conducted previously [1, 9-13]. The questionnaire consists of 6 sections. Section one contains questions related to the demographics information's and the year of study. Section two delineates the factors responsible for indulging in self-medication, while section three outlined questions related to the categories of drugs commonly self-prescribed. Section four stated indications for self-medication, while section five inquired about the attitudes of the students towards self-medication. The final section six was relevant to questions related to perception of students regarding the method to prevent the self-medication.

2.6 Inclusion and Exclusion Criteria

Students who were enrolled in 3rd, 4th and 5th years of the MBBS program were included in the study and the students of 1st and 2nd years were excluded from the study because they had not yet started the medical rounds and did not have much experience in the field.

2.7 Data Collection

Survey data was collected from students who were sitting in common rooms and in the courtyards of their colleges. The consent form was signed by students who were willing to participate in the study. The questionnaires were properly checked for their completeness and only completed questionnaires were analyzed.

2.8 Statistical Analysis

The collected data of questionnaires was analyzed using the Statistical Package for Social Sciences (SPSS), version 20 (SPSS Inc., Cary, NC, USA). The analysis set used was descriptive percentages (%). We have performed regression analysis (significance by F-test) to identify variable's relationship between self-medications

with either age and student's year. P values <0.05 were considered significant.

3. RESULTS

3.1 Socio-demographics

A total of 500 questionnaires were distributed as follows: Ayub medical complex: 200, Abbottabad international medical college: 100, frontier medical college: 100 and women medical college 100 questionnaires. 403 students have completed the questionnaire with a high response rate of 80.6%. The 403 students who had completed the questionnaire were assessed for their attitude and perception regarding the self-medication of which 69.7 % (281) were male and 30.3% (122) were female. The mean age of the respondents was 23.2 ±0.3 years. Self-medication was very common among the 4th year MBBS students (48.4%) with mean age 23.1 ±0.4 (range 22-24). The practice of self-medication according to year of MBBS was shown in Table 1.

3.2 Reasons for Self-medication

Majority of the participants practiced self-medication to save time (77.7%, $p < 0.001$) as the main reason, followed by their sufficient pharmacological knowledge (73%, $p < 0.001$). This was positively correlated with both medical student's year and gender of students (0.114 and 0.321), respectively. Interestingly, a high percentage of medical students quoted to avoid crowds at outpatient department-OPD as one of the main reasons (69.2%) with positive correlations with both medical student's year and gender of students. Negative correlations were reported for minor reasons as illness too trivial for consultation and privacy reasons with medical student's year and gender of students (-0.024, -0.301 and -0.258, -0.147), respectively.

3.3 Source of Information about Self-medication

Majority of students (80.1%) used their academic knowledge as the main source for information about drugs followed by asking friends (67.5%, $p < 0.001$), old prescriptions for same illness (45.9%), and drug advertisement and Internet sources. Interestingly, the pharmacist as the main source of information was only chosen by the least number of medical students (14.6%). Academic knowledge, and friends were positively correlated with medical student's year and

gender of students (0.125, 0.281 and 0.021, 0.304), respectively. While, old prescription for same illness, pharmacist and drug advertisement/Internet were negatively correlated with medical student's year and gender of students [(-0.267, -0.238), (-0.076, -0.185) and (-0.307, -0.367)], respectively. All the sources were statistically significant ($p < 0.001$).

3.4 The Categories of Drugs Used by Medical Students in Self-medication

Majority of participants have used antipyretics (90.6%) as self-medications followed by analgesic (86.4%), anti-tussives (78.9%), tonics/vitamins (78.2%), anti-diarrhea (77.2%), antihistamines (69.2%), antiemetic's (67.7%), antispasmodic (60.5%) and anti-ulcer (54.1%). It has been reported that 21.8% of participants have used antibiotics, sedatives (14.6%) and

least was combination drugs (6.2%) as self-medications. Statistically significant values ($p < 0.05$) were found between medical student's year and reported classes of drugs while non-significant values ($p > 0.05$) were exhibited by gender in four of the drug classes (antipyretics, analgesics, anti-tussives, tonic/vitamins and combination drugs).

The spearman correlation was positive for gender with all drug classes except for antibiotics, sedatives and combined drug therapy (-0.201, -0.292 and 0.077), respectively. It was also positive for the medical students' years with all drug classes except for (antipyretics, analgesics, antitussives, antihistamines, tonics/vitamins, sedatives). The results of categories of drugs commonly used in self-medication and respective correlations were depicted in, Table 3.

Table 1. Characteristics of surveyed medical students (N= 403)

Variable	Frequency (percentage %)
Medical student's MBBS year (Mean age 23.2 ±0.3 years)	
Third year: Mean age 22.2 ±0.6 (range 21-23)	110 (27.3)
Forth year: Mean age 23.1 ±0.4 (range 22-24)	195 (48.4)*
Fifth year: Mean age 24.2 ±0.7 (range 23-25)	98 (24.3)
Total	403 (100.0)
Gender	
Male	281 (69.7)*
Female	122 (30.3)
Total	403 (100.0)

Table 2. Reasons and source of information for self-medication

Variable	Frequency (percentage - %)	Medical student's year (p value)	Spearman correlation	Gender (p value)	Spearman correlation
Reasons for self-medication					
To save time	313 (77.7)*	<0.001**	0.114	<0.001**	0.321
Sufficient pharmacological knowledge	294 (73.0)	<0.001**	0.29	<0.001**	0.292
Avoid crowd at outpatient department-OPD	279 (69.2)	<0.001**	0.065	<0.001**	0.275
illness too trivial for consultation	146 (36.2)	<0.001**	-0.024	<0.001**	-0.301
Privacy	55 (13.6)	<0.001**	-0.258	0.003**	-0.147
Source of information about self-medication					
Academic knowledge	323 (80.1)*	<0.001**	0.125	<0.001**	0.281
Friends	272 (67.5)	<0.001**	0.021	<0.001**	0.304
Old prescription for same illness	185 (45.9)	<0.001**	-0.267	<0.001**	-0.238
Drug advertisement/Internet	119 (29.5)	<0.001**	-0.307	<0.001**	-0.367
Sources					
Pharmacist	59 (14.6)	<0.001**	-0.076	<0.001**	-0.185

Key: The highest percent achieved in rows

Table 3. Categories of drugs commonly used in self-medication by medical students

Class of drugs	Frequency (percentage-%)	Medical student's year (<i>p</i> value)	Spearman correlation	Gender (<i>p</i> value)	Spearman correlation
Antipyretics	365 (90.6)*	<0.001**	-0.021	0.095	0.083
Analgesics	348 (86.4)	<0.001**	-0.135	0.29	0.053
Antitussives	318 (78.9)	<0.001**	-0.148	0.161	0.07
Tonics/Vitamins	315 (78.2)	0.005**	-.012	0.16	0.07
Antidiarrheals	311 (77.2)	<0.001**	0.179	<0.001**	0.259
Antihistamines	279 (69.2)	<0.001**	-0.025	<0.001**	0.275
Antiemetics	273 (67.7)	<0.001**	0.125	<0.001**	0.285
Antispasmodic	244 (60.5)	<0.001**	0.062	<0.001**	0.308
Antiulcer	218 (54.1)	<0.001**	0.226	<0.001**	0.379
Antibiotics	88 (21.8)	<0.001**	0.078	<0.001**	-0.201
Sedatives	59 (14.6)	<0.001**	-0.389	<0.001**	-0.292
Combination therapy	25 (06.2)	0.015**	0.104	0.123	-0.077

Key: *The highest percent achieved in rows, *p* < 0.05

3.5 Indications for Self-medications

The main indications that have led to self-medications in decreasing fashion were fever (97.0%), headache (96.3%), flu/cough/cold (95.3%), pain (93.8%), sore throat (80.4%) and diarrhea (72.5%) as indications that lead to use of self-medications, Table 4. The indications of self-medication were statistically significant (*p* < 0.05) in both medical student's year and gender, except for fever with gender (*p* =0.815). The spearman correlations were positive with gender at all indications except for vomiting, insomnia and rash/allergies whereas it was negatively correlated with medical student's year at all indications of self-medication except for sore throat, diarrhea and mouth ulcer.

3.6 Students' Attitude towards Self-medication

82.1% of medical students have mentioned that they will continue self-medications, and 76% will advise self-medication to friends. 38% had given the opinion that self-medication is part of self-care, while the majority rejected such a statement (61.3%).

The preventive measures that were quoted by the surveyed medical students were 77.2% have perceived that supply of drugs with prescription can prevent the trend of self-medications.

4. DISCUSSION

The study showed that there was higher prevalence of self-medications in the study

sample which was similar to study conducted in Portugal [14] and Islamabad-Pakistan [15]. In comparison with females, males were economically stronger, and they can easily access pharmacy or medical store and can move freely outside in our society. Females were dependent on males in our society may be a reason behind the low self-medication level, [16]. However, the studies from India [1,17,18] and Slovenia [19] has shown that females have a higher prevalence as compared to males. Most of the students followed allopathic medicine, which is similar to studies in Islamabad-Pakistan [15] and India [20].

In our study, the most common reason that lead to self-medication was to save time, which was similar to study conducted in Bahrain [21] and India [22]. In this study 80.1%, participants indulged in self-medication due to sufficient academic knowledge. Antipyretics were the class of drugs that was majorly used as self-medications in our study. Similar results were reported in previous studies from India [18] and Ethiopia [23]. The most common indication for self-medication was fever which was similar to that reported in India [1,22] and Greece [24].

21.8% of antibiotics were used as self-medication by the participants. Our result was lower than the study conducted in India, [1] but was higher than the study conducted in Islamabad, Pakistan [15]. Our results were significantly lower than the other studies conducted in the developing countries namely Egypt and Nigeria, [25-27].

Table 4. Indications for self-medication

Indication for self-medication	Frequency (percentage-%)	Medical student's year (p value)	Spearman correlation	Gender (p value)	Spearman correlation
Fever	391 (97.0)*	<0.001**	-0.155	0.815	0.012
Headache	388 (96.3)	<0.001**	-0.12	0.011**	0.127
Cough/Cold-Flu	384 (95.3)	<0.001**	-0.138	0.03**	0.108
Pain	378 (93.8)	<0.001**	-0.176	0.015**	0.122
Sore throat	324 (80.4)	<0.001**	0.282	<0.001**	0.205
Diarrhoea	292 (72.5)	<0.001**	0.087	<0.001**	0.271
Mouth ulcer	230 (57.1)	<0.001**	0.197	<0.001**	0.432
Vomiting	85 (21.1)	<0.001**	-0.225	<0.001**	-0.242
Insomnia	72 (17.9)	<0.001**	-0.434	<0.001**	-0.299
Rash/allergies	71 (17.6)	<0.001**	-0.246	<0.001**	-0.234

Key: The highest percent achieved in rows

Table 5. Medical students' attitude towards self-medication

Students' attitude	Yes	No	Not sure
	Frequency (%)	Frequency (%)	Frequency (%)
Continue with/start self-medication	331 (82.1)*	70 (17.4)	2 (0.5)
Advice self-medication to friends	306 (76.0)*	96 (23.8)	1 (0.2)
Self-medication is a part of self-care	153 (38.0)	247 (61.3)*	3 (0.7)

Key: (%) = percent, *= The highest percent achieved in rows

In our study 38%, participants said that self-medication was part of their self-care, which was higher than the studies from Ethiopia, [28]. 82.1% of participants wished to start self-medication/continuing with self-medication. This was an alarming situation that so many of participants want to continue with self-medications and 75% were ready to advise their friends about self-medications. Self-medication as a part of self-care can only be justifiable when there is judicial use of these medications.

In order to minimize and halt the medical students' self-medication practices, it is recommended to: Prevent the supply of medicines without prescription, Raise the awareness and education regarding implications of self-medication on medical students, enforce strict rules regarding pharmaceutical advertising and Internet drug marketing, deploy medical student clinics working towards making health care facilities easily available.

5. STUDY LIMITATIONS

This study was based on one city of Abbottabad in Pakistan, and hence these finding cannot be generalized. More studies needed to be carried out among the medical studies and also on the general population to understand the various factors involved in self-medication practices.

6. CONCLUSION

The medical student's practices regarding self-medication is increasing in our population. It has been concluded that in order to prevent the growing trend of such self-medication practices, policies should be deployed to prohibit the supply of drugs without prescription. Further research is deemed in identifying the clinical implications of self-medication practices and its adverse outcomes on medical students' learning performance and general well-being. Unveil avenues for further research, which can assess medical student attitudes towards self-medication.

CONSENT AND ETHICAL APPROVAL

The study received approval from COMSATS university ethical Committee. All participants voluntarily signed the consent form.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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