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Research Article

**PREVALENCE OF SELF - MEDICATION AMONG
UNDERGRADUATE MEDICAL STUDENTS OF AYUB
MEDICAL COLLEGE: A CROSS-SECTIONAL STUDY****Sarah Khan, Dr Fakhra Nain Qureshi, Dr Shahid Khan**
Ayub Medical College, Abbottabad**Abstract:**

Background: Medications are an essential asset to health and important therapeutic tool in the hands of physicians and other health professionals. The utilization of medication by individuals to treat self-recognized symptoms themselves is termed as self-medication. Medical students usually choose to treat their friends, relatives and family members without consultation of registered medical practitioner and when they seek health care for themselves. Although antibiotics are very useful for the purpose of eradicating pathogens but unfortunately inappropriate use of these drugs may lead to develop resistance against antibiotics and self-medication with antibiotics (SMA), may lead to severe implications among healthcare professionals including legal & ethical issues, negative impacts on patients and poor quality of health care delivery towards ailing humanity. **Objectives:** This study was aimed on determining the prevalence of self-medication with special reference to the use of antibiotics among the undergraduate students of Ayub Medical College, Abbottabad and to know the characteristics i.e. the clinical conditions treated & type of antibiotics used for the purpose of self-treating the self-diagnosed problems. **Study Design:** Cross-sectional study **Setting & Period of study:** Conducted the study in Ayub Medical College, Abbottabad during academic session 2017-18. **Methodology:** The present study was conducted on self-medication among randomly selected 210 students of 3rd year & 4th year M.B.B.S classes of Ayub Medical College, Abbottabad, Pakistan. A pre-designed questionnaire was used to collect the relevant information pertaining to the study variables. **Results:** Response rate was 90.47% (n=190). Of those, (73.68%) were females & (26.32%) males. All participants were in the age range between 20-25 years. 147 (77.36%) participants were boarders and 43 (22.64%) non boarders. The most common symptom for self-medication was cough with sputum in 62 (32.63%). Among the participants 65.5% had self-medicated in the last six months. Most used antibiotics were Metronidazole (29.23%), Azithromycin (24.61%), Ciprofloxacin (18.46%), Augmentin (15.40%) and Norfloxacin (9.23%). Regarding the source of antibiotics used for self-treatment, 38.46% participants used the leftover medicines at home, 35.38% purchased from pharmacies / medical stores. The samples provided by representatives of pharmaceutical companies were the source of medicines for 16.93% participants whereas; 9.23% students obtained the drugs from Hospital Pharmacies for the purpose of self-medication. **Conclusion:** This study has shown that self-medication is common among undergraduate students of Ayub Medical College, Abbottabad and injudicious use of antibiotics is also on rise among younger medical students.

Keywords: Self-medication, Medical Students, Antibiotics, Prevalence, Questionnaire.

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INTRODUCTION:

Being the mandatory tool for health, Medication is used by the doctors and health care providers.[1] The desire for taking medicines is the only feature that distinguishes human being from animals.[2] It has been commonly observed that people feel unwell and use medications for their own treatment. Throughout the world, people try to prescribe different type of drugs for their own health, friends & relatives by using medication at their own discretion.[3] Self prescribing situation is a common practice among medical students who use a range of medicines from ordinary pain killer to antibiotics without prescription of a doctor.[4] Selection & use of different medicines by the people for treatment of illnesses or symptoms diagnosed by them is known as Self-medication.[5] The half-baked knowledge about manufacturing of medicines as well as inappropriate use of antibiotics without prescription may end up with many problems arising due to misuse of medicines among the students of medical colleges.

Being one of the important components of self-care, more awareness about the self-medication is required to update the knowledge as well as to improve the level of students' attitudes towards practice of self-medication.[6] Such type of practice for treating without consultation of registered doctor has been accepted universally because it provides opportunity for treating the minute illness by using the easy, simplest but effective methods.[7] The practice of self-treatment encompasses collecting & using the medicines without consultation & advice of a treating doctor. It may be for diagnosis, making prescription slip, presenting old and out dated prescriptions to get the medicines, sharing of medicines with friends, acquaintances, or using the left-over medicines kept in home. The practice of self-medication is increasing constantly all over the world because of economic / political instability and some of the cultural factors which may lead towards a major public health issue. The medicines must be used with great care due to their potential hazards, if used without proper prescription and instruction of the doctor. The hazards of various medicines due to self-medication are much higher and lead to the problems like resistance to the drugs,[8] addiction, misdiagnosis, complications related to under or over dosage, drug interactions and serious untoward effects leading to increased morbidity.[9]

Using antibiotics according to individuals own choice for self-diagnosed conditions is widely distributed in many developing countries [10-14] including Pakistan, India & Bangladesh. In these countries, there is easy availability of the several drugs including antibiotics; moreover, inadequate health services & poor administrative control on the sales of drugs may cause an increased proportion of

drugs to be used by self-medication.[15] The trend of self-medication in doctors develops during their undergraduate training courses in medical colleges [16] because they are exposed to knowledge of diseases, diagnosis and treatment by drugs. This practice is not only being used in developing countries [17-18] but also common in the developed countries. Self-medication comprises the inappropriate consumption of antibiotics in wrong indications, such as flue, common cold, allergy, viral infections involving upper respiratory tract while inadequate doses and minimum duration of treatment are also important factors responsible for complications thereof.[19]

Increased & non-judicious use of antimicrobial drugs have facilitated the resistant strains of pathogens i.e. multi-drug resistant tuberculosis, multidrug resistant pseudomonas aeruginosa, methicillin resistant staphylococcus aureus and clostridium difficile.[20-23] Prescribing antibiotics by medical students among themselves, termed as a silent epidemic is a problem all over the world.[24] Self medications among healthcare professionals have severe implications which might be legal / ethical issues, negative impacts on patients and poor quality of health care delivery.[25] Inappropriate use of common medicines as well as antibiotics is common concern of community and professionals. There is high prevalence rates of self-medication in the world; even in European countries up to 68%.[26] whereas, much higher in developing countries.[27] The rates are higher (92%) in adolescents of Kuwait.[28] A study conducted by Deshpande et al reported 31% prevalence rate of self-medication in India [29] and Shankar et al have reported 59% in Nepal.[27] It has been reported that the prevalence rates are increasing day by day in Taiwan inspite of the efforts to minimize this practice.[30]

In most of the developing countries including Pakistan, range of drugs are available without physician's prescription over the counter due to poor enforcement of laws relating to sales of drugs [31] and the problems related with unauthorized sale of drugs are magnified.[32] Almost every medical store / pharmacy is involved in selling drugs to the customer without seeking prescription in urban as well as rural areas of Pakistan and similar situation is also observed in most of the developing countries.[33] The poor enforcement of drug sale regulations & advertisement of medicines by the manufacturers encourage the common people for self-treatment of self-diagnosed conditions. Surprisingly, higher prevalence in the youngsters has been reported by Nabeel Zafar et al [34] in Karachi, involving both medical and non-medical students despite most of them know the hazards of this practice. Further studies showed the self-

medication rate in university students to be around 80.4% & in urban population to be around 68.1%. [35,36] Another study conducted by Bilal *et al* [37] in the people belonging to rural areas of Sindh showed prevalence rate 81.5% using antibiotics without any prescription.

This study was conducted on the self-treatment of self-diagnosed symptoms among students of Ayub Medical College, Abbottabad, Pakistan with the objectives to determine the prevalence of self-medication among medical students with special reference to the use of antibiotics and to know the characteristics *i.e.* the clinical conditions for which self-medication was done and the type of medicines used for such conditions.

METHODOLOGY:

This was a cross sectional, descriptive study based upon illness recall and was conducted among the students of 3rd year & 4th year MBBS classes in Ayub Medical College, Abbottabad from August, 2017 to July, 2018. Participants were explained about the purpose of study. They were informed that data collected would be anonymous and their participation would be voluntary. A pre- designed questionnaire was distributed among 210 students for collecting the information related to the study variables. Before starting the study, the

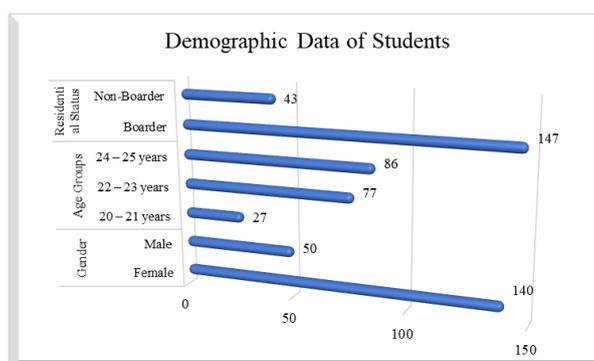
questionnaire was pretested on a group of 20 students and those were not included in final analysis. The students who denied to participate were excluded from the study. Out of the total 210 participants, 20 students answered either incompletely or did not answer at all. Hence, data of 190 participants was collected and analyzed. Pre-designed questionnaire contained queries about socio-demographic characteristics; age, gender, methods of self-medication *i.e.* type of the medicines used, source of obtaining antibiotics, and health condition of the individuals leading to self-medication. The survey was self-administered and included questions pertaining to self-medicated drugs and antibiotic usage patterns as well. Data were analyzed using descriptive statistics.

RESULTS:

In this cross-sectional study conducted on 210 students of Ayub Medical College, Abbottabad Pakistan, 190 students participated affirmatively with the response rate 90.47%. Of those 190 students, 140 (73.68%) were females & 50 (26.32%) males. All participants were in the age range between 20-25 years. 147 (77.36%) participants were residing in the hostels and 43 (22.64%) non boarders. The percentage of student's gender, age groups and residential status involved in the practice of self-medication are shown in (Table 1)

Table 1: Demographic Data of Students Involved in The Practice of Self-Medication (N=190)

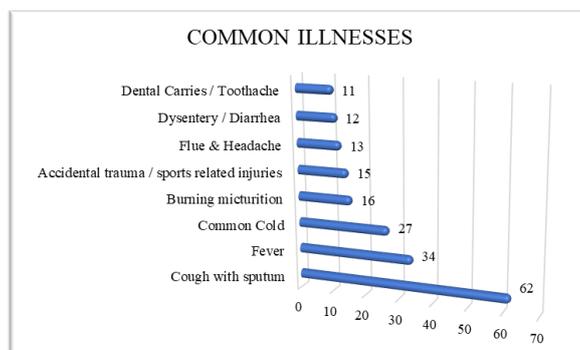
Parameters	N (%)
Gender	Female 140 (73.68 %)
	Male 50 (26.32 %)
Age Groups	20 – 21 years 27 (14.22 %)
	22 – 23 years 77 (40.52 %)
	24 – 25 years 86 (45.26 %)
Residential Status	Boarder 147 (77.36 %)
	Non-Boarder 43 (22.64 %)



Most common symptom for self-medication was cough with sputum in 62 (32.63%) cases. This was followed by fever 34 (17.89%), common cold 27 (14.21%), burning micturition 16 (8.42%), treating the wounds resulting in accidental trauma & sports related injuries 15 (7.89%), flue / headache 13 (6.85%) cases, dysentery / diarrhea 12 (6.32%), and dental carries / toothaches 11 (5.78%) which are shown in (Table 2)

Table No 02: Common Illnesses for Which Self- Medication Was Sought (N=190)

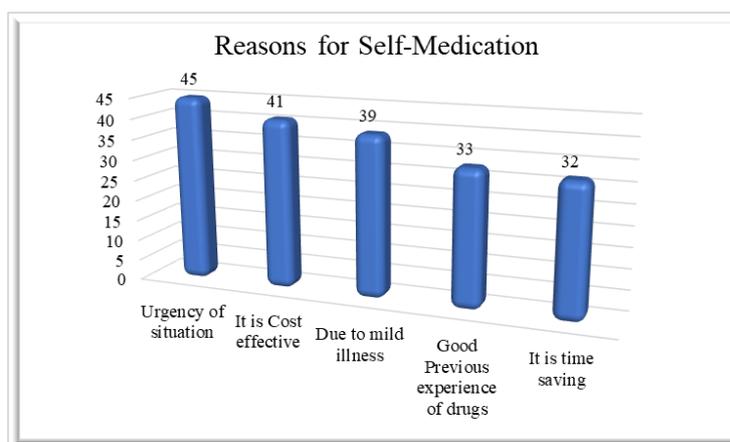
Illness	Frequency	Percentage
Cough with sputum	62	32.63 %
Fever	34	17.89 %
Common Cold	27	14.21 %
Burning micturition	16	8.42 %
Accidental trauma / sports related injuries	15	7.90 %
Flue & Headache	13	6.85 %
Dysentery / Diarrhea	12	6.32 %
Dental Carries / Toothache	11	5.78 %
Total	190	100 %



It was found that students prescribed medicines to their friends, relatives & for their own use without consultation of a registered medical practitioner. The most common reasons were having good previous experience of drugs (17.36%), the problem was too trivial to go to the doctor (20.52%), It is time saving (16.84%), it is cost effective (21.57%) and Urgency of situation in (23.68%). The student's response about reasons that lead to self-medication for some conditions are given in (Table: 3)

Table 3: Reasons for Self-Medication (N=190)

Reason	Frequency	Percentage
<i>Urgency of situation</i>	45	23.68 %
<i>It is Cost effective</i>	41	21.57 %
<i>Due to mild illness</i>	39	20.52 %
<i>Good Previous experience of drugs</i>	33	17.36 %
<i>It is time saving</i>	32	16.84 %
Total	190	100 %



Out of the total 190 participants, 65 (34.21%) were using antibiotics of self-medication for self-diagnosed conditions but majority 125 (65.79%) were not involved in such practice of using antibiotics at their own; as depicted in (Table: 4)

Table 4: Practice of Self-Medication with Antibiotics in Medical Students (N=190)

Response	Frequency	Percentage
Yes, I am using antibiotics at my own	65	34.21 %
No, I don't like the practice of self-treatment with antibiotics	125	65.79 %
Total	190	100 %

The highest purchased self-medicated antibiotics were Metronidazole (29.23%) followed by Azithromycin (24.61%), Ciprofloxacin (18.46%), Augmentin i.e. combination of Amoxicillin + Clavulanic acid (15.40%) and Norfloxacin (9.23%). The antibiotics which were purchased in least percentage were pipemidic acid (3.07%) which are shown in (Table: 5)

Table 5: Types & Percentage of Antibiotics Used for Self-Medication

Name of Antibiotic	Frequency	Percentage
Metronidazole	19	29.23 %
Azithromycin	16	24.61 %
Ciprofloxacin	12	18.46 %
Augmentin	10	15.40 %
Norfloxacin	6	9.23 %
Pipemidic acid	2	3.07 %
Total	65	100 %

Metronidazole was used by the students for self-treatment of dysentery, Gastroenteritis & Gingivitis. Azithromycin was self-medicated to treat fever, cold, cough, throat / respiratory tract infections. Ciprofloxacin was consumed for the problems of Gastroenteritis with fever, cough with sputum, food poisoning, urinary tract infection & respiratory tract infection. Amoxicillin + Clavulanic acid was taken for the treatment of pain in ears, pain in throat, fever, cough, common cold, gums / dental infection, and sinusitis. Norfloxacin & Pipemidic acid were self-medicated for the treatment of urinary tract infection. The reasons for self-treatment with antibiotics was good previous experience of their use (38.85%), suggestions of friends (24.61%), adequate knowledge of antibiotics (16.92%), to avoid doctor's fees (13.85%) and no confidence with doctor's medication in 10.77% students. (Table: 6)

Table 6: Reasons for Self-Treatment with Antibiotics

Reason	Frequency	Percentage
Good Pre - experience	22	33.85 %
Suggestion of Friends	16	24.61 %
Adequate Knowledge	11	16.93 %
To avoid doctor's fee	9	13.85 %
Lack of confidence in doctor's prescription	7	10.76 %
Total	65	100 %

Among the participants, 65.5% had self-medicated in the last six months. Regarding the source of antibiotics used for self-treatment, 38.46% participants used the leftover medicines at home, 35.38% purchased from pharmacies / medical stores. The samples provided by representatives of pharmaceutical companies were the source of medicines for 16.93% whereas; 9.23% students obtained the drugs from Hospital Pharmacies for the purpose of self-medication are shown in (Table: 7)

Table 7: Source of Antibiotics for Self-Treatment

Source of Antibiotics	Frequency	Percentage
Left-over medicines at home	25	38.46 %
Purchased from Pharmacy / medical stores	23	35.38 %
Samples by Pharmaceuticals	11	16.93 %
Obtained from Hospital Pharmacy	6	9.23 %
Total	65	100 %

DISCUSSION:

Self-Medication is commonly practiced all over the world in urban and rural population including developing countries like Pakistan, India & Bangladesh because many drugs are dispensed over the counter without prescription and it provides a low cost alternative for people.[38] The irrational use of antibiotics can cause untoward effects such as drug toxicity, negligible effect of medication, increase in treatment cost, prolonged hospitalization, and resistance to antimicrobial medicines & progression of the morbidity.[39] Restriction of sale of drugs with potentially harmful effects should be implemented effectively with monitoring systems between the physicians and pharmacists. Steps can also be taken to educate pharmacists on the need to cross-check with the prescribing physician while dispensing such drugs.[40]

There is high (90.47%) prevalence of self-treatment among medical students in our study which is consistent with finding of a study conducted in Karnataka, India by Shivaraj B Patil et al [41]

reporting almost similar (88.18%) prevalence of self-medication among undergraduate medical students. Our results of higher prevalence are in contrast with those of Nabeel Zafar et al [34] showing (55.3%) prevalence rate of self-medication among the young medical and non-medical students in Karachi. Further studies showed the self-medication rate in university students to be around 80.4% & in urban population to be around 68.1%.[35] The reason of higher prevalence is because medical students are exposed to knowledge about diseases and drugs. They have an easy access to information about drugs from medicine index, concerned literature, advertisement through electronic / print media and their colleagues.

Majority (73.68%) participants of our study were females compared to (26.32%) males. The gender disparity showing higher number of females is because students are admitted on open merit basis in all Government medical colleges in KPK, Pakistan and seats for boys / girls are not fixed and almost more than 75% seats are filled by girl students every year. All participants belonged to the age range 20

to 25 years because students get admission in First year M.B.B.S class in the age of 17-18 years and study was conducted among students of 3rd & 4th year classes. Out of the total 190, majority 86 (45.26 %) participants were in the age group of 24-25 years.

The use of antibiotic is occasionally indicated and is not necessary to treat viral infections by antibiotics until & unless advised by registered medical practitioner. Inappropriate treatment with antibiotics for shorter duration may lead to complicate the pre-existing illness e.g. multi-drug resistant strains can further limit the therapeutic options for clinicians. However, Respiratory tract infections bear the responsibility for larger consumption of antibiotics in many countries. [25-27] In our study, antibiotics were self-medicated by 65 (34.21%) participants. Of those, (29.23%) students used the most common antibiotic metronidazole which has also been reported in the study conducted by Bretagne *et al.*[26] Another study conducted by Olofsson *et al* in India found metronidazole and norfloxacin to be the most commonly self-medicated drugs for treatment of gastrointestinal infections [22] which is almost similar to our study.

25 (38.46%) students obtained antibiotics from the leftover medicines kept at home or medical stores. Over the counter availability of antibiotics invariably promotes wider sales and over usage in the community. This rate of self-medication with antibiotics among primary health care providers is higher as compared with those of Bangladesh (22.5%) & Turkey (19.1%).[42,43] In other studies in European countries, antimicrobial self-medication were found to be much lower than 10% in each of 19 European countries spread across east, west, north and southern Europe.[44]

As regards reason for self-treatment with antibiotics is concerned, (33.85%) participants had good previous experience of using antimicrobial drugs, (24.61%) involved in self-treatment of antibiotics as suggested by friends, (16.93%) medical students had adequate knowledge of medicines, (13.85%) wanted to avoid doctor's consultation fee whereas remaining (10.76%) participants have no confidence in doctor's prescription.

CONCLUSION:

The trend of self-medication is very common among medical students. There is a false sense of confidence in self-diagnosis and self-treatment due to knowledge of pharmacology & therapeutics. Drug-related knowledge and easy access to the medicines might have encouraged the practice of self-medication.

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