

Assessment of Self-Medication Practice among Medical Students: A cross-sectional study

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Abstract

Introduction: Antibacterial tolerance is becoming a particular viewpoint of the biggest risks to worldwide wellness. Consequently, it's critical to evaluate the circumstances that may have contributed to the surge in confirmed instances of susceptibility. The main purpose of this research was to evaluate the use of antibiotics for self-medication among college pupils at Bathinda's medical university. **Methods:** For involvement in this poll, an ensemble of 500 pupils was chosen at chance across all grades and institutions within the university. The self-medicated practices over the preceding months have been evaluated through the completion of a personal survey by the approved responders. SPSS version 26 was used to critically analyze the outcomes. **Results:** Researchers found that 56% (n=280) of participants used antibiotics for self-treatment. Self-administration with penicillin was primarily done because the sickness hadn't been severe enough to warrant a doctor's visit (45.9%). Typical colds, temperature, and congestion were the most prevalent illnesses treated (43.1%). Amoxicillin capsules were the highest choice of antibiotic individuals selected to treat themselves (35.2%) and the local drugstore became the primary distributor (77.7%) of medicines. **Conclusion:** In a nutshell, college pupils frequently use antibiotics for self-treatment. It was discovered that the primary causes of self-administration, the ailments being managed, and the drugs utilized might all be linked to pupils being unaware of the requirements for prudent antibiotic usage and that further research was required to prove this.

Keywords: Antibacterial agents, Self-medication, Medical students, Antibiotics

Introduction:

Self-medication with antibiotics (SMA) is a worldwide practice prevalent in industrialized and developing nations. Self-medication (SM) is defined as taking the medication without seeking a doctor's advice on a diagnosis or course of treatment.

By "use of medicines available over-the-counter (OTC) to treat self-identified illnesses or diseases, or for the ongoing use and reuse of prescription drugs for recurring diseases," the World Health Organisation (WHO) characterizes SM practice [1]. SM can take many different forms, such as taking pharmaceuticals without a doctor's prescription, utilizing an old prescription for a comparable ailment, or abusing over-the-counter prescriptions without consulting a doctor. SM can be a significant concern and result in a

number of issues, including adverse drug reactions, a potential rise in antimicrobial susceptibility, and resource depletion [2].

Incorrect use of SM can lead to a number of problems, such as delays in care, interactions between drugs, concealing of manifestations, adverse drug responses (ADR), and most importantly, the development of antibiotic resistance (AMR) [3,4]. This is true despite the fact that SM may have some benefits if administered properly, such as lowering treatment costs [3]. The WHO recognized AMR as being one of the biggest issues facing society [5].

Most often in developing countries, pharmacists may sell Over-the-Counter (OTC) pharmaceuticals, which are medications that can be used for self-medication sans a prescription from a physician [6]. As the

purchaser assesses their own condition and purchases a specific prescription to treat it, over-the-counter (OTC) medications are a type of self-medication [1]. OTC medications offer alleviation of symptoms for ailments that don't necessarily call for medical attention. The practice of self-medication to treat behavioral and psychological issues like smoking has been very common. To effectively quit using tobacco, users can choose the best over-the-counter (OTC) smoking cessation medicines with the assistance of chemists.

Although personal care goods are widely accessible, up to three million individuals can yearly lower their chance of developing lung cancer, emphysema, heart attack, stroke, and delivery difficulties. For instance, non-prescription nicotine aids in tobacco cessation [7]. Self-medication has specific perks because it is practical and affordable, and it cuts down on the use of assets for treating trivial illnesses. Nonetheless, the diagnosis of the illness may not be accurate, there might be a gap in seeing a medical provider; the adverse effects of the medicine are unknown; improper use of antibiotics can result in drug resistance; and using the same medicine with another medicine can cause drug interactions and occasionally dependence on drugs [8, 9]. Numerous studies have found that college students are among those who self-medicate, notably with antibiotics [10]. The purpose of this study was to evaluate medical students' use of self-medication for disease prevention.

Methodology:

Research Populace and Research Setting:

Doctoral candidates from Adesh University in Bathinda, Punjab took into account a longitudinal investigation utilizing survey data within the period of study 2022–2023. The randomized selection approach was used to choose the right proportion of learners. All terms have been incorporated into the divisions. Candidates were randomly selected from each division.

The following requirements ought to be fulfilled to qualify for responders to be considered for participation in the study: they had to consent to participate in the analysis, qualify as undergraduate or graduate pupils, and have additionally dwelt in the vicinity for a minimum of nine months prior to the study.

In the research we carried out, all the beginning-year medical learners and interns were included.

Subjects were eliminated if they were unable to participate in the course of the study, or if they weren't registered University students, hadn't been to the educational facility in a maximum of nine months, and lacked agreement.

A probe proposition requesting a recommendation to be rendered was presented to the medical unit at the Adesh University of Bathinda, Punjab, to secure authorization to conduct the aforementioned study. The institution provided ethical approval for the endeavor.

Furthermore, as proof of their agreement to participate in the analysis project, volunteers had to fill out a formal authorization document. Everyone who took part answered the inquiries independently and had the opportunity to terminate answering at any point or to continue.

Calculating the test population size:

The standard sampling size equation " $n = z^2 p(1-p)/e^2$ " was employed for establishing the total quantity of respondents using a proportion of 50% (the anticipated fraction of pupils displaying acceptable comprehension of and favorable opinions regarding SM). Considering a confidence range of 95% and a five percent chance of error, 380 respondents were estimated; however, a total of 500 individuals were used to compensate for a proportion of respondents who weren't able to reply.

The questionnaire's format:

Throughout the course of the six questionnaire divisions, it included a total of 38 open- and closed-ended inquiries. The first component examined the population's characteristics, including age, sex, educational background, marriage status, and place of abode. The next section evaluated the students' propensity for self-medication based on their demographic information. The potential benefits of employing SMA were illustrated in the third section. The sort of ailments when consuming SMA were covered in the next section. The potential vendors from which pupils could obtain SMA were included in the following section. The last part assessed how frequently antibiotics are utilized in SM practices.

Information Gathering and Interpretation:

The consenting responders were given a survey to complete, which examined their use of antibiotics for self-administration over the nine months preceding the study. The data was laid out in proportions and

frequency after being analytically analyzed utilizing a statistical tool (SPSS v. 26).

Tables:

Table 1. Demographic characteristics of medical students (n = 500).

Category	Division	Frequency	Percent
Gender	Male	200	40
	Female	300	60
Age	18-21	150	30
	22-25	250	50
	26-30	100	20
Marital status	Married	100	20
	Unmarried	400	80
Living area	Urban	370	74
	Rural	130	26
Level of education	Undergraduate	400	80
	Graduate	100	20

Table 2: Self-medication practices according to demographics

Category	Self-medication percentages (frequency %)	
Gender	Self-medicated	Not self-medicated
Female (n=300)	170 (56.6%)	130 (43.3%)
Male (n=200)	110 (55%)	90 (45%)
Age		
18-21 (n=150)	30 (20%)	120 (80%)
22-25 (n=250)	50 (20%)	200 (80%)
26-30 (n=100)	70 (70%)	30 (30%)
Marital status		
Married (n=100)	75 (75%)	25 (25%)
Unmarried (n=400)	165 (41.2%)	235 (58.8%)
Living area		
Urban (n=370)	200 (54.1%)	170 (45.9%)
Rural (n=130)	30 (23.1%)	100 (76.9%)
Level of education		
Undergraduate (n=400)	150 (37.5%)	250 (62.5%)
Graduate (n=100)	70 (70%)	30 (30%)

Table 3: Depicting possible objectives for using self – medication antibiotics

Objectives for Self Medications with Antibiotic	Frequency (Percentage)
Not a grave condition to go for consultation	170 (45.9%)
Presumed medical expertise	55 (14.8%)
Insufficient time for consultation because of course classes	60 (16.2%)
Considering a physician's advice subsequent to a prior session	40 (10.8%)
Uncomfortable demeanour of the medical staff	10 (2.7%)
Monetary problems	20 (5.4%)
Don't want to discuss	15 (4.1%)

Table 4: Self-medication taken in various illness by medical learners

Illness	Frequency (Percentage)
Typical cold, a temperature, and congestion	200 (43.1%)
Throat infection	150 (32.2%)
Urinary tract infections	15 (3.2%)
Cutaneous maladies	20 (4.1%)
Infected eyes	10 (2.1%)
Migraine	20 (4.1%)
Injuries	35 (7.5%)
Not discussed	15 (3.2%)

Table 5: Suppliers of the medicines identified in self-administration

Suppliers of medicine	Frequency (Percentage)
Local Drugstore	350 (77.7%)
Companions	70 (15.5%)
Residual medications	20 (4.4%)
Not discussed	10 (2.2%)

Table 6: Depicting type of Antibiotics used as self-medication

Antibiotic name	Frequency (Percentage)
Amoxicillin	80 (35.2%)
Azithromycin	90 (39.6%)
Ciprofloxacin	12 (5.2%)
Penicillin	10 (4.4%)
Tetracycline	3 (1.3%)
Ofloxacin	8 (3.5%)

Streptomycin	2 (0.8%)
Cefadroxil	20 (8.8%)
Bactrim	2 (0.8%)

Results:

In all, 500 medicine learners participated in the investigation, with 40% of them being men and 60% of them being women. The mean generation of the respondents was around 18 to 30 years, with most being under 22 and 25. 20% of people got hitched while 80% were single. According to Table 1, almost all (80%) of those surveyed were freshmen and 70% of them lived in metropolitan regions. The findings showed that 56% (n=280) of the reporting undergraduates had used antibiotics for self-medication within the preceding continuance. Self-administration was equally prevalent between responders who identified as male and female (56.6% and 55%), correspondingly. Although SMA practice grew by about 70% as people aged 26 to 30. In addition, graduates (70%) who had spouses (75%) and lived in cities (54.1%) seemed more likely to take SMA. (Table 2) The results show that 45.9% of those surveyed (n=170) self-medicated with antibacterial agents primarily as they believed their health condition was not significant, accompanied by envisioned medical expertise at 14.8% (n=55), a shortage of opportunity for examination as a result of class discussions at 16.2% (n=60), adhering to the guidance of a physician based on a prior experience at 10.8% (n=40), and an unsettling stance taken by medical professionals at 2.7% (n=10). (Table 3 highlights the self-medication-related causes) Frequent cold/flu/congestion (43.1%; n = 200), throat inflammation (32.2%; n = 150), urinary tract infections (3.2%; n = 15), dermatological conditions (4.1%; n = 20), vision problems (2.1%; n = 10), migraine (4.1%; n = 20), and lacerations (7.5%; n = 35) are the commonest disorders managed by SMA. (Table 4 lists disorders that SMA is used to alleviate.) Table 5 shows there is 77.7% (n=350) of the antibacterial agents used for self-administration come from neighborhood pharmacies, acquaintances provided 15.5% (n=70), and the remaining drugs provided 4.4% (n=20). Amoxicillin pills and Azithromycin pills 39.6% (n=90) are the two most frequently prescribed antibacterial medications for SMA (see Table 6), with Penicillin, Tetracycline, Ofloxacin, Streptomycin, Cefadroxil, and Bactrim tablets being the least frequently employed.

Discussion:

SMA ranks as top of the most prevalent manifestations of antibiotic resistance, however, it might be readily treated if appropriate measures are taken. Medicine trainees' SM behaviors need to be closely monitored in order to create preventative strategies for treating this disorder. Additionally, it reveals the welfare technique's weaker areas. However, on the basis of such considerations, the present investigation was carried out to ascertain the high incidence of SMA in a healthcare institution in Bathinda in addition to offering a glimpse at the causes and contributing variables of SMA.

Findings concerning the present investigation show that college pupils utilize antibiotics irrationally, exhibiting an incidence of 56% (n=280). This percentage is higher than a study by Jacques et al [11], which showed that antibiotic occurrence was identified to be 12.1%, yet lower than the rate recorded around college pupils in Ghana [12], in which the overall incidence of SMA reached seventy percent. Comparatively, the mean incidence of SMA has been determined to be 45% in Iran [13], 53.5% in Nigeria [14], and 76% in Pakistan [15], in pupils enrolled in higher educational institutions. Moreover, researchers have discovered that academically qualified people are more likely than those without education to self-medicate. Greater amounts of educational attainment and competent position are believed to be linked to self-administration and are thought to be indicator variables [16, 17].

According to the data gathered, both male and female students consumed antibiotics for SM, and wasn't gender-specific. In contrast with an investigation conducted across higher education pupils at the HUYE University in the Republic of Rwanda [11], SMA appeared more common in men than in women—23% and 46%, respectively.

Whereas the findings from our investigation showed equivalency with the findings of Habeeb et al.[18] and Shankar et al.[19], correspondingly. Yet the present investigation overlooked the connection concerning self-medication and Gender. However, other research revealed that factors such as sex, educational

background, age, social context, medical expertise, attitude toward sickness, personal care perspective, and product marketing affect how people seek self-treatment [20].

Likewise, the research we conducted showed that residents of metropolitan areas (54.1%) (n=300) had higher SMA consumption rates. This variation may be explained by recent developments on the negative effects of medicating oneself, expert medical advice regarding it, and improved availability of medicine in countries with elevated incomes [21]. The majority of people now have broader chances of getting medicines compared to the past, and this can be harmful to their wellness, particularly if subpar and insufficient prescriptions are taken [22]. Further, contrary to other studies [23], our investigation showed that SM practices were significantly more common among graduates (70%; n = 100) and individuals who were married (75%; n = 100).

A large proportion (45.9%) of people who self-medicated with antibiotics did so due to the fact they believed their medical condition hadn't been significant, and these findings correspond with those of an earlier investigation [24] carried out between college learners in Karachi, wherein it was stated that "ailment hardly serious" was the primary motivator for SMA in addition to other factors. The primary cause of SMA demonstrated the manner in which pupils may mistakenly believe that a condition is not dangerous when it is. This could be due to ignorance concerning medical problems, notably the responsible consumption of pharmaceuticals. The outcomes are equivalent to a study conducted on Chinese medical students [25]

Adolescents self-medicate to a great degree, possibly because they think it will help them feel better quickly. A similarity was additionally found in the research conducted in 2012 by Angamo and Wabe [26]. Among all ailment groupings, even those wherein antibiotics were not prescribed by the World Medical Association [1], such as viral infections and vomiting, the consumption of antibiotics remained substantial. The outcome was consistent with research from southern Nigeria. Medications have been employed for breathing-related conditions, according to a research report on antibiotic self-medication across college learners [10]. But since learners were not faithful to the entire procedure of providing medical services, it's possible that the conditions weren't adequately healed by SMA.

The following could lead to the illness getting worse or to further medical problems. Medication abuse is brought on by diagnosis ambiguity, provider ignorance, a shortage of monitoring opportunities, simple access to antimicrobial agents, and an overall paucity of therapy recommendations [1]. More than half of those surveyed (59.42%) self-medicated using Amoxicillin tablets. The present research did not pinpoint the rationale behind Amoxicillin being prescribed as an antimicrobial in SMA. Antimicrobial use, meanwhile, can be considered justified for a variety of factors. Therefore, additional research needs to be done to verify the selection requirements. Public pharmacies were the primary supplier of medications for self-administration (72.46%).

The aforementioned findings support a research investigation conducted in several locations, most notably among Karachi college pupils [15], within which the prevalence of self-medication with antibiotics was 41.4%, with neighborhood drug stores serving as the sole provider [15, 27]. By supplying antimicrobial agents without prescription, neighborhood pharmacists made a significant contribution to SMA. Since local drug stores are forbidden to have supplied learners with antibiotics sans authorization, this raises issues about compliance with pharmacy-related regulations [12].

Providing the foregoing findings, there is definitely a high likelihood that college pupils will use the self-administration of drugs carelessly and inadequately owing to the lack of information they disclosed. As a consequence, it is clear that raising the consciousness of the negative consequences of over-the-counter drugs and the value of outreach efforts in this area is a good idea, but it shouldn't be the sole suggestion. To address this issue, a variety of remedies must be used, encompassing adjustments in education phases, personal views, and conduct, as well as the quantity and nature of backing provided to nationwide initiatives and legislation.

Conclusion:

Researchers point out that the number of medical pupils who self-medicate with antibiotics has dramatically grown after the study. Nevertheless, the majority of responders seemed naive and took antibiotics for various purposes sans seeking advice. There are still open questions regarding the spread of bacteria and antibiotic desired outcomes, highlighting the value of educating pupils about AMR. To increase consciousness within medical learners, substantial

modifications to the syllabus shall be required to include greater didactic and practicum specifically relevant to AMR. To prevent pathogenic medication defiance across learners, it turned out vital to design university therapy recommendations on antibiotic susceptibility and to impose limitations on the self-purchase of unnecessary medicines.

References:

1. World Health Organization. Guidelines for the regulatory assessment of medicinal products for use in self-medication. WHODEDM/QSM/001. WHO; Geneva, Switzerland: 2000. Accessed February 14 2023.
2. Pandya RN, Jhaveri KS, Vyas FI, Patel VJ. Prevalence, pattern and perceptions of self-medication in medical students. *Int J Basic Clin Pharmacol*. 2017;2(3):275–80.
3. Noone, J.; Blanchette, C.M. The value of self-medication: Summary of existing evidence. *J. Med. Econ*. 2017, 21, 201–211. [[CrossRef](#)] [[PubMed](#)]
4. Ruiz, M.E. Risks of Self-Medication Practices. *Curr. Drug Saf*. 2010, 5, 315–323. [[CrossRef](#)]
5. Dadgostar, P. Antimicrobial Resistance: Implications and Costs. *Infect. Drug Resist*. 2019, 12, 3903–3910. [[CrossRef](#)]
6. Pwar NV, Jain SK, Sahi SR. Self-medication: how safe: Ask to your pharmacist. *The pharma review*. 2009; 7(47): 150–152.
7. You JH, Wong FY, Chan FW, Wong EL, Yeoh EK. Public perception on the role of community pharmacists in self-medication and self-care in Hong Kong. *BMC Clin Pharmacol*. 2011; 11: 19. [PubMed](#) | [Google Scholar](#)
8. Calabresi P, Cupini LM. Medication-overuse headache: similarities with drug addiction. *Trends Pharmacol Sci*. 2005; 26(2): 62–8. [PubMed](#) | [Google Scholar](#)
9. Greenhalgh T. Drug prescription and self-medication in India: an exploratory survey. *Soc Sci Med*. 1987; 25(3): 307 18. [PubMed](#) | [Google Scholar](#)
10. Osemene KP, Lamikanra A. A Study of the Prevalence of Self-Medication Practice among University Students, Southwestern Nigeria. *Tropical Journal of Pharmaceutical Research*. 2012; 11(4): 683–689. [Google Scholar](#)
11. Tuyishimire J, Okoya F, Adebayo AY, et al. Assessment of self-medication practices with antibiotics among undergraduate university students in Rwanda. *Pan Afr Med J*. 2019;33:307. doi:10.11604/pamj.2019.33.307.1813931692864 [[Crossref](#)], [[Web of Science](#)], [[Google Scholar](#)]
12. Eric S, Donkor, Patience B, Tetteh-Quarcoo, Patrick Nartey, Isaac O, Agyeman. Self-Medication Practices with Antibiotics among Tertiary Level Students in Accra, Ghana: a cross-sectional Study. *Int J Environ Res Public Health*. 2012; 9(10): 3519–3529. [PubMed](#) | [Google Scholar](#)
13. Sarahroodi S, Arzi A, Sawalha AF, Ashtarinezhad A. Antibiotics self-medication among southern Iranian university students. *Int J Pharmacol*. 2010; 6(1): 48–52. [Google Scholar](#)
14. Sapkota AR, Coker ME, Goldstein RER, Atkinson NL, Sweet SJ, Sopeju PO, Ojo MT, Otivhia E, Ayepola OO, Olajuyigbe OO, Shireman L, Pottinger PS, Ojo KK. Self-medication with antibiotics for the treatment of menstrual symptoms in southwest Nigeria: a cross sectional study. *BMC Public Health*. 2010; 10: 610. [PubMed](#) | [Google Scholar](#)
15. Syed NZ, Reema S, Sana W, Akbar Z, Talha V, Mehrine S et al. Self-medication amongst university students of Karachi: prevalence, knowledge and attitudes. *J Pak. Med Assoc*. 2008; 58(4): 214–217. [PubMed](#) | [Google Scholar](#)
16. Klemenc-Ketis Z, Hladnik Z, Kersnik J. Self-medication among healthcare and non-healthcare students at University of Ljubljana, Slovenia. *Med Princ Pract*. 2010; 19(5): 395 401. [PubMed](#) | [Google Scholar](#)
17. Martins AP, Miranda Ada C, Mendes Z, Soares MA, Ferreira P, Nogueira A. Self-medication in a Portuguese urban population: a prevalence study. *Pharmacoepidemiology Drug Saf*. 2002; 11(5): 409–14. [PubMed](#) | [Google Scholar](#)
18. Habeeb GF, Gearhart JG. Common patient symptoms: patterns of self-treatment and prevention. *J Miss State Med Assoc* 1993;34(6):179–81.
19. Shankar PR, Partha P, Shenoy N. Self-medication and non-doctor prescription practices in Pokhara valley, western Nepal: a questionnaire-based study. *BMC Fam Pract*. 2002;3:17. [https://doi.org/10.1186/1471-2296-3-17](#)
20. Afolabi AO. Factors influencing the pattern of self medication in an adult Nigerian population. *Ann Afr Med*. 2008; 7(3): 120 7. [PubMed](#) | [Google Scholar](#)
21. Hernandez-Juyol M, Job-Quesada JR. Dentistry and self-medication: a current challenge. *Med Oral*. 2002;7(5):34–7.
22. Balbuena FR, Aranda AB, Figueras A. Self-medication in older urban Mexicans: an observational, descriptive, cross-sectional study. *Drugs Aging*. 2009;26(1):51–60. [https://doi.org/10.2165/0002512-200926010-00004](#)
23. Patil SB, S H V, B V P, Santoskumar J, Binjawadgi AS, Kanaki AR5. Self-medication practice and perceptions among undergraduate medical students: a cross-sectional study. *J Clin Diagn Res*. 2014 8(12):HC20-3. [https://doi.org/10.7860/JCDR/2014/10579.5313](#)]
24. Yasmin Mumtaz, Ashraf Jahangeer, Tahira Mujtaba, Shahla Zafar, Sara Adnan. Self Medication among University Students of Karachi. *Journal of Liaquat University of Medical and Health Sciences*. 2011; 10(3): 102–5. [Google Scholar](#)
25. X Zhu, H Pann, Z Yang, B Cui, D Zhang, W Ba-Thein. Self-medication practices with antibiotics among Chinese university students. *Public Health*. 2016; 130: 78–83. [PubMed](#) | [Google Scholar](#)
26. Angamo MT, Wabe NT. Knowledge, attitude and practice of self medication in Southwest Ethiopia. *International Journal of Pharmaceutical Sciences and Research*. 2012; 3(4): 1005–10. [Google Scholar](#)
27. Togoobaatar G, Ikeda N, Ali M, Sonomjamts M, Dashdemberel S, Mori R ,Shibuya K. Survey of non-prescribed use of antibiotics for children in an urban community in Mongolia. *Bull World Health Organ*. 2010 Dec 1; 88(12): 930–6. [PubMed](#) | [Google Scholar](#)