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SELF-MEDICATION AMONG MEDICAL STUDENTS DURING COVID-19 PANDEMIC: A CROSS SECTIONAL STUDY

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ABSTRACT

Objectives: To find out the frequency of self-medication among medical students, specifically during the onset of COVID-19 symptoms or after a positive test.

Methodology: The present study was conducted on medical students of a public university with the cross sectional type of research. This study was conducted from July 2021 to September 2021. With a sample size of 358 calculated via Open Epi, data was collected using an online questionnaire via Google Forms after obtaining ethical approval. Demographic details and responses were gathered anonymously. All data were entered into SPSS version 20 for analysis purposes. Data were presented in the form of proportion and means with standard deviation.

Results: Over-all 363 students were registered in the study with 320 (88.2%) respondents being female. Mean age of the study cases were 21±2.5 years. Among study cases, 166 (45.7%) students, self-medicated with widely used medicines. Out of these 166, analgesics/antipyretics were the most frequently used class of medication (n=79, 47.59%), followed by antacids (n=35, 21.08%), antibiotics (n=28; 16.86%), and anti-allergic medications (n=24, 14.45%). The common antibiotics used in self-medication among the 28, were amoxicillin (n=11 39.28%) and azithromycin (n=8, 28.57%).

Conclusion: Nearly half of the participants self-medicated, with analgesics/antipyretics being the most commonly used medications. Among antibiotics, amoxicillin and azithromycin were prominently used antibiotics.

Keywords: Medical Students; Self-medication; COVID-19

INTRODUCTION

The COVID-19 pandemic has caused and made challenges in various aspects of life worldwide, including healthcare systems, education, and social behaviours. Among the populations significantly impacted are medical students, who find themselves navigating not only the challenges of their hard academic training but also the complexities of a global health crisis. As frontline witnesses to the pandemic's toll on public health, medical students face unique stressors, including increased academic demands, concerns for personal safety, and disruptions to clinical training.

One phenomenon that has emerged within the context of the COVID-19 crisis is self-medication among medical students, which has become highly converting into one of the most unsafe methods of the disease prevention process. Self-medication is defined as the use of medicinal products by individuals to treat self-recognized illnesses or symptoms without consulting a healthcare professional.[1]

Self-medication may offer temporary relief or perceived advantages, but it also brings different risks, including misdiagnosis, delayed treatment of underlying conditions, adverse drug reactions, and the development of antibiotic resistance.[2] Moreover, self-medication among medical students may have broader implications for their professional identity, ethical standards, and future patient care practices. Therefore, investigating the prevalence, patterns, and correlates of self-medication among medical students is essential for designing targeted interventions and educational initiatives aimed at promoting responsible healthcare behaviours and mitigating potential harms.[3]

There are various reasons why individuals resort to self-medication, including a lack of understanding of disease symptoms or a mistaken belief in one's ability to treat an illness. Financial constraints, time limitations preventing consultation with a doctor, and a casual attitude towards health issues also contribute to this practice. Studies conducted worldwide have highlighted instances where self-medication, particularly with prescription-only medications and in the absence of

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proper clinical assessment, has resulted in patient fatalities.[5] Particularly concerning is the widespread self-medication with antibiotics in developing countries, which poses a significant global health challenge. This misuse of antibiotics, often through self-prescription, has been linked to numerous adverse effects, such as the development of antibiotic resistance, increased harm to individuals, and ineffective treatment outcomes.[6] Medical undergraduate students are in a stage of developing clinical application of antibiotic knowledge about their use and can have a greater chance of irrational and unwise practices.

Students studying Health sciences are more likely to engage in self-medication compared to other undergraduates due to their easy access to drug information resources and their relatively advanced knowledge of different drug indications.[7,8] Various studies have been conducted worldwide regarding self-management behaviours among medical and non-medical undergraduates. However, much more relevant data is required to be collected concerning medical students in Karachi, Pakistan. With a surge in COVID-19 cases lately, self-medication has become more prevalent and this research intends to evaluate the self-medication practices among medical students during the aforementioned period, in particular. Moreover, we plan on running a campaign among medical undergraduates, highlighting the potential risk self-medication carries with itself in the long term and that one should only self-medicate if he has enough knowledge of the antibiotic(s).

Although self-medication is a common practice in society, medical students who are future doctors are expected to refrain from such practices. This study was conducted to assess this assumption and was an attempt to identify self-medication behaviours among medical students and evaluate the medications, specifically the antibiotics that they used to treat their medical issues, especially during the pandemic COVID-19.

METHODOLOGY

It was a cross-sectional study that was focused among the medical undergraduate students of a public medical university from July 2021 for three months. Taking prevalence from the previous study a sample size was calculated as 358, using Open Epi software. [9] First to final-year medical students at a public sector university who voluntarily provided the information were included. Post- graduate students and students of other disciplines were not included in the study. Ethical endorsement was taken by the IRB of JSMU (JSMU/IRB/2021/-525).

Informed consent and data for the study was collected through a structured online questionnaire in the English Language via Google Forms. Additionally, Cronbach's alpha was employed to assess the reliability of the questionnaire responses. Online data was extracted onto Microsoft Excel. The investigators of this research had access to the responses of the Google Form, which was kept anonymous. The demographic data was age, gender, year of study and their living place. A total of 21 questions which were asked after thorough literature review of relevant material and internal validation of the research team and all information was recorded on Google forms. Data was kept highly confidential and was analyzed using IBM SPSS version 20. Categorical data was represented as proportions, while continuous data was represented as means with standard deviation.

RESULTS

In the present study a total of 363 students were enrolled, out of which 320 (88.2%) respondents being female. The average age of the participants was 21$\pm$2.5 years. Among study cases, 166 (45.7%) students self-medicated with widely used medicines, out of which 123 were female students. Out of these 166, analgesics/antipyretics were the most commonly used class of medication (n=79, 47.59%), followed by antacids (n=35, 21.08%), antibiotics (n=28; 16.86%), and anti-allergic medications (n=24, 14.45%). The most frequent reason to self-medicate was past experience of the illness symptoms (n=83, 50%), followed by perceived non-seriousness of the illness (n=33, 19.87 %). The frequency of self-medication was more in the students who lived at hostel (n=65, 39.15%) and the main diseases treated with self-medication was respiratory infections (n=96, 57.83%) (Table1). The common antibiotics used in self-medication among the 28, were amoxicillin (n=11 39.28%) and azithromycin (n=8, 28.57%) (Figure 1). Majority of the students who did not self-medicate (n=197) preferred to go to a doctor (n=68, 34.5%) and were afraid of side effects 47 (23.8%) (Table 2).

DISCUSSION

The present study points out the self-medication among medical students which was 45.7% and this frequency is in line with findings of a study from Nepal which showed the rate of self-medication of 51.1%.[3] This frequency is lower as compared with the findings of some other studies conducted in Kathmandu, where this rate was 76.6 %[10] and a study from Iran which showed that the occurrence of self-medication in medical students was 83.0%.[11] In a study conducted in Sri Lanka, frequency of self-medication among study cases was 78%.[12]

The disparity in occurrence may be owing to the selection of choice of study populations, availability of antibiotics easily, and the socio-economic state of the countries. Similar studies conducted in Punjab amongst general population showed frequency of self-medication by general population at 58.3%.[13,14] and in Jordan (74.%).[15] These

findings highlights that self-medication practices among the study cases remain comparable, despite their enhanced knowledge and familiarity with different categories of drugs. Despite their training and exposure to pharmacological principles, medical students may still engage in self-medication, indicating that factors beyond mere knowledge influence these behaviors. These factors could include personal attitudes, accessibility to healthcare services, perceived severity of symptoms, and cultural norms surrounding self-care.

Among those 166 (45.7%) cases who self-medicated, analgesics/antipyretics were the most frequently used class of medication (n=79; 47.59%). Other researchers conducted worldwide also showed analgesics/antipyretics as the most frequently used class of drugs,[2] the prevalence were Jordan (79.9%),[15] Kingdom of Saudi Arabia (57%),[17] East Africa (34.3%),[18] Nepal (50%).[19] In the context of self-medication among students, the primary reason for those who engaged in self-medication was a previous experience with the illness, accounting for 50%. Other contributing factors included the perception of the illness as non-serious (19.87%), ease of self-administration (14.45%), concern about the ongoing pandemic (8%), and a shortage of time (7%).

Conversely, among students who refrained from self-medication (n=197), the leading factor was a consistent preference for consulting a doctor, with 30.4% indicating this as their primary choice. Additional reasons included apprehension about potential side effects (21.8%), the perceived risk of using incorrect drugs (17.7%), insufficient knowledge about medications (15.7%), and unavailability of drugs (5%). This diversity in reasons suggests a complex interplay of factors influencing the decision-making process related to self-medication and non-self-medication among students.

In our set-up, the frequency of students who were taking antibiotics were found to be 16.86%, (n=166) which is lower as compared to a study done in Punjab which shows 53% percent of non-medical respondents had self-medicated with antibiotics as compared to medical students (37.2 %).[13,14] The higher intake of antibiotics in medical students in Punjab may be due to the fact as medical students are more likely to have access to both prescription and over-the-counter medication.

Self-medication among medical students may be encouraged by variables like a low propensity to visit health experts, reliance on the internet for baseline medical knowledge, and treating self-diagnosed ailments. The frequency of self-medication is more in the students who live at hostel 65 (39.15%) as compared to the home 101 (60.84%). The present study shows retail pharmacies as the most common source of non-prescribed antibiotics, a study in Nepal also showed the same finding.[12] In those countries that are developing, several drugs are effortlessly accessible lacking a registered doctor's prescription due to poor drug supplying rules and the absence of knowledge about drug usage, side effects, resistance, and drug interaction. Medical students consider themselves as more knowledgeable about antibiotics and dislike calling a specialist doctor until and unless some grave appearance of the disease or problems befalls. These issues promote the students to self-medicate themselves with antibiotics.

A researcher in Nepal also showed amoxicillin and azithromycin as the most commonly self-medicated antibiotic. Both of these antibiotics are broad-spectrum and effective against a wide range of bacteria. Most common cause of self-medication was respiratory tract infections (57.83 %), two more researches in Eastern Nepal and Iran[20] during year 2020 and 2021 respectively also showed respiratory tract infections as the most common cause of SMA, while researches done in North West Nigeria[21] and Vilnius[22] during pre-pandemic times showed dysentery and tonsillitis respectively as the most common cause of SMA, this explains that during COVID-19 pandemic undergraduate medical students started SMA for their respiratory tract symptoms, these symptoms

Table 1: Frequencies of Different Bacteria Isolated

Variable	Options	Frequency	Percent
Reasons	Prior experience of the illness	83	50.0%
	Perceived non-seriousness of the illness	33	19.87%
	Easy to do	24	14.45%
	Fear of covid-19	14	8.0%
	Lack of time to go to a consultant	12	7.0%
Residence	Hostel	65	39.15%
	Home	101	60.84%
	Diarrhea	39	23.49%
	Skin infections	16	9.0%
	Sinus infections	9	5.0%
	Ear infections	6	3.0%
Antibiotic accessibility	Pharmacy	129	77.7%
	Family/friends	26	15.66%
	Private Clinic	11	6.0%

Table 2: Reasons for refraining from self- medication (n=197)

Options	Frequency	Percent
Always prefer a consultant	68	34.5%
Apprehension about potential side effects	47	23.8%
Perceived risk of using incorrect drugs	38	19.2%
Insufficient knowledge about medicines	33	16.7%
Unavailability of medicines	11	5.5%

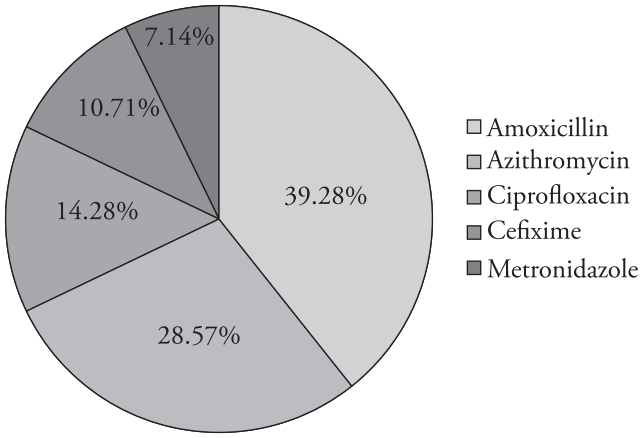

Figure 1: Frequently used antibiotics (n=28)

could possibly have arisen due to covid 19 infection.

There are 76 (45.78 %) of 166 students who suspected their respiratory infection during the last year as Covid-19 and 14 (8 %) did self-medication as a prophylaxis, due to the fear of COVID-19 at hospital and due to psychological stress. Inadequate utilization of broad-spectrum antibiotics can contribute to the emergence of multi-drug resistant microorganisms. Such infections pose significant challenges for treatment, often necessitating the use of more toxic and expensive antibiotics as first and second-line options become ineffective.[23,24] This not only burdens the current healthcare system but also places financial strain on patients and their families. Addressing this issue promptly is imperative. Hence, it is essential to continually educate medical students on the judicious use of antibiotics by incorporating relevant courses into their curriculum. Emphasis should be placed on practical training in antibiotic management rather than solely focusing on theoretical knowledge.

CONCLUSIONS

Nearly half of the medical students self-medicated, with analgesics/antipyretics being the most commonly used medications. Among antibiotics, amoxicillin and azithromycin were prominently used antibiotics. Education providers should encourage the students not to self-medicate themselves especially antibiotics.

REFERENCES

1. Ismail Z, Mohan A, Ngendahayo C, Aborode AT, Abid A, dos Santos Costa AC, et al. Self-Medication in Africa during COVID-19 Pandemic. Innov Pharm. 2021;12(4):1-4. DOI: 10.24926/iip.v12i4.4234.
2. Haque M, Rahman NAA, McKimm J, Kibria GM, Azim Majumder MA, Haque SZ, et al. Self-medication of antibiotics: investigating practice among university students at the Malaysian National Defence University. Infect Drug Resist. 2019:1333-1351. DOI: 10.46542/pe.2021.212.152162.
3. Mandal NK, Rauniyar GP, Rai DS, Panday DR, Kushwaha RP, Agrawal SK, et al. Self-medication practice of antibiotics among medical and dental undergraduate students in a medical college in Eastern Nepal: A descriptive cross-sectional study. J Nepal Med Assoc. 2020;58(225):328. DOI: 10.31729/jnma.4914.
4. Faqihi A, Sayed S, editors. Self-medication practice with analgesics (NSAIDs and acetaminophen), and antibiotics among nursing undergraduates in University College Farasan Campus, Jazan University, KSA. Ann Pharm Fr. 2021:Elsevier. DOI: 10.53075/ljmsirq/65887895473577557.
5. Khatony A, Soroush A, Andayeshgar B, Abdi A. Nursing students' perceived consequences of self-medication: a qualitative study. BMC Nurs. 2020;19:1-7. DOI: 10.1186/s12912-020-00460-8.
6. Elong Ekambi G-A, Okalla Ebongue C, Penda IC, Nnanga Nga E, Mpondo Mpondo E, Eboumbou Moukoko CE. Knowledge, practices and attitudes on antibiotics use in Cameroon: Self-medication and prescription survey among children, adolescents and adults in private pharmacies. PloS One. 2019; 14 (2): e0212875: DOI: 10.1371/journal.pone.0212875.
7. Janatolmakan M, Abdi A, Andayeshgar B, Soroush A, Khatony A. The Reasons for Self-Medication from the Perspective of Iranian Nursing Students: A Qualitative Study. Nurs Res Pract. 2022; 2960768. DOI: 0.1155/2022/2960768.
8. Baracaldo-Santamaría D, Pabón-Londoño S, Rojas-Rodriguez LC. Drug safety of frequently used drugs and substances for self-medication in COVID-19. Ther Adv Drug Saf. 2022;13:DOI: 10.1177/204209862210941.
9. Paudel S, Aryal B. Exploration of self-medication practice in Pokhara

valley of Nepal. BMC Public Health. 2020;20(1):714. DOI: 10.1186/s12889-020-08846-9.
10. Khadka A, Kafle KK. Prevalence of Self-medication among MBBS students of a Medical College in Kathmandu. J Nepal Med Assoc. 2020; 58 (222): 69.
11. Yasmin F, Asghar MS, Naeem U, Najeeb H, Nauman H, Ahsan MN, et al. Self-medication practices in medical students during the COVID-19 pandemic: a cross-sectional analysis. Front Public Health.2022;10. DOI: 10.3389/fpubh.2022.803937.
12. Subashini N, Udayanga L. Demographic, socio-economic and other associated risk factors for self-medication behaviour among university students of Sri Lanka: a cross sectional study. BMC Public Health. 2020; 20: 1-13: DOI: 10.1186/s12889-020-08622-8.
13. Azhar H, Tauseef A, Usman T, Azhar Y, Ahmed M, Umer K, et al. Prevalence, attitude and knowledge of self-medication during Covid-19 disease pandemic. Pak J Med Health Sci. 2021;15:902-5.
14. Gillani AH, Chang J, Aslam F, Saeed A, Shukar S, Khanum F, et al. Public knowledge, attitude, and practice regarding antibiotics use in Punjab, Pakistan: a cross-sectional study. Expert Rev Anti Infect Ther. 2021; 19 (3): 399- 411. DOI: 10.1080/14787210.2021.1823216
15. Elmahi OK, Musa RA, Shareef AA, Omer ME, Elmahi MA, Altamih RA, Mohamed RI, Alsadig TF. Perception and practice of self-medication with antibiotics among medical students in Sudanese universities: A cross-sectional study. PLoS One. 2022;17(1):e0263067. DOI: 10.1371/journal.pone.0263067.
16. Lukovic JA, Miletic V, Pekmezovic T, Trajkovic G, Ratkovic N, Aleksic D, Grgurevic A. Self-medication practices and risk factors for self-medication among medical students in Belgrade, Serbia. PloS One. 2014;9(12):e114644: DOI: 10.1371/journal.pone.0114644.
17. Barros GAMd, Calonego MAM, Mendes RF, Castro RA, Faria JF, Trivellato SA, et al. The use of analgesics and risk of self-medication in an urban population sample: Cross-sectional study. Rev Bras Anestesiol. 2020; 69: 529- 36.
18. Almohammed BA. Frequency and Knowledge of Analgesics Self-Use and Their Adverse Effects in the Eastern Province of Saudi Arabia. Cureus. 2023; 15 (1). DOI: 10.12345/cureus.12345.
19. Amoabeng IA, Otoo BA, Darko G, Borquaye LS. Disposal of unused and expired medicines within the sunyani municipality of Ghana: A cross-sectional survey. J Environ Public Health. 2022; 6113346. DOI: 10.1155/2022/6113346.
20. Malla B, Deepti K. Knowledge, attitude and practice of over-the-counter drug among undergraduate medical students-a cross sectional study. J Gandaki Med Coll Nepal. 2021; 14 (2):153- 9.
21. Hashemzaei M, Afshari M, Koohkan Z, Bazi A, Rezaee R, Tabrizian K. Knowledge, attitude, and practice of pharmacy and medical students regarding self-medication, a study in Zabol University of Medical Sciences; Sistan and Baluchestan province in south-east of Iran. BMC Med Edu. 2021; 21(1):1- 10. DOU: 10.1186/s12909-020-02374-0.
22. Ajibola O, Omisakin OA, Eze AA, Omoleke SA. Self-medication with antibiotics, attitude and knowledge of antibiotic resistance among community residents and undergraduate students in Northwest Nigeria. Diseases. 2018;6(2):32. DOI: 10.3390/diseases6020032 .
23. Barkus A, Lisauskiene I. Inappropriate habits of antibiotic use among medical specialists and students in Vilnius. Acta Medica Lituanica. 2016;23(2):135-41. DOI: 10.6001/actamedica.v23i2.3330.
24. Iqbal S, Begum F, Qasim M. Screening, Characterization and Optimization of Bioactive Peptides with Antibacterial Activities Against Multi-Drug Resistant Pathogens, Produced by Bacillus safensis Strain MK-12.1. Int J Pept Res Ther. 2022;28(6):161. DOI: 10.1007/s10989-022-10469-z.
25. Bonten M. Lowbury Lecture 2021: tales of the unexpected in antibiotic resistance. J Hos Inf. 2022;123:139-42. DOI: 10.1016/j.jhin.2022.02.019.
26. Pulingam T, Parumasivam T, Gazzali AM, Sulaiman AM, Chee JY, Lakshmanan M, et al. Antimicrobial resistance: prevalence, economic burden, mechanisms of resistance and strategies to overcome. Eur J Pharm Sci. 2022;170:106103. DOI: 10.1016/j.ejps.2021.106103.

Author's Contribution

SR conceived the idea and designed the study. MN, ZA and MIP helped in designing the study, performed data analysis and helped in the write up of the manuscript. RP and NJ helped in the write up of the manuscript. All authors made substantial intellectual contributions to the study.

Conflict of Interest

Authors declared no conflict of interest

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None

Data Sharing Statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.