To Determine the Rate of Antibiotic Self-Medication Practices among Undergraduate Students in District Abbottabad

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Abstract – Self-medication is defined as acquiring and using medications without the advice of a doctor for diagnosis, prescription, or therapy monitoring. The objectives of this study to estimate the prevalence of self-medication with antibiotics among under graduate students in district Abbottabad, Pakistan. This descriptive cross-sectional study was conducted at Vertex Institute of Science and Technology, Comsats University Abbottabad and University of Engineering & Technology Abbottabad Campus from undergraduate students of Generic Nursing, Pharmacy and Engineering. We interviewed and responses were recorded on a close ended questionnaire. In this study, 298 undergraduate students participated, of those 221 (74.2%) male students and 77 (25.8%) female students admitted using self-medication. The most frequently used antibiotics were amoxicillin (39.5%), ciprofloxacin (9.05%), erythromycin (9.72%), metronidazole (8.05%), and other antibiotics (24.8%) and most users reported no negative medication reactions. About 40.60% students are aware of rational drug use and 59.40% students are not aware of the rational drug use. The students at the universities frequently use self-medication, with antibiotics being the most frequently used drug class and cough, fever and cold being the most prevalent morbidities for doing so. Students frequently self-administer prescription-only drugs, such as antibiotics, in the mistaken belief that doing so will save them money and time but doing so can have serious negative drug reactions, lead to antibiotic resistance, cause treatment failure and cause drug-related toxicity, all of which are costly for both patients and healthcare services.

Keywords – Self-medication, Diagnosis, Morbidities, Antibiotics, Administer, Resistance, Toxicity

I. INTRODUCTION

Disease and health are two terms that have existed from the beginning of time. In this sense, it appears that illness is more than human attention, and the use of medication in various forms has been one of the methods to combat disease in the past. Self-medication is a significant aspect of an individual's medical behavior; in fact, it is frequently the first choice for treating early signs of disease and is one of the most important tools employed by patients in coping with common health problems. Although 75% of treatments are mediated, excessive usage without consulting and medical therapy in addition to not addressing the ailment can result in long-term problems [1].

Self-medication is defined as diagnosing and prescribing medications without consulting a physician, resulting in excessive time and money spent, morbidities owing to unpleasant effects and, eventually, the development of antibiotic resistance

(AR) due to a decrease in antibiotic efficacy. It is a common practice all across the world, particularly in undeveloped countries, and is considered an alternative for individuals who cannot pay the prices of healthcare services. A paucity of medical supplies, long travel times to medical facilities, unfavorable attitudes of healthcare staff toward patients, and previous knowledge of the condition and its remedies are the key causes of self-medication. All of these characteristics exist in poor and middle-income nations and contribute to their growth. Antibiotics have been used to treat infectious infections and are frequently employed in place of basic healthcare. Self-medication is a prevalent practice in the healthcare system and is a component of self-care [2,3].

Antibiotic self-medication (ASM) is the purchase and use of antibiotic medications without consulting a physician, as well as the storage of antibiotics previously used to treat infections in the house in order to remedy comparable health issues more rapidly. Numerous studies have demonstrated that the phenomena of self-medication with antimicrobial medications is continually rising, both in adults and children formerly used to treat infections at home in order to more swiftly overcome comparable health issues. Numerous research has indicated that the problem of antimicrobial drug self-medication is increasing in both adults and children. Having used a medicine to treat a past infection can often lead to parents believing that the antibiotic can also be used to treat similar symptoms in their children [4]. A fast expanding global concern is bacterial antimicrobial resistance (AMR), which develops when changes in bacteria lead medications used to treat illnesses to become less effective. The World Health Organization initially issued a paper in 2017 listing the 12 families of bacteria that are deemed harmful to human health owing to their specific antibiotic resistance mechanisms. Each year, AMR directly causes more than 1.27 million deaths and contributes to another 4.95 million fatalities worldwide [4].

The initial option and response to most disease episodes is self-medication. Antimicrobial usage without the advice of a health care expert may increase the likelihood of incorrect use, missed diagnosis, delays in effective treatment, pathogen resistance, and increased morbidity. There is no sector of the health care community that is immune to drug addiction or misuse, with doctors, nurses, and pharmacy professionals among the worst offenders. Self-medication among health care workers may indicate that the practitioner is ignoring his or her own health. This raises severe concerns for both patients and professionals [5].

According to the World Health Organization (WHO), "self-medication" occurs when an individual takes drugs based on their self-diagnosis of an illness without visiting a medical practitioner or doing any clinical tests to validate their assertions. Self-medication does not just relate to taking medications for acute symptoms; it also includes the repeated self-administration of medications for chronic conditions. Evidence reveals that those who self-medicate themselves also counsel their family members, relatives, and friends to do the same. Self-medication is a big healthcare problem since it can lead to misinterpretation of sickness, antibiotic resistance, hazardous drug interactions or even a delay in the identification of a serious condition [6].

Self-medication is a significant concern, particularly in developing countries. Self-medication is a notion in which people use drugs to treat and manage minor diseases. Individuals are gambling with their health in the belief that certain drugs may alleviate their disease and bring the situation under control. It is one of the most prevalent and preferred modalities that the patient has restored. Self-medication cannot be considered completely harmful because many drugs are categorized as over-the-counter and may be acquired without a prescription, saving patients money and time [7]. Self-medication among people with a healthcare background is supposed to promote autonomy by allowing them to make decisions regarding minor health conditions. Self-medication has been associated with a variety of advantages for healthcare systems, including faster access to treatment at a lower cost. Despite all of the advantages, the hazards of self-medication must not be forgotten. These hazards may include taking an excessive amount of a certain medication; using the incorrect medicine in a given situation; utilizing a specific drug for a prolonged period of time; and taking several drugs at the same time, which may result in a drug interaction [7].

Self-medication for prescription-only medications such as antibiotics, on the other hand, has become a severe concern in terms of medical safety and

efficacy. Antibiotic abuse and misuse, including self-medication, is a particularly important problem across the world, owing to the emergence of antimicrobial resistance, which is strongly linked to antimicrobial consumption patterns. Antibiotic resistance is seen as a worldwide problem owing to factors such as increased morbidity and death rates associated with uncontrolled infectious illnesses when routine therapies become ineffective. There are certain advantages of use of self- medication as it is convenient, economical and also reduce wastage of medical resources in minor illnesses. There are also some of side effects in which some of them are, inappropriate usage of antibiotics can lead to drug resistance, drug addiction sometimes and drug interactions by taking one drug with other same drugs. Self-medication is of serious medical concern [8, 9].

Antimicrobial resistance, for example, is caused by the excessive and inappropriate use of antibiotics, which is one of the world's primary issues. Antibiotic resistance develops as a result of improper antibiotic usage. Bacterial resistance adds to the cost burden by demanding the use of numerous expensive antibiotics. The low-income population is unable to afford expensive treatment for resistant microorganisms, resulting in the loss of many valuable lives. Because antibiotics are widely used in the treatment of viral and self-limiting bacterial illnesses, there is a significant tendency for misuse. The widespread usage of broad-spectrum antibiotics is frequently unfounded. Self-medication with antibiotics is one kind of irrational usage [10].

Lack of time to consult with a physician, inability to schedule a quick appointment, relative due to distance from nearby hospitals and clinics, limited slots to receive quick treatment from a government hospital during busy hours, and excessive consulting fees to obtain a service from a physician are all possible reasons for self-medication. Other motivations include: family, friends and neighbor's; using obsolete medicines or prescriptions previously used in a similar sort of situation; lucrative ads in newspapers and internet sources; journals and periodicals. However, self-medication can lead to major health issues such as inaccurate diagnosis, habituation, allergic responses, antibiotic resistance, persistent pain and so on [11].

University or college undergraduate students they play a crucial role as future healthcare workers. Self-medication has advantages and disadvantages.

Several studies have found that antibiotic self-medication is common among undergraduate students in various regions of the world. Self-medication habits are widespread among junior medical students during their training in healthcare. This is due to their expansion and increased awareness of illnesses and therapies. According to reports, healthcare students typically practice based on their inadequate knowledge and experience. As a result, the rate of antibiotic self-medication has increased [12].

Reasons for self-medication vary by region and can be attributed to a variety of factors such as health systems, geography, poverty, gender and age. In certain areas, self-medication is viewed as a means of gaining independence from health-care systems and exercising a human right to refuse treatment from physicians. Self-medication with antibiotics is strongly related to improper usage, such as insufficient dose, medicine sharing and discontinuation of therapy with relieving symptoms. This raises the risk of medication interactions, concealment of symptoms of underlying illnesses, and the establishment of antibiotic-resistant bacteria. Furthermore, incorrect antibiotic usage has been linked to an increase in water-borne and food-borne diseases caused by antibiotic-resistant bacteria, nosocomial infections, and decreased animal productivity. As a result of the emergence of resistance strains, prolonged hospital periods related to treatment regimen failure, along with increased community movement, result in a higher risk of the general population catching antibiotic-resistant bacterial strains [13].

Since the discovery of penicillin in 1928 and subsequent antimicrobial classes, antimicrobials have saved millions of lives and increased human life expectancy. In addition to treating infectious illnesses, antibiotics assure the safety of several emergency medical procedures, such as surgery and organ transplants. However, the medications' success is measured by their ability to withstand the evolution of resistance in harmful microorganisms. Bacterial resistance to practically all antibiotics is a worldwide public health issue. Antibiotic-resistant microorganisms are expected to cause around 10 million deaths each year by 2050 [14]. Antibiotic resistance is a natural phenomenon generated by genetic alterations in chromosomes under selection pressure, and this phenomenon can be spread horizontally to other bacteria via the interchange of

extrachromosomal resistant plasmids. Because the resistant bacteria have no "evolutionary disadvantage," it is doubtful that they will lose their resistance over time. Consequently, scientists recommend that antibiotics be used appropriately to prevent the formation of primary resistance. Antibiotics available from pharmacies without a prescription, as well as overuse or misuse of antibiotics such as self-medication, non-adherence to the prescription, inappropriate prescribing and a lack of antibiotic susceptibility testing can all play a significant role in the evolution of antibiotic resistance [14].

Self-medication raises the risk of drug misuse and dependence. It also covers the signs and symptoms of underlying disorders, exacerbating the situation, increasing drug resistance and delaying diagnosis. William Osler once said, "A desire to take medicine is perhaps the great feature which distinguishes man from animals." This desire, however, may cause disaster when a person begins taking medications on their own (i.e., self-medicating), failing to recognize that all pharmaceuticals are poisonous and their legal use in treatment is predicated on a quantifiable risk. The causes for the increase in self-medication are the need for self-care, pity for sick family members, a lack of health services, financial restrictions, ignorance and significant drug promotion and drug availability in businesses other than pharmacies. In developing nations such as India, the simple availability of a wide range of drugs combination with insufficient health facilities leads to a rise in the proportion of drugs used for self-medication. Many studies show that self-medication can create delays in obtaining health-care, which can lead to problems, which can lead to economic losses and life-threatening situations. Self-medication with medications such as antibiotics is a key contributor to the establishment of drug resistance [15, 16].

The pattern of self-medication varies by demographic and is impacted by factors such as age, gender, income, self-care attitude, educational level, medical knowledge, prior experience, satisfaction and the severity of diseases. Although pharmacology students' academic education provides a solid knowledge of medications and their effects, there is a lack of awareness of illness diagnostics. When compared to other medical and nonmedical students, the pharmacy student community will have a greater level of self-medication expertise. Individuals, particularly teenagers are greatly impacted by technology and they may obtain knowledge on any substance as well as purchase drugs through websites, resulting in irrational self-medication [17].

The antibiotics are usually obtained from the residual pills of the last treatment course, which can be provided by a family member or a close friend. The causes for self-medication in Saudi Arabia require additional research since they are not thoroughly examined from a community standpoint. A precise estimate of the problem's prevalence and causes can offer policymakers with optimal remedies. Resistance arises as a result of self-medication with antibiotics. Antibiotic resistance develops when germs are able to outwit the antibiotics intended to destroy them. Antibiotic resistance is one of the most pressing clinical challenges facing the world today. In the United States, around 2.8 million individuals are infected with antibiotic-resistant bacteria or fungi each year, with over 35,000 deaths [18].

II. LITERATURE REVIEW

To determine the frequency of SM among University students, several research have been conducted all over the world. Previous studies concentrated on specific cities and were insufficient for developing interventional methods across the country. Students are an important part of the community, particularly the educated portion, because they will play various roles in the community and impact it. Self-medication among students is concerning, because it will inevitably spread across the community [19].

The study was conducted on nursing students in Behbahan, southwest Iran, in 2020, in which they discovered a high percentage of self-medication among students. According to this cross-sectional study, lowering drug usage without prescription and training nursing students how to reach out to others in the community The prevalence of self-medication with antibiotics, cold and cough, analgesic, neurological, gastrointestinal, cardiovascular, anti-psychoactive, opioid and psychedelic drugs, skin, antimicrobial, vitamins and supplements, and medicines was 53.3%, 82.5%, 52.5%, 3.3%, 19.2%, 4.2%, 25.8%, 0.8%, 14.2%, 5.8%, 25.8%, and 37%, respectively [20].

In 2021, Khalid S and his colleagues work on antibiotic self-medication practices in a general

public sector university in Southern Punjab. According to this cross-sectional study, perceptions of self-medication of antibiotics in the general public sector in southern Punjab: a comparison of medical and non-medical students. Self-medication with antibiotics is a fast rising concern, particularly in developing countries such as Pakistan. Antibiotics are widely available to the general population, even without the need for a prescription. As a result, there are several hazards associated with the improper use of antibiotics. The primary goal of this study was to evaluate the inappropriate practice of self-medication in public sector universities in southern Punjab. The present study also examines self-medication habits in various university departments. Data was gathered using a validated questionnaire. The data was analyzed using descriptive statistics and inferential statistics (chi-square test). The study gathered data from 900 students from various disciplines, both males and girls. There were 450 medical students and 450 non-medical students among the 900 students. Self-medication was found to be 57% common. Augmentin (37%), and Amoxicillin (23%), were the most often used antibiotics for self-medication. Fever and cough were the most common reasons for self-medication with antibiotics. Most students (40%) self-medicate due to their adequate knowledge of pharmacology. Academic knowledge is the primary source of antibiotic information (60%). Only 39% of students believed that self-medication is part of the self-core, and 31% said that the availability of non-prescription medications may curb the rising trend of self-medication with antibiotics. 30% of students said that antibiotics were aware of or warned about the risks of self-medication. According to the findings of this study, a large number of medical and non-medical students use antibiotics without a medical prescription. Self-medication was shown to be 57% common. Augmentin (37%), and Amoxicillin (23%), were the antibiotics most commonly used for self-medication. [21]

The incidence of self-medication among nursing students was studied at Dow University of Health Sciences in Karachi, Pakistan. Self-medication activities were more common among men 49 (62%), according to this study. The main reasons for self-medicating were knowledge of the medication (59.7%) and convenience (13.5%). The most prevalent symptoms leading to self-medication were fever (46.8%) and sore throat (34.2%). The β-lactam antibiotic class was the most commonly utilized (35/44.3%). Only 26 (32.9%) of those respondents finished the whole antibiotic course. [22].

In 2015, Siddique A and his colleagues conducted a research on self-medication habits among first-year medical students at the University and College of Medicine and Dentistry in Lahore, Pakistan. According to this study, 74% of students used self-medication, whereas 26% did not. It was seen that Antibiotics (42%) were found to be the most often utilized medications, followed by cough suppressants (20%). The majority of students (62%) reported using self-medication to save time. Sixty-five percent reported complete recovery with self-medication, 21% had various issues, 10% had extended morbidity, and 4% developed complications. Just too much self-medication is performed among UCMD medical students. [23].

The current study used a cross-sectional study design and was done in Kuala Lumpur (Malaysia). Kuala Lumpur is Malaysia's capital city with an estimated population of 1.78 million and an area of 243 km2. According to the findings, 13.5% of participants took antibiotics in the previous month, 23.1% used antibiotics at least once in the previous six months, 17.7% used antibiotics last year and 11% used antibiotics more than a year ago. At the same time, 24.4% of participants indicated they couldn't recall the last time they used antibiotics. Furthermore, 51% of participants stated that they received instruction on how to take medication from a doctor, pharmacist or nurse. While 40.4% of participants indicated that they did not get any advice from them, 36% did not recall any information [24].

III. MATERIALS AND METHOD

3.1 STUDY DESIGN:

A cross sectional study was conducted to find the prevalence of self-medication with antibiotics among under graduate students.

3.2 PURPOSE OF THE STUDY

To determine the rate of antibiotic self-medication practices among undergraduate students in district Abbottabad.

3.3 STUDY AREA

The study was conducted in Vertex Institute of Science and Technology, Comsats University Abbottabad, and University of Engineering & Technology Abbottabad Campus from

undergraduate students of Generic Nursing, Pharmacy and Engineering.

3.4 POPULATION AND SAMPLE

In cross sectional study, research population was the Undergraduate students of Vertex Institute of Science and Technology, Comsats University and University of Engineering & Technology Abbottabad Campus. Data of 298 students was taken as a sample.

3.5 DATA COLLECTION

A questionnaire was used for data collection. The collected data was then analysed by using statistical package for social science (SPSS).

3.6 STATISTICAL ANALYSIS

Data was analysed statistically using simple statistical tools like ratio, average and percentage etc.

IV. RESULTS

Table 4.1 shows the demographic details of the participants included in this study. The majority of the participants who completed the questionnaire were male, 74.2%, compared to female participants 25.8%. The students of Vertex Institute of Science and Technology 32.9%, Comsats University 35.6% and University of Engineering & Technology Abbottabad Campus 31.5% were participated in this study.

Table 4.1: The demographic details of the participants, included in this study

Variables	Details	Frequency	Percentages
Gender	Male	221	74.2%
	Female	77	25.8%
Institutions	Vertex Institute of Science and Technology	98	32.9%
	Comsats University	106	35.6%
	University of Engineering & Technology Abbottabad Campus	94	31.5%
Discipline or Department	BS Nursing	99	33.2%
	Pharm D	101	33.9%
	Engineering	98	32.9%
Year of Study	1st Year	118	39.6%
	2nd Year	80	26.8%
	3rd Year	85	28.5%
	4th Year	11	3.7%
	5th Year	4	1.3%

Table 4.2 shows the attitude of the participants toward the use of self-medication with antibiotics. The attitude of participants toward the use of self-medication shows that self-medication has a harmful effect on 147 out of 221 male students and 59 out of 77 female students. Some students self-medicate with antibiotics because they have knowledge about antibiotics and illnesses, whereas others do not trust their doctor's prescriptions. It was found that cough, sore throat, and fever were the predominant morbidities for which students practiced self-medication. Other causes of morbidity prompting the students to practice self-medication included aches and pains, vomiting and diarrhea, and skin problems.

Table 4.2: The attitude of participants toward uses of self-medication

Variable's	Males	%	Females	%
How often do you self-medication with antibiotics?				
A. Always	48	11%	9	3.02%
B. Sometimes	139	46.6%	54	18.1%
C. Never	34	11.4%	14	4.69%
Do you think self-medication may harm your health?				
A. Yes	145	48.6%	59	19.7%
B. No	76	25.5%	18	6.04%
What was your reason of self-medication with antibiotics?				
Time constraints	31	10.4%	5	1.67%
Knowledge about antibiotics and illness	141	47.3%	54	18.12%
Lack of trust in prescribing doctor	27	9.06%	10	3.3%
Others	22	7.38%	8	2.68%
For which of the following complaints did you use antibiotics?				
A. Cough	52	17.4%	8	2.68%
B. Sore throat	79	26.5%	27	9.06
C. Fever	51	17.11%	21	7.04%
D. Aches and pains	8	2.68%	11	3.69%
E. Vomiting	5	1.67%	5	1.67%
F. Diarrhea and Skin wounds	15	5.03%	5	1.67%
G. Others	11	3.69%	0	0%

Table 4.3 shows the usage of antibiotics and the opinions of various people about the use of antibiotics for self-medication. Different antibiotics were used at the recommendation of the community pharmacist, by family members, by the opinion of friends, or by their own choice. Antibiotics were taken from the pharmacy, herbal store, or from friends or relatives. The most frequently used antibiotics were erythromycin (7.38%), ciprofloxacin (8.38%), and amoxicillin (25.83%) and most users reported no negative medication reactions. The major benefits of self-medication with antibiotics, which was mostly purchased from neighborhood retail pharmacies, were cost reductions and ease.

Table 4.3: Use of antibiotics and perception of different individuals regarding use of Antibiotics

Variable's	Males (No's)	%	Females (No's)	%
Please write down the names of antibiotics you have ever taken for SELF				
A. Tetracycline	22	7.38%	4	1.34%

B. amoxicillin	77	25.83%	41	13.75%
C. metronidazole	22	7.38%	2	0.67%
D. erythromycin	25	8.38%	4	1.34%
E. ciprofloxacin	25	8.38%	2	0.67%
F. others	50	16.77%	24	8.05%
Your selection of antibiotics was based on				
A. Recommendation by community pharmacists	84	28.18%	38	12.75%
B. Opinion of family members	57	19.12%	17	5.70%
C. Opinion of friends	23	7.71%	0	0%
D. My own experience	57	19.12%	22	7.38%

Where from you obtained self-medication?				
A. Pharmacy	183	61.40%	66	22.14%
B. Herbal store	23	7.71%	6	2.01%
C. Relative /Friend	15	5.03%	5	1.67%
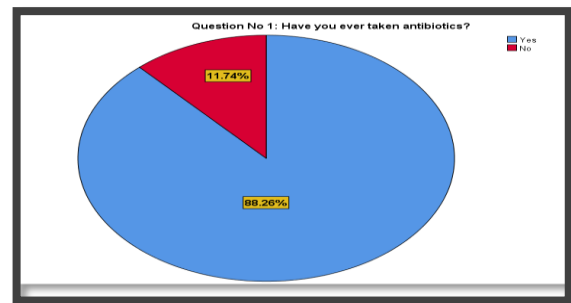
Figure 4.1: The ratio of the participants using antibiotics as self-medication

Among all the 298 participants, 88.26% have taken the antibiotics, while the remaining 11.74% have not taken the antibiotics. That means most individuals adopted antibiotics as self-medication, as shown in figure 4.1.
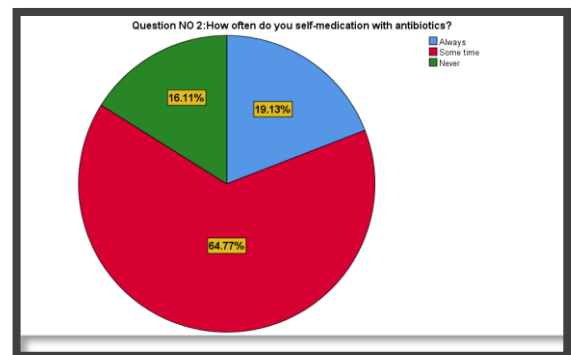
Figure 4.2: The percentage of included individuals who use self-medication

Figure 4.2 shows the percentage of individuals who have adopted self-medication as a method for using antibiotics. Among all the participants 19.13% have always bused the self-medication method for antibiotic use. While 64.77% have used it most often

while 16.11% have not used the antibiotics with the physician's prescription.
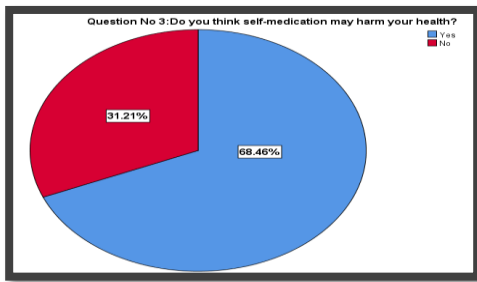
Figure 4.3: The attitude of participants toward the use of self-medication is harmful

Figure 4.3 shows the perception of different participants regarding the use of antibiotics as self-medication, whether it is harmful or not. 68.46% of individuals believe that self-medication is harmful to them. On the other hand, 31.21% assume that self-medication is not harmful to them.
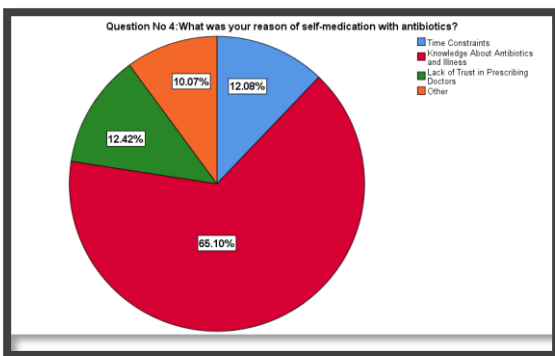

Figure 4.4: Reasons of the students for using self-medication with Antibiotics

The underlying reason for self-medication with antibiotics is summarized in figure 4.4. why they have used the antibiotics as self-medication. 12.08% of participants have self-medicated antibiotics because of the shortage of time, and 65.10% have knowledge about antibiotics and illness. For this reason, they have used antibiotics as self-medication. 12.42% did not trust on the prescription of the doctor, while 10.07% said they had other reasons for antibiotic use.
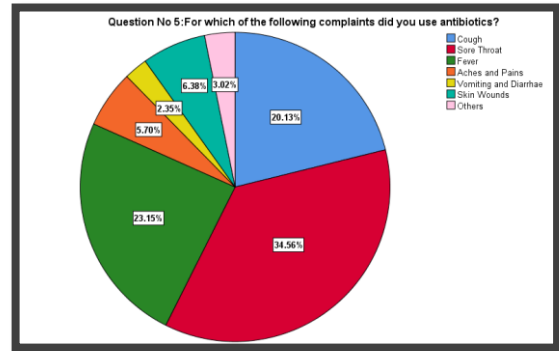
Figure 4.5: The ratio of the participants using self-medications for the following diseases

Antibiotics are used for treating different infectious diseases. In the current study, the participants used antibiotics for different infectious diseases, i.e., cough 20.13%, sore throat (34.56%), fever (23.15%), aches and pain (5.70%), vomiting and diarrhea (2.35%), skin wounds (6.38%), and other infectious diseases (3.02%).
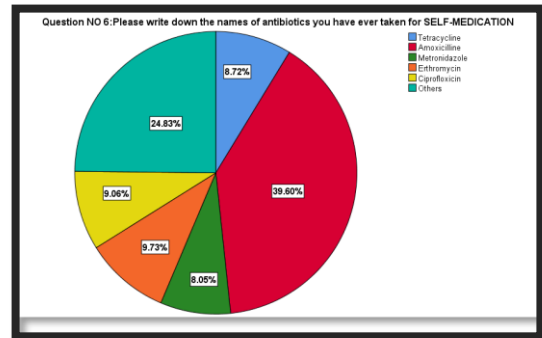
Figure 4.6: The percentage of antibiotics that students use for self-medication

Various antibiotics are used for treating different infectious diseases depending upon the type of organism which causes the infection, or the location of the infection been caused in the body. Some of them are a narrow spectrum, while others are broad spectrum. The students enrolled in the current study have used different antibiotics for a different purpose. The details of the different antibiotics used are presented in figure 4.6, i.e., tetracyclin (8.72%), amoxicillin (39.60%), metronidazole (8.05%), erythromycin (9.73%), ciprofloxacin (9.06%), and other antibiotics (24.83%).
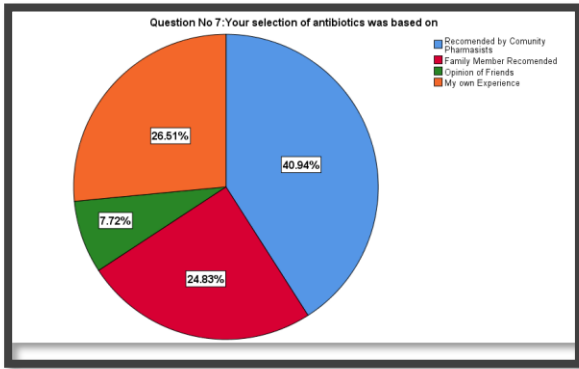
Figure 4.7: The ratio of the participants for selection criteria of antibiotics

Students used different antibiotics during self-medication ranging from narrow to broad-spectrum antibiotics. These antibiotics were selected for multiple reasons, as depicted in figure 4.7. It is evident from figure 4.7 that most students use antibiotics on family recommendations (40.94%).
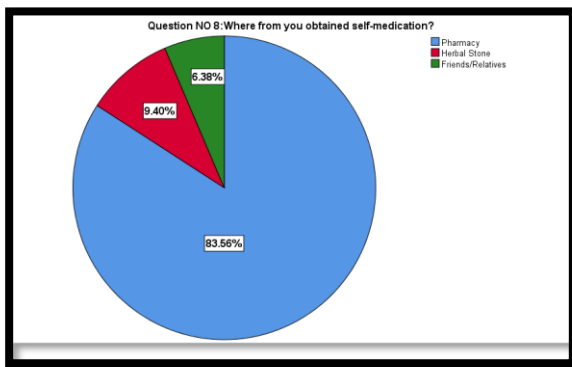

Figure 4.8: The percentage of obtaining antibiotics by the students

Students use antibiotics obtained from different sources without any prescription from the physician. Figure 4.8 shows that most students obtained antibiotics from pharmacy shops (83.56%), followed by herbal stores (9.40%).
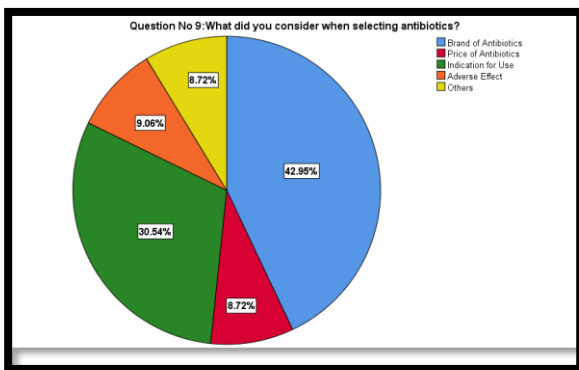
Figure 4.9: The consideration of participants while selecting antibiotic

Figure 4.9 shows antibiotics selected and considered for multiple reasons based on their brand (42.95%)

followed by their use indications (30.54%). Other reasons include adverse effects (9.06%), price and unknown reasons (8.72%).
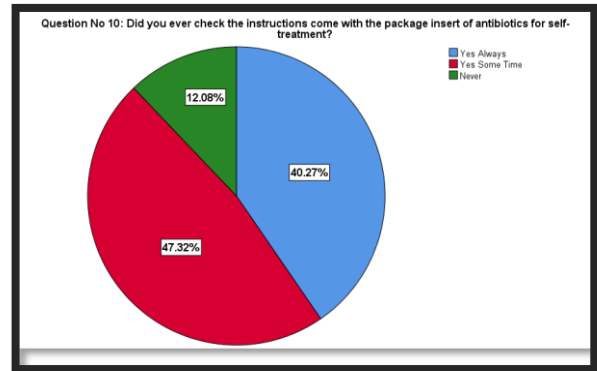
Figure 4.10: The percentage of participants for checking of instructions come with the package insert of antibiotic for self-medication

Figure 4.10 depicts the percentage of students who took medicine according to the user's instructions contained in the package. Accordingly, most read instructions casually (47.32%), followed by always reading instructions (40.27%).
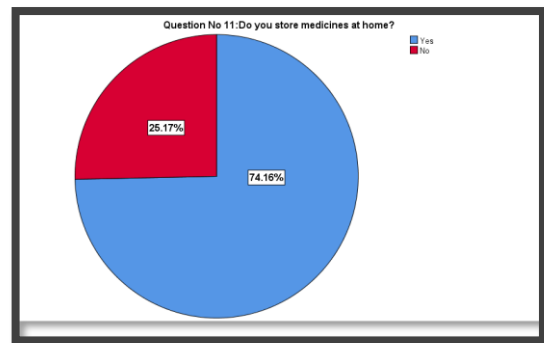

Figure 4.11: The ratio of students who store medicines at home

The figure depicts the ratio of students who store medicine at home for use, which is the majority (74.16%).
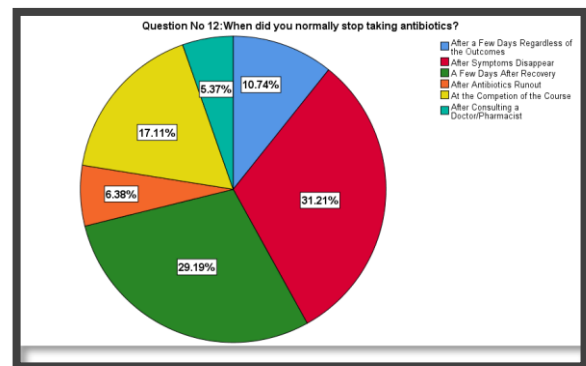

Figure 4.12: The ratio of students who normally stop taking antibiotics

Figure 4.12 shows the important ratio of use and time period of antibiotics usage. Most students (31.21%) stopped usage after the stoppage of signs

and symptoms, followed by (29.19%) with full recovery. The standard usage was found to be on the lower side (17.11%), with the lowest percentage of consulting physician (5.37%).
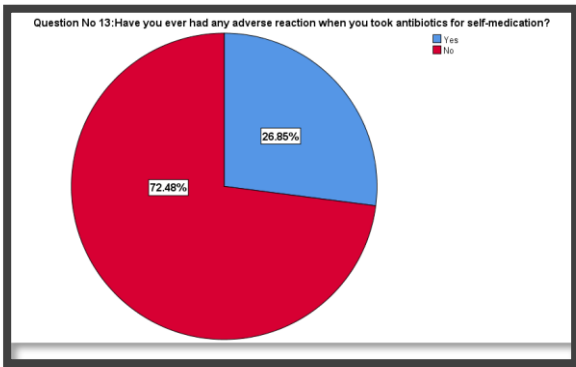

Figure 4.13: Adverse reaction when talking antibiotics for self-medication

Figure 4.13 shows the percentage of students who directly experienced the adverse effects of self-medication directly. The students (72.48%) never complained about adverse effects.
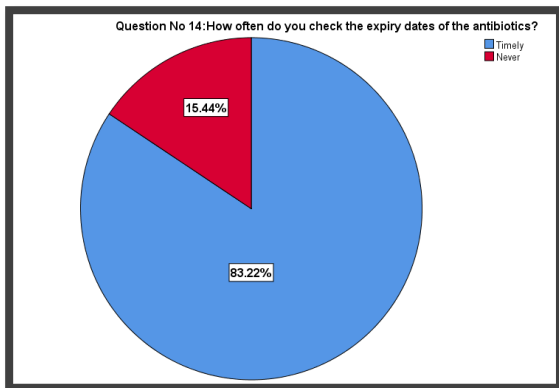

Figure 4.14: The ratio of students who check the expiry dates of the antibiotics

Figure depicts how concerned students are about the proper use of antibiotics regarding reading of instructions about expiry dates which shows that majority of them (83.22%) read these instructions.
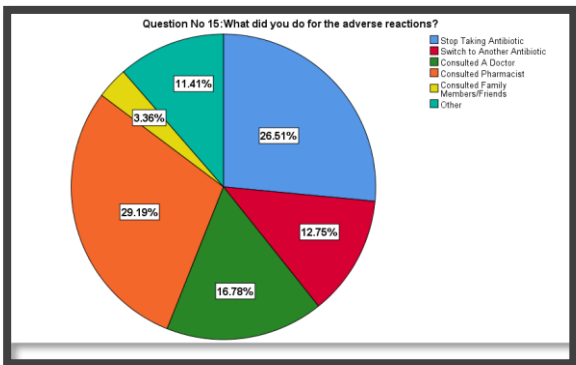

Figure 4.15: The ratio of participants for the solution adverse reaction

After the onset of adverse effects due to the use of antibiotics majority of them consulted pharmacist (29.19%) followed by stoping doage (26.51%) and (16.78%) consulting the doctor as shown in figure 4.15.
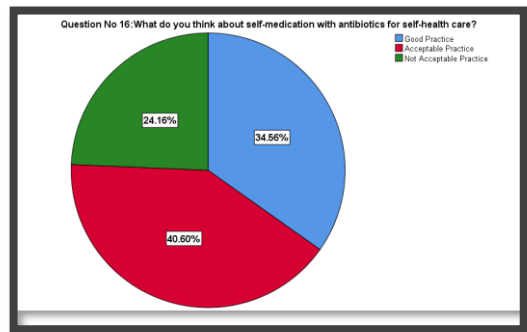

Figure 4.16: The thoughts of participants about self-medication with antibiotics for self-health care

Figure 4.16 shows the awareness among the participants about self-medication that shows negligence of participants with (40.60%) and (34.56%) considered it acceptable and good practice respectively.
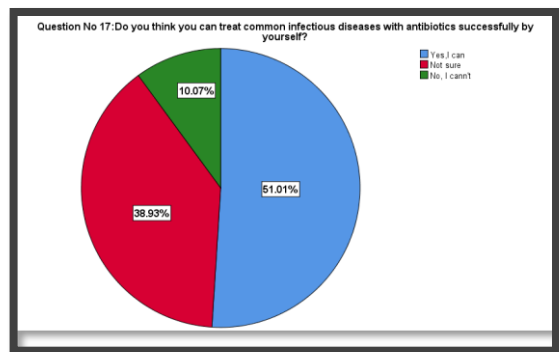

Figure 4.17: The treatment common infectious diseases with antibiotics successfully by yourself

Figure depicts participant's thinks of countering infectious diseases with self-medication and usage of antibiotics. Most of the (51.01%) participants answers in yes followed by ambiguity of whether they can or not (38.93%)
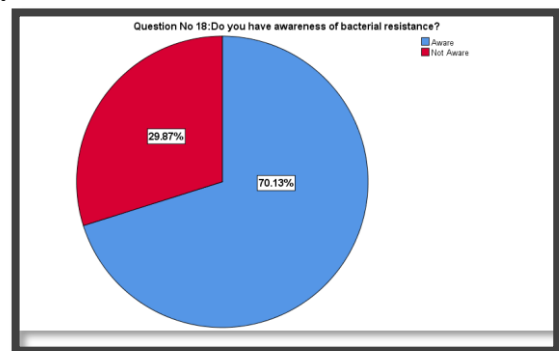

Figure 4.18: The ratio of individual's awareness regarding bacterial resistance with antibiotic self-medication

Figure shows the participants knowledge about antibiotics resistance. Most of them (70.13%) were aware of the threat regarding antibiotics resistance.
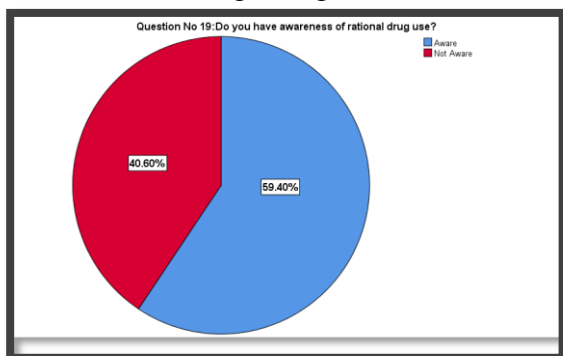

Figure 4.19: The ratio of individual's awareness regarding rational drug use with antibiotic self-medication

Figure 4.19 depicts the use of antibiotics rationally among the participants of study. Which shows that most of them (59.40%) were aware about rational drug use.
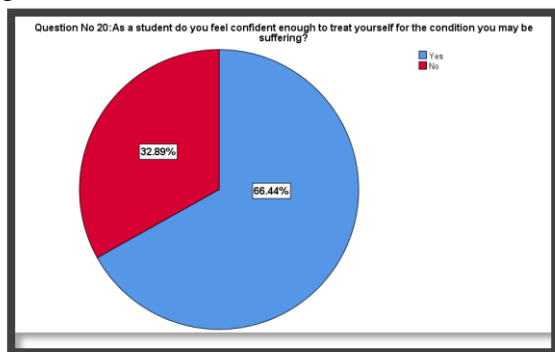

Figure 4.20: The percentage of students who feel confident enough to our self for the condition they suffer

Figure depicts student's percentage about self-treatment and their confidence of treating yourself successfully about self-medication. Results showing about (66.44%) were confident about treating themselves.

V. DISCUSSION

Students frequently self-administer prescription-only medications, including antibiotics, believing that they will save money and time, but doing so can result in serious adverse drug reactions, antibiotic resistance, treatment failure, and drug-related toxicity, all of which are expensive for both individuals and healthcare services. Treatment options are becoming more limited as a result of the emergence of extremely drug-resistant microbial strains, which increases the number of doctor visits, the length of hospital stays, the cost of proprietary drugs, the cost of health care, the mortality rate, and the loss of potential work hours. SMA may cause negative medication responses and interactions, hide symptoms, which makes it more difficult to get the right diagnosis, and encourage the emergence of new infectious illnesses. Aside from that, using the incorrect antibiotic or dose (which is frequently observed in SMA) might result in microbial resistance, treatment failure, and higher costs [25]

According to research done among Karnataka medical students, 53% of them self-medicate. However, it is challenging to compare the level of self-medication among undergraduate students at the institute from a national viewpoint due to a lack of information regarding the prevalence of the practice in the Indian population. In the current study it was found that cough, sore throat, and fever were the predominant morbidities for which students practiced self-medication. Other causes of morbidity prompting the students to practice self-medication included aches and pains, vomiting and diarrhea, and skin problems [26].

According to numerous studies, the high rate of SMA can be explained by inadequate or nonexistent drug control measures, regulatory policy, and planning. Patients can purchase antimicrobials over the counter despite the fact that they are typically only available by prescription due to subpar regulatory agency practices and individuals buying antibiotics to resell on the black market [27].

More than half (71.1%) of the respondents had taken analgesics without a prescription before the survey was conducted. The most used medicine among the students was paracetamol (75.1%). Other research revealed similar findings [28].

The most often used antibiotics were tetracycline and amoxicillin. According to other research, students most frequently use the antibiotics ampicillin and amoxicillin for self-medication. Out of the 38 people who used antibiotics, 44.7% obtained them from their homes, hostels, or other places [31]. Contrary to the findings of much research, the primary suppliers were found to be pharmacies, specialty drug stores, friends, and relatives. The results of this study could simply reflect the fact that there are no pharmacies on the university campus where students can buy over-the-counter medications [29].

When they are ill themselves, medical practitioners have a propensity towards self-medication. Even though they have the option of consulting other doctors, they put off getting medical attention from their colleagues when they

are unwell owing to a hectic schedule and a complicated range of factors, including ego. There are benefits and drawbacks to this specific method, though. While appropriate self-medication has negative effects, it is a practical option for treating minor illnesses and managing acute emergencies. Self-medication is ingrained in medical practitioners beginning in their college years [30].

To estimate the extent of self-medication in the medical community, additional metacentric studies with the aim of evaluating the knowledge, attitude, and practices of self-medication among a larger section of medical students across different medical colleges in the nation are urgently required. The results of such multi centric investigations may establish the necessity of making responsible self-education an integral part of medical education [31].

VI. CONCLUSION

Students frequently self-administer prescription-only drugs, such as antibiotics, in the mistaken belief that doing so will save them money and time, but doing so can have serious negative drug reactions, lead to antibiotic resistance, cause treatment failure, and cause drug-related toxicity, all of which are costly for both patients and healthcare services. Due to the emergence of highly drug-resistant microbial strains, treatment options are becoming more limited. This results in an increase in the number of doctor visits, the length of hospital stays, the price of proprietary drugs, the cost of health care, the mortality rate, and the loss of potential work hours.

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