ORIGINAL ARTICLE

UNVEILING TRENDS; SELF-MEDICATION WITH ANTIBIOTICS AND ITS ASSOCIATED FACTORS IN THE ADULT POPULATION OF SOUTH WAZIRISTAN

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ABSTRACT

Objectives: To determine the frequency of self-medication with antibiotics and its causative factors in South Waziristan.

Material and Methods: A cross-sectional study was conducted in the Tehsil Wana of South Waziristan, Khyber Pakhtunkhwa. A total of 400 participants were selected using a convenient random sampling technique. Data was collected by using a structured questionnaire after obtaining informed consent. The questionnaire included demographics, socioeconomic variables, and information on self-medication with antibiotics i.e. reason for self-medication, source of procurement, symptoms that lead to self-medication, and type of antibiotic used.

Results: Of 400 subjects, 373 (93.25%) agreed to participate. The frequency of antibiotic self-medication in the study area was 84.5%. The most common reason for self-medication with antibiotics was saving money (38%). The common antibiotic used by most study participants was Amoxicillin/Clavulanic acid (42%) with respiratory tract infections as the most common indication for their usage (62%). A significant association between self-medication of antibiotics was observed with age, marital, education, and economic status of the respondents ($p<0.05$). No significant association of self-medication was found with gender distribution (p-value 0.438).

Conclusion: The study showed a significantly high prevalence of self-medication practices with antibiotics, revealing a strong association with socio-demographic factors. A multi-sectoral approach is needed to deal with this alarming situation in this war-affected underdeveloped district of Khyber Pakhtunkhwa.

Keywords: Self-medication, Antibiotics, Adult population, Waziristan, Khyber Pakhtunkhwa

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INTRODUCTION

"Self-medication is the self-use of any pharmaceutical product for the treatment of any self-diagnosed experience and symptoms without consultation with a health care provider". [1] It is a public health concern across the world. Reports suggest that the prevalence of self-medication in northern Europe is 3% as compared to 4 to 75% in Asia. In Pakistan, few studies are conducted in this regard revealing a higher prevalence of self-medication i.e. 61.2% in the rural population of Islamabad and 80.4% in Karachi. [2] Among the self-medication of drugs, self-medication of antibiotics is of more concern because its irrational use causes the development of antibiotic resistance strains, resulting in the treatment failure of previously treatable bacterial diseases. In this regard, the United Nations General Assembly passed a declaration of global cooperation for fighting against anti-microbial resistance in 2016. [3]

The prevalence of antibiotic self-medication in underdeveloped countries is much higher. Factors like lack of awareness, health care facilities, high cost of health, and irrational prescription of antibiotics by health profes-

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sionals contribute to this ill practice. [4] Despite the efforts of global and regional health authorities, the purchase of antibiotics without prescription is an increasing trend globally. It is reported to be 47% in Southern Europe, 30% in Eastern Europe, 25% in South America, 39% in the Middle East, and 58% in Asia. [5] Pakistan, being an underdeveloped country, has a similar position. The irrational use of antibiotics leads to complications like drug interactions, under or over-drug dosing, incorrect diagnosis, and delays in appropriate treatment. All these factors contribute to the emergence of antibiotic-resistant strands of bacteria. In 2014, WHO published a report declaring this serious issue an emergency where we are heading towards an antibiotic-resistant era. [6]

In another WHO report, more than 50% of antibiotics are used irrationally, while 50% of the patients do not follow the recommended dosage and duration. [7] Most people treat illness through self-medication, to save time and money, long distances from medical facilities, and lack of health care system. [8] To determine the magnitude of this serious problem of self-medicated antibiotics, several studies have been conducted in different parts of the world reporting the prevalence range from 26 to 81.25% including big cities in Pakistan. [9-13] This study was an attempt to determine the prevalence of self-medication of antibiotics in the tehsil Wana, a completely rural area of South Waziristan with having population of 152,881. It is a war-torn area lacking basic healthcare services with no available literature on the topic. We also intended to evaluate the associated factors leading to self-medication of antibiotics among the adult population of this region.

MATERIAL AND METHODS

A cross-sectional study was carried out in the Tehsil Wana of South Waziristan, Khyber Pakhtunkhwa from June 2023 to December 2023. A sample size of 400 subjects was calculated using the OpenEpi website, with a 95% confidence interval and 45% frequency of antibiotic self-medication as reported in Punjab.[14] After approval from the Institutional Research and Ethical Review Board (IREB) vide letter number 295/DME/KMC, residents of both genders aged 18 years & above were included in the study. The study excluded respondents under 18 years old, critically ill patients (due to their complex medical conditions and poly-pharmacy which could confound the study results regarding the use of antibiotics), and mentally disabled subjects (to ensure the reliability of data, preventing potential stress, particularly for those who might have difficulty providing informed consent or understanding study procedures).

The study was conducted in the community rather than in a hospital or healthcare facility. The data was collected using a convenient random sampling technique ensuring all outcomes are given equal chance of getting selected in the sample. After informed consent, the participants were interviewed and a close-ended structured questionnaire was administered for data collection. The questionnaire included demographics, socioeconomic variables, reasons, and information on self-medication with antibiotics during the last six months i.e. source of procurement, symptoms that lead to self-medication, types of antibiotics used, and their frequency.

The data collected was entered and analyzed in SPSS version 22. Descriptive statistics such as frequencies and percentages were calculated for categorical variables. The chi-square test was used to determine the association between socio-demographic variables and self-medication practice of antibiotics.

RESULTS

In this cross-sectional study, 400 subjects were enrolled having a mean age of 43±5 years with 78% male and 22% female. The response rate of study participants was 93.25% of which 29.8% (111) respondents were illiterate, 36.4% (136) were primary, 22.5% (84) high school, and 11.3% (42) were bachelor or above. Most of the respondents belonged to the occupation of farming (33.8%), 8.6% were students, 18% were housewives, 8.8% were businessmen, 7.8% were drivers, 2.9% were government employees, and 20.1% were unemployed. About 80% of subjects had low socioeconomic status with a total family income of less than 45000 PKR.

In the study area, 315 (84.5%) respondents admitted self-medication with antibiotics. Most of them got information about these antibiotics from family and friends (48.9%), 37.1% from old prescriptions for the same illness, and 14% received information from pharmacy shops. Common reasons identified by the study population for self-medication with antibiotics are shown in Figure I. Most of the participants used them to save money (38%) while some considered their illness too minor for consultation (35%). Few respondents mentioned other factors like avoiding the hassle of going to the doctor, previous experience with the same illness, and urgency of the problem.

As depicted in Figure 2, respiratory tract infections were the leading cause of self-medication with antibiotics (62%), followed by gut-related infections. Other important symptoms for which drugs were self-administered included generalized body aches, fever, wounds, skin, ear, and eye-related problems, and urinary tract symptoms. The type/category of self-medicated antibiotic was also determined as shown in Figure 3. Amoxicillin/clavulanic acid was the most commonly used antibiotic (42%) followed by

Amoxicillin, Metronidazole, Ciprofloxacin, Erythromycin, and Azithromycin. A few participants also identified Ampicillin, Co-trimoxazole, and Cefixime as the antibiotics of choice for their illness. Only 2% of respondents have used topical ophthalmic drugs like polymyxin B sulfate and bacitracin zinc (Polyfax).

The association of self-medication practice of antibiotics with different socio-demographic variables is displayed in Table I. A significant association was observed between self-medication practice and the age, education, economic, and marital status of the respondents ($p<0.05$). With increasing age, the likelihood of self-medication with antibiotics increased whereas the practice of self-medication among respondents with better education and income status was significantly low. Moreover, those who were married were more exposed to self-medication with antibiotics as compared to those who were unmarried. No significant association was found between gender and self-medication (p-value 0.438).

Table No 1: Association of self-medication with different socio-demographic variables

VARIABLES	ANTIBIOTIC USE		P-VALUE (Chi-Square)
	Yes	No	
AGE (Years)			
18-28	88 (23.6%)	28 (7.8%)	0.009
29-38	108 (29.0%)	18 (4.8%)	
39-48	69 (18.5%)	9 (2.4%)	
49 & above	50 (13.4%)	3 (0.8%)	
Total	315 (84.5%)	58 (15.5%)	
GENDER			
Male	248 (66.5%)	43 (11.4%)	0.438
Female	67 (18%)	15 (4%)	
MARITAL STATUS			
Married	278 (74.5%)	42 (11.3%)	0.001
Unmarried	37 (9.9%)	16 (4.3%)	
EDUCATION			
Illiterate	105 (28.2%)	6 (1.6%)	0.000
Primary	120 (32.2%)	16 (4.3%)	
High school	62 (16.6%)	22 (5.9%)	
Bachelor/ above	28 (7.5%)	14 (3.8%)	
INCOME (PKR)			
≤15000	33 (8.8%)	29 (0.5%)	0.006
15000-30000	104 (27.9%)	10 (2.7%)	
30000-45000	124 (39.4%)	28 (48.3%)	
45000-60000	41 (11%)	16 (4.3%)	
60000≥	13 (3.5%	2 (0.5%)	

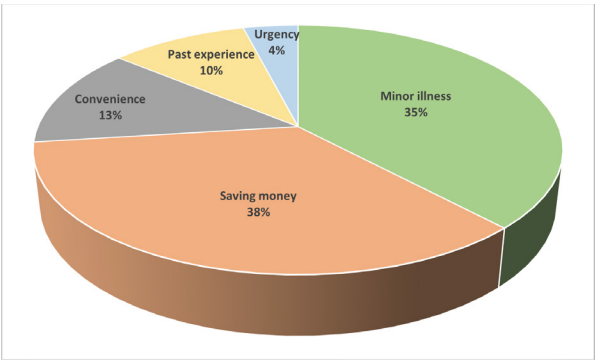

Fig 1: Reasons for self-medication with antibiotics

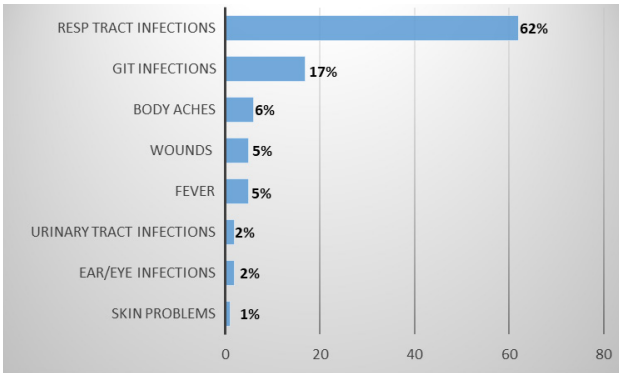

Fig 2: Disease/Symptoms leading to self-medication

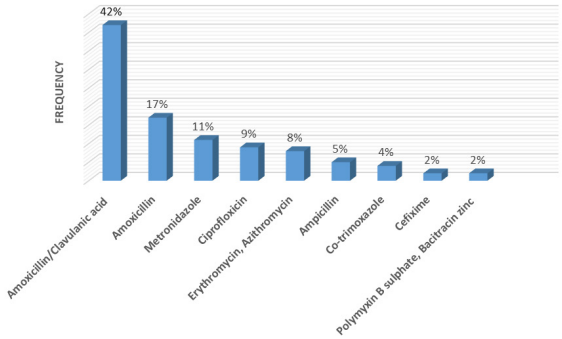

Fig 3: Categories of self-medicated antibiotics

DISCUSSION

Self-medication is a burning public health issue because the use of antibiotics without the prescription of qualified health professionals is a common practice globally. It is reported more in underdeveloped countries. This study was conducted in the Tehsil Wana of South Waziristan revealing an 84.5% prevalence of self-medication with antibiotics. Though, it is less than the prevalence reported in Peshawar (100%), it is higher than rural dwellers of Punjab (45%), Sindh (81.25%), and many neighboring countries like Bangladesh (23.55) and India (57%). [9, 14-16]

In the current study, saving money was the main reason (37.8%) for self-medication with antibiotics. The same reason was identified in other studies conducted

in Pakistan and Malaysia. [2,17] Most respondents identified their family or friends as the leading source of information about these antibiotics (48.9%), resembling the results of a study conducted in Uttar Pradesh, India. [18] However, in studies conducted in Greece and Cameroon, a maximum number of respondents received information from pharmacy shops unlike our study i.e. 14%. [19, 20] As reported in various studies conducted in the Hamdard University of Karachi[21], Qom state of Iran[10] and Southern Iran,[22] we have also observed respiratory tract infections as the common illnesses (61.9%) which compelled respondents to take antibiotics without consulting health professionals. This also indicates a high prevalence of respiratory microbes in these areas causing such infections which need to be addressed with proper surveillance.

The current study revealed Amoxicillin/Clavulanic acid (Augmentin) as the most frequently used category of antibiotics (42.2%) among the respondents followed by Amoxicillin. The same category was also determined in the urban areas of Peshawar[15] whereas Metronidazole (Flagyl) was reported as the most common category in Karachi.[2]

Association between socio-demographic variables and self-medication practices were also measured in this study. No significant association was found between gender and self-medication, which aligns with the results of a study conducted in rural Bengaluru, India.[23] Moreover, self-medication practices were more common in the married respondents, contradicting the findings of a similar study conducted in Cameroon. [20] The probable cause could be an increase in financial liabilities after marriages in developing countries like Pakistan.

A significant association was observed between self-medication practices and the age, education, and economic status of the respondents i.e. chances of self-medication increased with increasing age, and decreased with increasing education and economic status. Similar results were measured in a study conducted among university students in southern China. [11] This is because age and education tend to increase awareness among respondents while better economic conditions enable them to approach healthcare facilities and prevent irrational use of drugs.

Lack of awareness regarding rational use of antibiotics and poor healthcare facilities were detected to be the major reasons for such alarmingly high prevalence of self-medication with antibiotics in tehsil Wana. The data will serve as a piece of useful evidence for policymakers to make timely decisions and discourage self-medication practices in the region by providing quality and affordable healthcare services. Most importantly, bringing awareness in the local population regarding the consequences of self-medication with antibiotics should be incorporated into the agenda.

CONCLUSION

Self-medication practice with antibiotics is highly prevalent in the Tehsil Wana of South Waziristan. Poverty was found to be the major associated reason, beta-lactam was the commonest self-medicated antibiotic, and respiratory tract infection was the most common indication for use in this war-torn area.

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Authors Contribution:

Following authors have made substantial contributions to the manuscript as under

Authors	Conceived & designed the analysis	Collected the data	Contributed data or analysis tools	Performed the analysis	Wrote the paper	Other contribution
Gul R	✓	×	✓	×	✓	×
Haroon M	✓	✓	×	✓	✓	×
Faisal MS	×	✓	×	×	✓	×
Khan SZ	✓	✓	✓	×	✓	✓
Khan AZ	✓	✓	×	✓	✓	×
Sarwar N	×	✓	×	×	✓	×

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

Ethical Approval:

This Manuscript was approved by the Ethical Review Board of Khyber Medical College, Peshawar. Vide No. 295/DME/KMC.

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