Factors Influencing Inappropriate Antibiotic Usage Among Patients of Multan Periphery

SHAHID JAVED1, ZAKA UL REHMAN2, MUHAMMAD NAQASH KHAN3, MUHAMMAD YOSUF4, UMAIR AHMAD5, UMAIR IQBAL6
1FCPS trainee Orthopedics, Recep Tayyip Erdogan Hospital Muzaffargarh.
2FCPS trainee Gen Surgery, Nishtar Hospital Multan.
3FCPS trainee Orthopedics, Nishtar Hospital Multan.
4FCPS, Senior Registrar Orthopedics, Recep Tayyip Erdogan Hospital Muzaffargarh.
Correspondence to: Shahid Javed, Email: shahid.javed@tih.org.pk

ABSTRACT
Objective: To determine the factors that contribute to the inappropriate utilization of antibiotics and to determine their knowledge antimicrobial resistance (AMR).

Materials and methods: A total of 280 people who had history of use of antibiotics within last 30 days were included. A questionnaire was build to collect information from respondents (including two separate parts). The first part was including their age, gender socioeconomic status and residential area. The questionnaire also included information to diagnose either the antibiotics use was appropriate or in-appropriate. The 2nd part included information regarding the peron’s knowledge regarding AMR.

Results: Among the 280 patients, only 104 (37.1%) patients had appropriate use of antibiotics and remaining 176 (62.9%) had inappropriate use of anti-biotics. patients of age ≤40 years had higher percentage of appropriate antibiotics use; 90 (86.5%) versus 123 (69.9%) using inappropriate antibiotics (p-value 0.000). People living in urban area had higher use of appropriate antibiotics; 70 (67.3%) versus 101 (55.7%) in inappropriate group with p-value 0.05. Patients having high school or more-higher education had higher frequency of appropriate use of antibiotics; 73 (70.8%) versus 97 (55.2%) in inappropriate group, p-value 0.01. On average there was poor knowledge of people regarding AMR, on 37 (35.6%) patients in appropriate and 39 (22.2%) in inappropriate antibiotics group had knowledge regarding antibiotics, p-value 0.01.

Conclusion: Age <40 years, living in rural area, and low level of education are significant factors of inappropriate antibiotics use. The knowledge of AMR was poor in all people, however, people having appropriate use of antibiotics had higher knowledge of AMR.

Keywords: Antimicrobials, antibiotics, inappropriate use.

INTRODUCTION
Antimicrobial resistance (AMR) is a worldwide problem that has a negative impact on patient health and puts the long-term well-being of people as well as animals in considerable jeopardy. It is generally accepted that the use of antibiotics when they are not necessary is a large and variable contributor to the development of antibiotic resistance. Antibiotic resistance is associated with a wide variety of unfavorable consequences, some of which include an increase in the costs of medical care, an increase in the rates of morbidity and death, and a reduction in the efficiency with which health services are provided.

It is possible that by the year 2050, AMR will be responsible for 10 million deaths yearly if the essential modifications are not taken quickly. It is anticipated that the impacts will be particularly detrimental in low- and middle-income countries (often abbreviated as LMIC).

In the past, antibiotic-resistant bacteria were only seen in hospitals, but now they are increasingly prevalent outside of healthcare settings. In low- and middle-income countries (LMIC), improper use of antibiotics is a significant contributor to antibiotic resistance, and it is widespread since medications can be purchased or received without a prescription from private, often illicit, providers. Patients who buy antibiotics from these sources have the option to acquire antibiotics in lower quantities if they are unable to finance a complete course of treatment, which contributes to improper use of antibiotics. The education of the general public on antibiotic resistance is absolutely necessary in order to make headway against this sneaky issue. It is well-established that a lack of understanding regarding the optimal use of antibiotics leads to inappropriate intake of antibiotics, which in turn leads to the emergence of microbes that are resistant to the antibiotic.

In Pakistan, most people still don’t know much about antibiotic resistance and don’t know how much they know about it. Understanding how much people know about antibiotics and how they use them is important for setting up educational interventions. This is because the first step in solving the problem of antibiotic resistance is to make sure people know the risks of using antibiotics in the wrong way. This study was initiated with the purpose of determining the factors that contribute to the inappropriate utilization of antibiotics by the people of Pakistan.

PATIENTS AND METHODS
In this cross-sectional study we included the data of 280 peoples living in Multan territory from June-2022 to January-2023. The respondents were the persons who took antibiotics in the last month due to any reason. A questionnaire was build to collect information from respondents (including two separate parts). The first part was including their age, gender socioeconomic status and residential area. The questionnaire also included information to diagnose either the antibiotics use was appropriate or in-appropriate. If the person took anti-biotics without proper prescription, took anti-biotics for shorter period than the recommended or took lower dose of anti-biotics or took for wrong indications such as in viral infections was labelled as inappropriate antibiotics use. the questionnaire also included information regarding person’s education, marital and socio-economic status.

The 2nd part included information regarding the person’s knowledge regarding AMR. The questionnaire included 4 sections (total of 52 questions), including information regarding anti-biotics, indications of antibiotics usage, side-effects of antibiotics, antibiotic resistance and related terminology of resistance, the answer was either yes, no and do not know, for correct answer score was for 1. So the total score was 52, the higher the score the more the person’s knowledge regarding anti-biotics.

Association of risks factors with inappropriate use of anti-biotics was determined using chi-square test.

RESULTS
Among the 280 patients, only 104 (37.1%) patients had appropriate use of antibiotics and remaining 176 (62.9%) had inappropriate use of anti-biotics. patients of age ≤40 years had higher percentage of appropriate antibiotics use; 90 (86.5%) versus 123 (69.9%) using inappropriate antibiotics (p-value 0.000). People living in urban area had higher use of appropriate antibiotics; 70 (67.3%) versus 101 (55.7%) in inappropriate group with p-value 0.05. Patients having high school or more-higher education had higher use of appropriate antibiotics; 73 (70.8%) versus 97 (55.2%) in inappropriate group, p-value 0.01. On average there was poor knowledge of people regarding AMR, on 37 (35.6%) patients in appropriate and 39 (22.2%) in inappropriate group had knowledge regarding antibiotics, p-value 0.01.
appropriate use of antibiotics; 73 (70.8%) versus 97 (55.2%) in inappropriate group, \(p\)-value 0.01. On average there was poor knowledge of people regarding AMR, on 37 (35.6%) patients in appropriate and 39 (22.2%) in inappropriate antibiotics group had knowledge regarding antibiotics, \(p\)-value 0.01. There was no significant association of gender and socioeconomic status with inappropriate use of antibiotics (Table 1).

### Table 1: Risk Factors of Inappropriate use of Antibiotics.

<table>
<thead>
<tr>
<th>Age</th>
<th>Antibiotics Use</th>
<th>(P)-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>(N=104)</td>
<td>(N=176)</td>
<td></td>
</tr>
<tr>
<td>&lt;40 Years</td>
<td>90 (86.5%)</td>
<td>123 (69.9%)</td>
</tr>
<tr>
<td>41-60 Years</td>
<td>14 (13.6%)</td>
<td>53 (30.1%)</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td>0.001</td>
</tr>
<tr>
<td>Male</td>
<td>37 (35.6%)</td>
<td>48 (27.3%)</td>
</tr>
<tr>
<td>Female</td>
<td>67 (64.4%)</td>
<td>128 (72.8%)</td>
</tr>
<tr>
<td>Residence</td>
<td></td>
<td>0.14</td>
</tr>
<tr>
<td>Rural</td>
<td>34 (32.7%)</td>
<td>78 (44.3%)</td>
</tr>
<tr>
<td>Urban</td>
<td>70 (67.3%)</td>
<td>98 (55.7%)</td>
</tr>
<tr>
<td>Socioeconomic Status</td>
<td></td>
<td>0.05</td>
</tr>
<tr>
<td>Poor</td>
<td>38 (36.3%)</td>
<td>75 (42.6%)</td>
</tr>
<tr>
<td>Rich</td>
<td>66 (63.5%)</td>
<td>101 (57.4%)</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td>0.31</td>
</tr>
<tr>
<td>≤middle</td>
<td>31 (29.2%)</td>
<td>79 (44.8%)</td>
</tr>
<tr>
<td>High school or higher</td>
<td>73 (70.8%)</td>
<td>97 (55.2%)</td>
</tr>
<tr>
<td>Knowledge Score</td>
<td></td>
<td>0.01</td>
</tr>
<tr>
<td>≤55</td>
<td>67 (64.4%)</td>
<td>137 (77.8%)</td>
</tr>
<tr>
<td>≥56</td>
<td>37 (35.6%)</td>
<td>39 (22.2%)</td>
</tr>
</tbody>
</table>

### DISCUSSION

The purpose of this study was to investigate the factors that contribute to the incorrect utilization of antibiotics at the community level in the Pakistani population. In general, policies and actions that are effective in maximizing the use of antibiotics and reducing resistance.

Research have demonstrated that the population as a whole has a low degree of understanding of antibiotic resistance and the reasons that are responsible for it. In the same vein, the majority of people who participated in this research had no prior knowledge of the concepts of drug resistance, antimicrobial resistance, or superbugs. It’s possible that the general public has a limited understanding of the many mechanisms that contribute to antibiotic resistance, as well as the repercussions of antibiotics being overused or abused. There is evidence to suggest that raising awareness efforts that were addressed at the general community led to a significant reduction in the amount of prescribing. To this day, there are not enough public awareness-raising programs in Malaysia that are geared toward educating people about how to make responsible decisions regarding their use of antibiotics. As a result, the time has come to launch a campaign with the goal of improving the general public’s knowledge of the factors that lead to antibiotic resistance and the severe effects that result from it in order to encourage the correct application of antibiotics.

Another possible cause of antibiotic misuse is the simple fact that antibiotics are widely available without a doctor’s prescription. These results on excessive antibiotic use are consistent with those from other studies, and they help explain why first-line antibiotics are no longer considered a viable therapeutic option. Almost half of antibiotics are bought and used without a prescription, just like in other low- and middle-income countries. Professionals in the medical field, such as physicians and nurses, might be enlisted to spread awareness about the importance of avoiding antibiotic overuse and the spread of antimicrobial resistance. These are recognized as the best places to learn about AMR-related concepts. Better antibiotic use by patients has been linked to patient-doctor interactions, such as drug counseling and shared decision making for antibiotic treatment programs. Since primary care clinics are where approximately 80% of the study population received their most recent course of antibiotics, these can be excellent venues for providing opportunie education on antibiotic use.

Primary care physicians play a crucial role in educating patients during consultations, and the VALUE model suggests that patients and their doctors make joint decisions about antibiotic use.

### CONCLUSION

Age <40 years, living in rural area, and low level of education are significant factors of inappropriate antibiotics use. The knowledge of AMR was poor in all people, however, people having appropriate use of antibiotics had higher knowledge of AMR.

### REFERENCES