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Research Article

To Determine the Level of Awareness in Respect of Antibiotic Resistance among Health Professionals

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ABSTRACT

Background: Antimicrobial resistance (AMR) is a major global health problem that makes treating infections more difficult and increases healthcare costs. In Pakistan, the situation is particularly severe. To address this issue, strategies like antimicrobial stewardship and the "One Health" approach are being promoted to encourage responsible use of antibiotics.

However, the rising use of antibiotics and a lack of awareness among the public are worsening the resistance problem. This situation underscores the urgent need for immediate action and changes in behavior regarding antibiotic use.

Objective: To determine the level of awareness in respect of antibiotic resistance among health professionals

Study design: A cross-sectional analysis

Duration and place of study: This study was conducted in Gambat Medical College / GIMS Gambat Pakistan from January 2024 to January 2025

Methodology: In this cross-sectional study, 150 health care workers were surveyed through a self-completed questionnaire to assess their knowledge regarding antibiotic resistance. A non-probability consecutive sampling technique was used, and the questionnaire was pilot-tested and validated. All available on-duty healthcare personnel, irrespective of age or professional category, were surveyed. Ethical clearance was obtained, informed consent was taken, and participant anonymity was ensured. Data were statistically analyzed using SPSS version 26, and the findings were expressed in terms of descriptive statistics, tables, graphs, and charts.

Results: There were a total of 150 individuals who were a part of this study. The female participants were in majority, representing 66.7% of the total population. All the participants were aged between 19 years to 64 years. The highest cases were from the age group of 25 years to 34 years. 55.3% participants were married. More than half of the participants strongly agreed that antibiotic resistance is the world's biggest problem.

Conclusion: This research suggests varying levels of awareness about antibiotic resistance among health professionals, highlighting the need for ongoing education, training, and targeted interventions to prevent future harm and promote judicious use of antibiotics.

INTRODUCTION

Antimicrobial resistance (AMR) has been considered a top global public health threat [1]. AMR can render once-easily-treated diseases challenging or even impossible to treat with medicines, making the illness of both children and adults more unbearable [2]. Germs that resist antibiotics can spread from family members, classmates, and co-workers to others, putting entire communities at risk [3]. This developing resistance has made the health care cost rise to unbelievable heights and imposes an ever-growing economic load on society [4]. Antibiotic resistance in Pakistan is more severe, and different studies have reflected an alarming and deteriorating trend over the last two decades [5].

Increasing concerns regarding antimicrobial resistance (AMR) and the gradual nature of finding effective new antimicrobial drugs have prompted significant efforts towards enhancing bacterial infection control strategies and antimicrobial stewardship strategies [6]. Antimicrobial stewardship refers to a methodical approach that supports the appropriate choice, dose, and length of antimicrobial treatment to enhance clinical outcomes [7]. Successful stewardship programs have led to improved prescribing habits, reduced unnecessary antimicrobial use, and reduced avoidable pharmacy expenditures [8]. These initiatives help generate the best possible clinical outcome in treating as well as preventing infections, minimizing patient harm as well as reducing the prospect of future resistance emergence [9].

The Ministry of National Health Services, Regulation, and Coordination (MNHS R&C) initiated the process of creating a National Strategic Framework to contain antimicrobial resistance (AMR) through an advisory process following the "One Health" model [10]. The Centres for Disease Control and Prevention (CDC) have listed several microorganisms as significant threats, the majority of which contribute substantially to the country's economic burden [11]. In the same vein, the World Health Organisation (WHO) has noted disturbing increases in antibiotic resistance, which is a huge challenge to infectious disease control. Overuse of antibiotics and overall unawareness are key drivers of the development of AMR, both of which diminish the power of these essential medicines.

South-Eastern Mediterranean sites, like Jordan, have higher antibiotic resistance risk than Western nations, and more use of broad-spectrum antibiotics in healthcare, according to studies. The use of human antibiotics in the world grew by 36% from 2000 through 2010 [12]. A number of studies on how to change human behaviour and beliefs indicate that there are a few decisions in advance of having antibiotics prescribed, dispensed, swallowed, or disposed of, which can greatly influence subsequent antibiotic-related behaviour.

METHODOLOGY

This research is a cross-sectional analysis which was conducted on around 150 individuals who were a part of this study. Non-probability Consecutive sampling method was used to collect the sample. The research employed a survey using a questionnaire, where the data were collected directly from the principal investigator. Data collection was through a self-completed quantitative tool. The validity of the questionnaire was established using pilot testing on a random sample of 18 health professionals (n = 18) who were not included in the actual study. From the pilot findings, the final questionnaire was developed.

The research involved all healthcare workers who were working at the hospital during the data collection except those on leave. The dependent variable was the knowledge of antibiotic resistance among healthcare workers. The research was conducted irrespective of participants' socio-demographic factors (e.g., gender and age), educational level (e.g., physicians, senior consultants, nurses, dentists, chemists, physiotherapists, LHWs, LHVs, dispensers, etc.), or professional experience in years.

The Institutional Review Board gave its ethical clearance for the research, and the necessary permission was obtained from the concerned health facilities. The privacy and confidentiality of the participants were assured by maintaining their anonymity. All participants gave informed consent by signing a consent form. The quantitative data collected from the questionnaire were keyed into SPSS version 21. The data entry was verified by both the lead researcher and the supervisor to ensure accuracy. Statistical analysis was conducted, with answers to the structured questionnaire analysed descriptively using frequencies and percentages. The findings were set out in tables, graphs, and charts.

RESULTS

There were a total of 150 individuals who were a part of this study. The female participants were in majority, representing 66.7% of the total population. All the participants were aged between 19 years to 64 years. The highest cases were from the age group of 25 years to 34 years. 55.3% participants were married. Table number 1 shows the socio-demographics of the participants of this study.

Table No. 1

Variables	N	%

Gender		
• **Male**	50	33.3
• **Female**	100	66.7
Age (yrs)		
• **19 to 24**	11	7.3
• **25 to 34**	91	60.7
• **35 to 44**	31	20.7
• **45 to 54**	15	10.0
• **55 to 64**	2	1.3
Marital Status		
• **Married**	83	55.3
• **Single**	67	44.7
Qualification		
• **Lady Health Worker**	15	10.0
• **Physiotherapist**	9	6.0
• **Dentist**	6	4.0
• **Pharmacist**	9	6.0
• **Consultant doctor**	8	5.3
• **Women Medical Officer**	18	12.0
• **Nurse**	54	36.0
• **Medical Officer**	17	11.3
• **Causality Medical Officer**	8	5.4
Sr. Women Medical Officer	6	4.0

Table number 2 shows the true and false statements regarding antibiotics.

Table No. 2

Categories & Variables	**Yes**	**No**
Several infections are resistant to antibiotics	144	6
Regularise of antibiotics cause problems	45	105
AB resistance can affect me/my family	132	18
When the body is resistant to antibiotics, AB resistance occurs	147	3

AB resistant bacteria are difficult to treat	141	9
Antibiotic resistance is an issue in other country only	132	18
AB resistant infections could make medical procedures more dangerous	132	18
AB resistant bacteria can spread from one to another	83	67

More than half of the participants strongly agreed that antibiotic resistance is the world's biggest problem. Table number 3 shows the attitude of the participants towards antibiotics.

Table No. 3

Variables	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
AB should not be given to animals who produce food	9	6	18	60	57
Hands should be properly washed	3	0	3	30	114
Extra antibiotics should not be used	9	6	24	33	78
Should use the antibiotics only on doctor's/nurse's prescription	3	1	3	14	129
New antibiotics should be developed	3	0	12	48	87
Children's vaccination should be up-to-date	7	2	3	27	111
AB should be prescribed by the doctors rationally	1	0	5	24	120
Reward should be given for the development of AB	1	0	8	51	90
Attitude towards antibiotic resistance					
Antibiotic resistance is the biggest world problem	3	0	12	45	90
Medical experts should solve this problem	3	6	12	69	60

DISCUSSION

This research sought to quantify healthcare workers' knowledge and beliefs regarding antibiotic resistance, a key and evolving global health problem. Results illustrated that the respondents possessed a high degree of awareness of significant elements of antibiotic resistance, although some misconceptions and knowledge gaps remained. Most participants (66.7%) were female, and the most common age group (60.7%) was 25-34 years old, an early- to mid-career age for healthcare professionals. They are likely to represent an actively practicing clinical population with continuing education, and this may have helped explain the overall high level of knowledge observed.

The majority of the respondents were well aware of antibiotic resistance, with 96% being aware that many diseases are resistant to drugs and 98% identifying correctly that antibiotic resistance arises when bacteria, not

the human body, become resistant. In addition, 94% knew that antibiotic-resistant germs are hard to treat, and 88% concurred that antibiotic resistance may hurt them and their loved ones. These results show that health professionals possess a good understanding of the importance of resistance to antibiotics. Yet there are some myths. Perhaps most importantly, only 55% of the sample acknowledged that bacteria resistant to antibiotics can be transferred from one individual to another, suggesting a critical knowledge deficiency about transmission. In addition, only 30% of the respondents acknowledged that frequent use of antibiotics can lead to problems, suggesting an ignorance of how misuse leads to resistance.

The attitudes of healthcare workers seemed to be generally positive and active. The majority (93%) consented or strongly consented to the fact that antibiotics must only be used on prescription by a doctor or nurse, and 88% consented to the notion that physicians should prescribe antibiotics reasonably. Additionally, 84% strongly consented to the fact that hands should be washed properly to prevent infection, and 93% emphasized the importance of maintaining up-to-date children's vaccines. These opinions are in line with worldwide best practice for antibiotic stewardship and infection control. Perhaps ironically, there was 90% support for the proposition that novel antibiotics should be developed and also a comparable high rate of support for offering incentives or rewards for research into antibiotics. This suggests that clinicians are cognizant of the dire lack of new antimicrobial drugs and need for innovation in this domain [13].

A questionnaire of the Iraqi population in Jordan found that a common practice of regularly obtaining antibiotics from doctors was prevalent [14]. Likewise, Indian research revealed that perceptions of patient need by healthcare staff and actual patient requests can strongly influence antibiotic dispensing and prescribing [15].

Resistance to antibiotics has been considered across the globe to be a significant global problem, with 90% of respondents strongly agreeing with the statement. In addition, 86% were in accordance with the fact that medical professionals should lead in solving the matter, highlighting the sense of responsibility healthcare staff have in addressing the issue. These results align with prior research indicating that, although overall, healthcare professionals are well aware of the risks of antimicrobial resistance, there remain certain areas where knowledge and practice can be enhanced, particularly transmission, excessive use, and environmental effects of using antibiotics [16-20].

CONCLUSION

This research suggests varying levels of awareness about antibiotic resistance among health care professionals, highlighting the need for ongoing education, training, and targeted interventions to prevent future harm and promote judicious use of antibiotics.

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Conflict in the interest

The authors had no conflict related to the interest in the execution of this study.

Permission

Prior to initiating the study, approval from the ethical committee was obtained to ensure adherence to ethical standards and guidelines.

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