Contents lists available http://www.kinnaird.edu.pk/

Journal of Natural and Applied Sciences Pakistan

Journal homepage: http://jnasp.kinnaird.edu.pk/

KNOWLEDGE AND ATTITUDE TOWARDS ANTIBIOTICS USAGE AND RESISTANCE IN DIFFERENT AGE GROUPS OF MULTAN, PAKISTAN

Anam Rao[1], Faiza Rao[2*]
[1]Center To Advance Level Research & Development Multan, Pakistan.
[2]Fujian Provincial Key Laboratory of Reproductive Health Research, Department of Obstetrics and Gynecology, The First Affiliated Hospital of Xiamen University, School of Medicine, Xiamen University, Xiamen, China.

Article Info

*Corresponding Author
Email: rao.faiza@yahoo.com

Abstract

After many years of successful usage of antibiotics, now in some cases, they have lost their power of effectiveness due to the high rate of developing superbugs.To investigate the leading causes of antibiotics resistance by examining the knowledge about antibiotics resistance, habits of self-medication, and the sources of perchance antibiotics.A quantitative, cross-sectional study based on a structured questionnaire utilized in face-to-face and online interviews across Multan Division during May 2020- December 2021. We selected the Multan division for the study. Multan division includes Multan, Lodhran, Khanewal, and Vehari. Online links were shared and face-to-face interviews were organized to collect data. Statistical analysis was made by GraphPad Prism. The study sample consisted of 3856 people between the age groups of 21-62. Overall, 30% of respondents stopped taking antibiotics when their health improved, while 80% chose to adhere to the doctors' prescribed antibiotics. However, 20% of people had formulated various misconceptions regarding antibiotic resistance. In actuality, the effectiveness of antibiotics can only be preserved when a health professional prescribes taking the entire course of antibiotics, discarding left-over antibiotics, avoiding sharing of antibiotics with others, and improving public awareness.

Keywords
Antibiotics Resistance, Multan-Pakistan, Self-Medication, Antibiotics Awareness, Age Groups

1. Introduction

Antibiotics are antibacterial and are categorized as antimicrobial drugsfor treating and preventing bacterial infections (*Antibiotics - NHS*, n.d.). The immense success of 20th-century medicine can be attributed to the discovery of antibiotics. Presently, antibiotics have garnered widespread usage in almost every residence as they play a

vital role in saving our lives. In addition, they are incredibly effective against various infectionssuch as sepsis, bacterial meningitis, pneumonia, etc. After several years of the overwhelming success of antibiotics, they have recently failed to prove effective in specific cases. A significant reason for their decline ineffectiveness could be attributed to the development of antimicrobial resistance (Mazińska *et al.*, 2017). In the modern age, we tend to rely excessively on antibiotics for treating mild ailments such as regular flu or cold. As humans, we must learn to trust our immune system too. In general, many people are unaware of the repercussions stemming from excessive usage of antibiotics. In cases of high dosage, antibiotics result in the rise of superbugs, which are highly drug-resistance. Superbugs are strains of bacteriathatdevelopincreased resistance to various antibiotics. In this scenario, the adequate treatment of patients with a regular dosage of antibiotics has become arduous (*Common Trend of Antibiotics Usage in a Tertiary Care Hospital of Peshawar, Pakistan - PubMed*, n.d.). With an antibiotic resistance crisis gaining momentum in Pakistan, the prospect of a looming medical disaster is imminent. Therefore, antibiotics designed to combat infections and block excessive growth of bacteria would be deemed ineffective owing to the proliferation of highly resistant superbugs over the past several decades. The primary issue stems from the ignorant belief that antibiotics are guaranteed to treat every form of infectious disease (McNulty *et al.*, 2007). With this false pretext, people tend to allocate medicine doses according to their understanding. Presently, numerous patients suffer from antimicrobial resistance (AMR) in Pakistan, which could act as the catalyst for the declining awareness regarding antibiotics among people. According to an article published in Dawn news, hardly any people in Pakistan possess general knowledge about antibiotics resistance (*The Antibiotics Resistance Crisis: An Emerging Public Health Disaster - Pakistan - DAWN.COM*, n.d.). Thus, this research will investigate the predicted behavior of people regarding antibiotics and their level of awareness. Furthermore, the study will be conducted in various cities of Pakistan.Specifically, critical areas of interest include self-medication with antibiotics, the age group encompassing excessive usage of antibiotics with self-prescription, and assessing people's knowledge of antibiotics resistance.

2. Material and Methods

2.1 Study Design

Pakistan's different provinces are sub-divided into districts, divisions, villages, towns, cities. Punjab province is the most populous of Pakistan and also the second-largest region by area. It comprises nine divisions and thirty-six districts. We selected the Multan division for the study. Multan division includes Multan, Lodhran, Khanewal, and Vehari. We performed a cross-sectional quantitative survey in these areas from May 2020 to December 2021. (Fig 1)

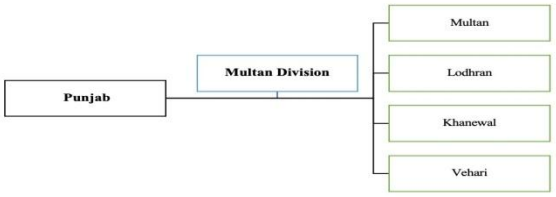

Figure 1: Diagram Representing Areas Of Punjab For Data Collection

Individuals who were literate and can read and write Urdu or English were given self-administrated questionaries, whereas interviews were conducted among illiterate individuals. An online questionnaire was developed on Google form. The forum link was sent to different non-medical undergraduates, graduates, professionals, and the people belonging to othersources assessed onthe internet. The individuals were contacted and made aware of the purpose of this study. A total of 3856 respondents were approached from all selected areas; this number was almost equal from each district.

2.2 Data Analysis

Data entry was carried out by using GraphPad prism. We selected ten main questions to evaluate knowledge among people about antibiotics and also differentiated knowledge in different age groups.

3. Results

Data collection of 3856 respondents was used for analysis. Our important target was identifying the age group of people who are most careless in using antibiotics without prescription. Most of them understood that using antibiotics required prescription but still 73% people used antibiotics without any prescription. Half of the participants were aware of Antibiotics resistance as a negative of antibiotics use while others heard this term but could not explain its meaning.

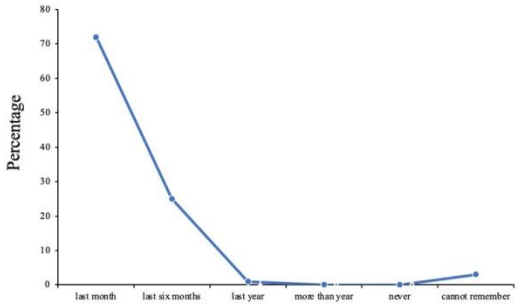

Figure 1: When People Took Antibiotic Lastly?

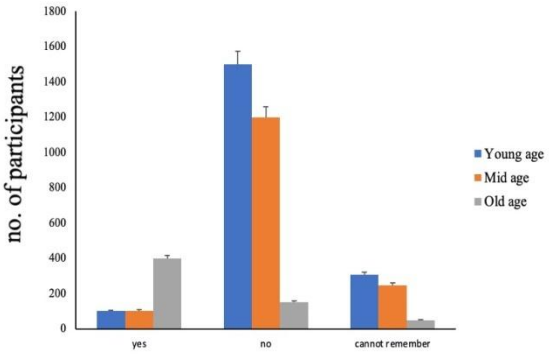

Figure 2: Age Groups Presenting When They Took Antibiotics Last Time?

In Figure. 2 and 3 we gathered data about percentage of people when they took antibiotics and number of participants taking advice from doctors or nurse for medicine.The majority of respondents (80%) said they had not taken advice from a health professional about the antibiotics they last took. While 20% had advice for taking antibiotics, and they prefer self-medication.When we divided the response according to the age groups, it is observed that the people under the age group 21-34are in the

majority (78%) who take antibiotics without a doctor or nurse prescribe them. According to the age group of people, the majority (70%) people 35-48 years old don't remember that from where they had last taken the antibiotics. While only (20%) people under the age group 35-48 years purchase antibiotics from medical stores.

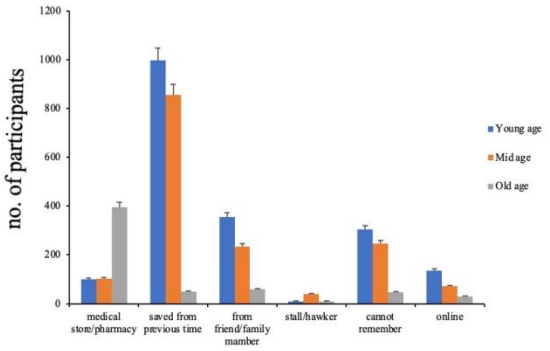

Figure 3: Presenting Different Age Group, How They Find About Antibiotics And What Way They Adapt To Get Antibiotics

The results in Figure 4 represents the old age group seems to be more efficient as compare to young and middle age people. They are more conscious and aware of getting their medicines from medical stores while young and middle age people are more careless in buying medicines from medical stores. They usually save the medicines from previous time and keep on using same medicine without any doctor's prescription. This can lead to antibiotics resistance too.

4. Discussion

The prevalence of taking antibiotics without any prescription is much higher in developing countries as compared to developed ones (Napolitano *et al.,* 2013). According to our study, the half of studied population had takin antibiotics in the past month. And almost one third study population had taken antibiotics in past six months. To our knowledge there was no study conducted in Pakistan about antibiotics self-medication according to age groups. In other countries the study about antibiotics intake, without any prescription, shows the prevalence to be 47.8% in Southern China, 79.5% in Sudan and 48% in Iran(Awad & Eltayeb, 2007; Pan *et al.,* 2012; Sarahroodi *et al.,* 2010). According to our study the self-medication prevalence in Pakistan is 80% and out of them 77% are 21-34 age group on top following 35-48 age group.

Our study assessed the reason behind this self-prescription. The study responses indicate some main reasons which are; People had previous successful experience of their self-prescription. It helped them saving their time. They want to avoid the hassles in the hospitals or they cannot afford the prescription fees of doctors so they save the once prescribed antibiotics from the doctor for the same illness.

According to WHO Multi-country survey the developed countries have prevalence of taking antibiotics on the prescription from Doctor or Nurse is 86% and prevalence of obtaining antibiotics from medical store or pharmacy is 84% (*Antibiotic Resistance: Multi-Country Public Awareness Survey*, 2015). This major difference between these developed countries and our country is remarkable. Our study shows that 80% of respondents take antibiotics without

prescription and the major source of obtaining these antibiotics are medical stores. There are laws that clearly state that the controlled antibiotics cannot be dispensed without a proper prescription by a registered health practitioner. There is no proper check and balance in this regard and thus they are running this operation right under the nose of the authorities responsible for enforcement of these laws. Literature indicates that certain countries conducted identical studies in their own countries and results were nearly the same; antibiotics can be easily purchased from these pharmacies. The literature includes case study from Jordan (*(PDF) Self-Medication Practice in Baghdad, Iraq. . 2012; 5:600-602.*, n.d.; Albsoul-Younes *et al.*, 2010; Jassim, 2010; R Y Suaifan et al., 2012; Scicluna *et al.*, 2009), from Iraq (Lim & Teh, 2012; Oh *et al.*, 2011), and from other countries (*Antibiotic Use and Knowledge in the Community in Kalamoon, Syrian Arab Republic: A Cross-Sectional Study - PubMed*, n.d.).

A pattern was observed in the case studies; older people tend to take the antibiotic course more seriously than others; they will not only follow the directions but also go for the full course rather than quitting it half way. According to our study 65% people under age group 49-62 years take full course of antibiotics. The study indicates that the level of awareness amongst masses about completing the antibiotic course and also that antibiotics have no effect whatsoever on the cold was far better than the earlier conducted studies(Lim & Teh, 2012; Oh *et al.*, 2011).

5. Conclusion

Our study highlights the possibility of tackling the misuse of antibiotics through educational campaigns, which could also address the shortcomings related to antibiotics practice and public awareness. Additionally, the study aims to alter the stance of both public and health professionals. Health authorities should take adequate measures to restrict the access to antibiotics without prescription. The effectiveness of antibiotics can only be retained under the condition of proper usage as preserved by qualified health professionals, completing the course of antibiotics as prescribed by qualified health professionals, completing the course of antibiotics as prescribed by doctor, discarding left-over antibiotics, avoiding shared consumption of antibiotics with others, and arranging educational campaigns about the safe usage of antibiotics. Evidently, people between the age group of 21-34 years constitute the majority of individuals who consume antibiotics without any prescription. Therefore, proper education of the target group concerning the safe use of antibiotics is the need of the hour.

6. References

Albsoul-Younes, A., Wazaify, M., Yousef, A. M., & Tahaineh, L. (2010). Abuse and misuse of prescription and nonprescription drugs sold in community pharmacies in Jordan. *Substance Use and Misuse*, *45*(9), 1319–1329.

https://doi.org/10.3109/10826080802490683

Antibiotic Resistance: Multi-country public awareness survey. (2015).

Antibiotic use and knowledge in the community in Kalamoon, Syrian Arab Republic: a cross-sectional study - PubMed. (n.d.).

Antibiotics - NHS. (n.d.).

Awad, A. I., & Eltayeb, I. B. (2007). Self-medication practices with antibiotics and antimalarials among Sudanese undergraduate university students. *Annals of Pharmacotherapy*, *41*(7–8), 1249–1255. https://doi.org/10.1345/aph.1K068

Common trend of antibiotics usage in a tertiary care hospital of Peshawar, Pakistan - PubMed. (n.d.).

Jassim, A. M. (2010). In-home drug storage and self-medication with antimicrobial drugs in Basrah, Iraq. *Oman Medical Journal*, *25*(2), 79–87. https://doi.org/10.5001/omj.2010.25

Lim, K. K., & Teh, C. C. (2012). A cross sectional study of public knowledge and attitude towards antibiotics in Putrajaya, Malaysia. *Southern Med Review*, *5*(2), 26–33.

Mazińska, B., Struzycka, I., & Hryniewicz, W. (2017). Surveys of public knowledge and attitudes with regard to antibiotics in Poland: Did the European Antibiotic Awareness Day campaigns change attitudes? In *PLoS ONE* (Vol. 12, Issue 2). Public Library of Science. https://doi.org/10.1371/journal.pone.0172146

McNulty, C. A. M., Boyle, P., Nichols, T., Clappison, P., & Davey, P. (2007). Don't wear me out - The public's knowledge of and attitudes to antibiotic use. *Journal of Antimicrobial Chemotherapy*, *59*(4), 727–738. https://doi.org/10.1093/jac/dkl558

Napolitano, F., Izzo, M. T., Di Giuseppe, G., & Angelillo, I. F. (2013). Public knowledge, attitudes, and experience regarding the use of antibiotics in Italy. *PLoS ONE*, *8*(12). https://doi.org/10.1371/journal.pone.0084177

Oh, A. L., Hassali, M. A., Al-Haddad, M. S., Sulaiman, S. A. S., Shafie, A. A., & Awaisu, A. (2011). Public knowledge and attitudes towards antibiotic usage: A cross-sectional study among the general public in the state of Penang, Malaysia. *Journal of Infection in Developing Countries*, *5*(5), 338–347. https://doi.org/10.3855/jidc.1502

Pan, H., Cui, B., Zhang, D., Farrar, J., Law, F., & Ba-Thein, W. (2012). Prior knowledge, older age, and higher allowance are risk factors for self-medication with antibiotics among University students in Southern China. *PLoS ONE*, *7*(7). https://doi.org/10.1371/journal.pone.0041314

(PDF) Self-me*dication practice in Baghdad, Iraq. . 2012; 5:600-602*. (n.d.).

R Y Suaifan, G. A., Shehadeh, M., Darwish, D. A., Al-Ijel, H., Yousef, A.-M. M., &

Darwish, R. M. (2012). A cross-sectional study on knowledge, attitude and behavior related to antibiotic use and resistance among medical and non-medical university students in Jordan. *African Journal of Pharmacy and Pharmacology*, *6*(10), 763–770. https://doi.org/10.5897/AJPP12.080

Sarahroodi, S., Arzi, A., Sawalha, A. F., & Ashtarinezhad, A. (2010). Antibiotics self-medication among southern iranian university students. *International Journal of Pharmacology*, *6*(1), 48–52. https://doi.org/10.3923/ijp.2010.48.52

Scicluna, E. A., Borg, M. A., Gür, D., Rasslan, O., Taher, I., Redjeb, S. Ben, Elnassar, Z., Bagatzouni, D. P., & Daoud, Z. (2009). Self-medication with antibiotics in the ambulatory care setting within the Euro-Mediterranean region; results from the ARMed project. *Journal of Infection and Public Health*, *2*(4), 189–197. https://doi.org/10.1016/j.jiph.2009.09.004

The antibiotics resistance crisis: an emerging public health disaster - Pakistan - DAWN.COM. (n.d.).