Original Article

KNOWLEDGE Of ANTIBIOTIC USE, MISUSE AND ANTIBIOTIC RESISTANCE IN THE SLUM COMMUNITY IN KARACHI

Alia Nasir[1], Badil[2], Adeel Eliyas[3], Shireen Sherali[4], Muhammad Hasnain Shaikh[5], Shamsher Moloo[6]

[1]Dean / Associate Professor, College of Nursing, Ziauddin University, Karachi
[2]Assistant Professor, Institute of Nursing, Dow University of Health Sciences, Karachi
[3]Nursing Instructor, College of Nursing, Ziauddin University, Karachi
[4]Nursing Instructor, Liaquat College of Nursing, Liaquat National Hospital. Karachi
[5],6BS. Nursing Student, College of Nursing, Ziauddin University, Karachi
Correspondence: Badil, Assistant Professor , Contact: +92 3083129931, Email: badil@duhs.edu.pk.

Abstract

Background: Worldwide antimicrobial resistance is hugely increasing in the response of inappropriate antibiotic use. Our objectives were to assess knowledge of antibiotic use, misuse and antibiotic resistance in the slum community of Karachi.
Methods: This Community-based cross-sectional study was carried out Shireen Jinnah Colony in Karachi for the period of six months from 1st January to 30th June 2017.Subjects of both genders were approached through convenient non-probability sampling technique. Subjects of both genders having age 15 years and above and who were willing to participate in the study were included. An adapted and validated questionnaire was used for data collection.
Results: Out of total 120 subjects, the majority of 100 (83.3%) were males, 64 (53.3%) married, 36 (30%) were matriculate and 54.2% fell in the age group between 15-30 years of age. Majority of 77.5% participants never attended any seminar or workshop about antibiotic resistance. Most of 73.33% subjects answered that antibiotics are effective in treating both bacterial and viral infections. 60.83% of respondents purchase antibiotic with the prescription. 70 % of subjects knew about antibiotic adverse drug reaction. In addition, 60.83% stop the antibiotic medication when feeling better.
Conclusion: The study concluded the lack of knowledge of the use of antibiotics and the unnecessary and improper use of the antibiotic may cause antibiotic resistance.
Keywords: Antibiotic, knowledge, resistance, antimicrobial agents, excessive use.

Introduction

Antibiotic resistance is a global health challenge and one of the greatest threats to health worldwide (1). Antibiotic has major uses and advantages to human health whereas its misuse has the negative impact on human health because it may increase the risk of antibiotic resistance (2). It is evident that antibiotic resistance has been generally reported in developing countries. It is affirmed by current research that urinary tract infections caused by E. coli are untreatable as it has established resistance to the ancient antibiotics (3). Worldwide, 3.4 % of cases were estimated with the diagnosis of multi-drug-resistant Tuberculosis (MDR-TB) that was resistant to rifampicin and isoniazid in 20101. In America, every year patients died of Methicillin-Resistant Staphylococcus Aureus (MRSA) (2). Across the globe, 50 % antibiotics purchase privately without prescription. Worldwide many pharmacies and street vendors had open informal sectors that have no license of this illegal activity (4). The main cause of antibiotic resistance is an inappropriate and improper use of antibiotics that can lead to antibiotic resistance which may decrease the efficiency of antibiotic towards antigen (5). In Karachi, Pakistan, antibiotic resistance has become a serious problem due to its inappropriate use. Furthermore, several persons use antibiotics as self-medication, do not follow the complete course because of feeling better (6).

The Misuse or Resistance of antibiotics in Pakistan is caused by numerous factors which include government policies and its implementation, socioeconomic status, behavioral and knowledge level of health care providers as well as the community (7, 8).

Despite the fact of that pharmacology is taught at undergraduate level in Pakistan and various in-service educations and training session is held but despite ample knowledge, health care providers continue to prescribe antibiotics with misdiagnosed symptoms on the very first or second day of viral infections without proper evidence or laboratory investigations. This further increases bacterial resistance (9). The main objective of this study was to assess knowledge of antibiotic use, misuse and antibiotic resistance in the slum community of Karachi.

Methodology

The community-based cross-sectional study was carried out at Slum community of Shireen Jinnah Colony in Karachi for the period of six months from 1st January to 30th June 2017. The calculated sample size was 120 subjects of both genders. Participant of both genders having age 15 years and above and who were willing to participate were enrolled in this study. Subjects of both genders were approached through convenient non-probability sampling technique. An adapted and validated questionnaire was used to collect the data. The questionnaire had two parts. The first part of questionnaire comprised of demographic variables like age, gender, marital status and level of education of study participant, and the second part of questionnaire comprised of questions pertaining to knowledge of antibiotic use, misuse, and antibiotic resistance. The questionnaire was translated into the Urdu language. Urdu language questionnaire was used for data collection. The respondents who were unable to fill questionnaire was guided and helped. Written informed consent was obtained from all participants prior to data collection. The participation of subjects was voluntary. Confidentiality of the participants was guaranteed. Data were entered and analyzed in SPSS version 21.0. Demographic variables like gender, marital status, and level of education were presented as frequencies and percentages. Knowledge of antibiotic use, misuse, and antibiotic resistance was presented as percentages.

Results

Table 1 exhibits the demographic characteristics of study participants:

Table 1: Demographic characteristics of study participant (N =120)

Variable	Frequency(f)	Percent (%)
Gender		
Male	100	83.3
Female	20	16.7
Age		
15-30	65	54.2
31-45	47	39.2
45-60	7	5.8
61 and above	1	0.8
Marital Status		
Single	55	45.8
Married	64	53.3
Widow	1	0.8
Qualification		
Never gone to school	11	9.2
Middle	35	29.2
Matriculate	36	30.0
Intermediate	23	19.2
Undergraduate	12	10.0
Graduate	3	2.5

Table 2 discloses the knowledge of antibiotic use, misuse, and antibiotic resistance. Majority of 77.5% participants never attended any seminar or workshop about antibiotic resistance while 22.5% attended. Most of 71.67% subjects reported the extreme use of antibiotics can lead to antibiotics resistance but 28.33% subjects did not think so. 73.33% subjects answered that antibiotics are effective in treating both bacterial and viral infections while 26.67% did not in favor of the statement. 60.83% of respondents purchase antibiotic with prescription while 39.17% participants did not purchase antibiotic with the prescription

Table 2: Knowledge of antibiotic use, misuse and antibiotic resistance (N = 120)

Question	Yes	No
Have you attended any seminar on antibiotic resistance	22.5%	77.5%
Excessive use of antibiotics can cause antibiotics resistance	71.67%	28.33%
Antibiotics are effective in treating both bacterial and viral infections.	73.33%	26.67%
Do you purchase antibiotics outside of the hospital	45%	55%
Do you purchase antibiotics with prescription?	39.17%	60.83%
Do you follow complete 7 days course of antibiotics.	66.67%	33.33%
Antibiotics are safe medicines when used without prescription	63.33%	36.67%
Antibiotics can cause adverse drug reactions.	70%	30%
Do you have any experience of the adverse effects of antibiotics?	35.83%	64.17%
Do you think the antibiotics were effective that you used last time	74.17%	25.83%
Is it good to take antibiotics again and again without prescription	26.67%	73.33%
Does antibiotics should be used until the symptoms are relief	37.50%	62.50%
The appropriate duration of antibiotic use is 4-6 days	77.50%	22.50%
We can use antibiotics in future for the same infection without prescription	32.50%	67.50%

About two-thirds (66.67%) of subjects said they follow the complete 7 days course of antibiotics but 33.33% did not. 63.33% respondents believed that antibiotics are safe medication when used without the prescription and 36.67% said antibiotics are not safe medication when used without the prescription. Antibiotics may cause adverse drug reactions, 70% of subjects agreed with the statement while 30% disagreed. 35.83% participant had experienced the adverse effects of antibiotics but 64.17% had not experienced the adverse effects of antibiotics. 74.17% responded that antibiotics were effective that they used last time, on the other hand, 25.83% refuted. When a question asked from participants, is it good to take antibiotics again and again without the prescription? 26.67% said in Yes whereas 73.33% replied in NO. 37.50% respondent believed that antibiotics should be used until the symptoms are relieved, however, 62.50% did not think so. 77.50% agreed that the appropriate duration of antibiotic use is 4-6 days, nonetheless, 22.50% disagreed. 32.50% replied antibiotics can be used in future for the same infection without prescription but 67.50% contradicted. 60.83% said they stop the antibiotic medication when feeling better, conversely, 39.17% denied.

Discussion

This study assessed the knowledge of participants about the use and misuse of antibiotic medication; the study conducted in a community of Karachi, Pakistan - majority of study participants were male 100(83.3%) and, most of them were literate from middle to matric level 71(59.2%) hence majority of respondents 77.5% had not attended any seminar on antibiotic resistance because in our country, we are not conducting any awareness programs, whether for school going children or public awareness campaigns. The interesting findings in our study was that, although there is no awareness campaign but 71.6% respondent were aware about antibiotics can develop resistance, but they do have misconception about usage of antibiotic for viral infections. 60.83% of respondents purchase antibiotic with prescription- results are much higher as compare to other study conducted in Ethiopia show 19.6%(10).

In our study majority of respondents think antibiotic are safe medicines when to use without prescription therefore few respondents purchase antibiotics without prescription. However, we did not investigate the reason why they are not going to the physician for their treatment. But, in similar study that have been conducted in India reported that individual social factors such as income, access to health care, traveling cost are some contributing factors toward individual's decision to purchase medication without prescription (11). We assume that we'll have the similar reasons in our country. One of the important finding, majority 66.6% of the respondent follow complete 7 day course of antibiotics, this is one of the good practices which can prevent them to develop resistance against the prescribed antibiotic. But, 77.5% participants were not aware of the appropriate duration of antibiotic usage. Many studies had found that the reasons for discontinuation of antibiotics are due to lack of awareness and knowledge regarding antibiotic use (12,13).In Pakistan doctors commonly not write complete prescription as well as they do not do patients counseling which can cause misuse on antibiotic(6).

In present study, most of the participants have never experienced of any adverse drug reactions with antibiotic, therefore for they find it is safe to use antibiotic for treatment. Only few agreed that they can use same antibiotics in future for the same infection without prescription. In this study, 37.50% respondent believed that antibiotics should be used until the symptoms are relieved, This result are higher as compare to study conducted in China(14). This study of ours help us identify that there is major misconception about usage of antibiotics among people living in Shireen Jinnah Colony in Karachi, and there is a need to provide awareness campaigns to prevent them from developing resistance of the antibiotics.

Conclusion

The study concluded that there is the dearth of knowledge of use and resistance of the antibiotics in the slum community of Karachi. Resistance against antibiotic has multiple reasons like self-medication, excessive use, and misuse.

References

1. Kandelaki K, Lundborg CS, Marrone G. Antibiotic use and resistance: a cross-sectional study exploring knowledge and attitudes among school and institution personnel in Tbilisi, Republic of Georgia. BMC Res notes. 2015; 8(1): 495-99
2. Llor C, Bjerrum L. Antimicrobial resistance: risk associated with antibiotic overuse and initiatives to reduce the problem. Ther Adv Drug Saf. 2014; 5(6): 229-41.
3. Mandal J, Acharya NS, Buddhapriya D, Parija SC. Antibiotic resistance pattern among common bacterial uropathogens with a special reference to ciprofloxacin resistant Escherichia coli. Indian J Med Res. 2012; 136(5): 842-48.
4. Belkina T, Al Warafi A, Eltom EH, Tadjieva N, Kubena A, Vlcek J. Antibiotic use and knowledge in the community of Yemen, Saudi Arabia, and Uzbekistan. J Infect Dev Ctries. 2014; 8(04): 424-9.
5. Awad AI, Aboud EA. Knowledge, attitude and practice towards antibiotic use among the public in Kuwait. PloS one. 2015; 10(2).10-20.
6. Naveed S, Qamar F, Maqsood A, Ayub A, Kauser H, Malik H, Fatima K, Hameed A. Prevalence and consequences of misuse of antibiotics, survey based study in Karachi. J Bioequiv Availab. 2015; 7(5): 202-7.
7. Prestinaci F, Pezzotti P, Pantosti A. Antimicrobial resistance: a global multifaceted phenomenon. Pathog Glob Health. 2015; 109(7): 309-18.
8. Collignon P, Athukorala PC, Senanayake S, Khan F. Antimicrobial resistance: The major contribution of poor governance and corruption to this growing problem. PLoS One 2015; 10(3) :20-7.
9. Bala-Miller P, Macmullan J, Upchurch L. Drugs, doctors and dinners. How drug companies influence health in the developing world. London: Consumers International. 2007; 12(4): 40-6.
10. Gebeyehu E, Bantie L, Azage M. Inappropriate use of antibiotics and its associated factors among urban and rural communities of Bahir Dar city administration, Northwest Ethiopia. PloS one. 2015; 17; 10(9): DOI:10.1371/journal.pone.0138179.
11. Barker AK, Brown K, Ahsan M, Sengupta S, Safdar N. Social determinants of antibiotic misuse: a qualitative study of community members in Haryana, India. BMC public health. 2017; 17(1): 333. DOI: 10.1186/s12889-017-4261-4.
12. Grosso G, Marventano S, Ferranti R, Mistretta A. Pattern of antibiotic use in the community: Von- adherence and self-prescription rates in an Italian urban population. Molecular medicine reports. 2012; 5(5): 1305-10.
13. Fatokun O. Exploring antibiotic use and practices in a Malaysian community. Int J Clin Pharmacol. 2014; 36(3): 564-9.
14. Wun YT, Lam TP, Lam KF, Ho PL, Yung WH. The public's perspectives on antibiotic resistance and abuse among Chinese in Hong Kong. Pharmacoepidemiol Drug Saf. 2013; 22(3): 241-9.