UNDERSTANDING REGARDING ANTIBIOTIC RESISTANCE AMONG HEALTHCARE PROFESSIONALS IN GOVERNMENT SECTOR OF TEHSIL GUJAR KHAN

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Abstract

Background: Antibiotic resistance is found to be a continuous threat to effective prevention and treatment of infections and it is a common problem the world facing these days. The severity of problem has increased especially in developing countries with lack of understanding. The objective of the study was to assess the Knowledge, Attitude and Practices of antibiotic resistance among different types of health care professionals working in governmental sector of Punjab, Pakistan.

Methods: A Cross sectional study was conducted by distributing questionnaire with 136 healthcare professionals working in Tehsil Head Quarter Hospital Gujar Khan, Rural Health Centre Qazian, Rural Health Centre Mandra and Rural Health Centre Daultala. Ethical approval was granted by the Institutional Review Board of Health Services Academy Islamabad. Questions were of true or false type in knowledge section. A Likert scale was used to assess of participants regarding use of antibiotics and its resistance developed among the patients. The responses of this scale ranged "from strongly agreed to strongly disagree, from always to never" and Practices were measured by different factors and drivers.

Results: The total number of participants was 136, out of which there were (35%) males and 88 (65%) females. 80 respondents were from THQ Hospital Gujar Khan and 56 participants were from three RHCs. It was found in the study that majority 79% (n=107) respondents were demanding by themselves to prescribe them antibiotics. It was found that more than half or 60% (n=81) people strongly agreed that antibiotic resistance is one of the biggest issue worldwide that needs to be addressed. The overall knowledge was found to be good but there were attitude and practice problems.

Conclusion: The findings of this study indicate a diverse level of understanding of antibiotics resistance among different health care professionals. Therefore, serious concerns and efforts are still needed to develop, education and trainings to implement strategies to minimize the future risks of antibiotic resistance.

Keywords: Antibiotic resistance, knowledge, attitude, practices

Introduction

Antimicrobial resistance is considered as one of the most emerging public-health issue globally. It may result in infections that can be simply curable with antibiotic to avoid high-risk ailments, causing the increase in the children and adult's sufferings. Antibiotic-resistant bacteria can spread towards family members and affecting other schoolmates, co-workers, and is a serious issue to community. Health care expenditures and economic burden to the society has been ultimately increased because of the issue. (1)

"Antibiotics are natural compounds that kill bacteria, such as certain types of molds or

chemicals produced by living organisms. "Antibiotic resistance is the ability of bacteria to resist the effects of an antibiotic". "Antibiotic resistance occurs when a bacteria changes in a way that reduces the effectiveness of drugs, chemicals or other agents designed to cure or prevent infections (1)". "The bacteria survive and continue to multiply, causing more harm" (1).

Antibiotic resistance is considered to be one of the major health related issues in Pakistan and overall situation is found to be much more dreadful as represented in many published studies over last two decades.

Growing concerns about anti-microbial-resistance (AMR) and insufficient progress of productive new anti-microbial drugs have encouraged large efforts to build-up development to control bacterial infections and antimicrobial stewardship implementation (13).

Anti-microbial stewardship is defined as logical approach to encourage the proper selection, dose and therapy duration for anti-microbial agents throughout the duration of their use in order to enhance the effects. Successful stewardship programs have better anti-microbial prescription practices. It has minimized anti-microbial drug use and has cut down the unjustified pharmacy expenses which results in the best clinical effect for treating and preventing the infections, with minimum toxicity to the patient and less influence on further resistance (14,15).

Ministry of National Health Services, Regulation & Coordination (MNHSR & C) has commissioned the development of National Strategic Framework for antimicrobial resistance management through a consultative process initiating "One-Health-Approach (2).

The CDC: "Centers for Disease Control and Prevention" has categorized a number of microorganisms as thinking a big warning sign and most of them are considered for an economic burden on the country (4).

The World-Health-Organization has reported rising levels of anti-microbial resistance, which are alarming for the control of infectious diseases. Antibiotic misuse and lack of knowledge are key reasons for the emergence of anti-microbial resistance, which affects the capability and effectivity of these drugs (7).

The studies from the "South-Eastern Mediterranean regions like Jordan", show an elevated rate of antibiotic resistance in comparison to other Western countries, along with "broad-spectrum antibiotics" consumption in health care centers (8). Internationally, antibiotic utilization in human beings has been raised by 36% between 2000 and 2010 (9).

A study conducted on the changing human behavior and understanding indicates that before antibiotics are "prescribed, dispensed, consumed, or discarded", one or many decisions are taken influencing further human behavior (10).

Methodology

A Cross-sectional study was conducted in Tehsil Gujar Khan under District Rawalpindi which is situated in the northern part of the Province Punjab of Pakistan. A World Health Organization (WHO) tool was adopted for this survey and sample size was universal.

Secondary care governmental hospital of district Rawalpindi was selected and study was done in Tehsil Head Quarter (THQ) Hospital Gujar Khan. Sample was also collected from Rural Health Centers (RHCs) including RHC Qazian, RHC Mandra and RHC Daultala in Tehsil Gujar Khan. And they all come under Primary and Secondary health care departments (PS & HCD) of Punjab Government. Sampling technique was Non-probability Consecutive Sampling (Purposive) and data collection was done in a period of one month year 2018. Sample of 136 participant was found and collected in which 80 participants were found from Tehsil Head Quarter Hospital Gujar Khan and 56 participants were from all three Rural Health Centers of Tehsil Gujar Khan.

Study duration was three months i.e. From April to June 2018. It was a questionnaire based survey and primary data was collected from the which is described below in knowledge table. Data was collected by the principal investigator or researcher herself and Quantitative tool was self-administered. Validity was also confirmed by the pilot testing and a random sample of 18 health care professionals (n=18) was taken that were not included in the final research by using adopted questionnaire. According to this final questionnaire was finally designed for data collection. All Health care professionals working in THQ hospital and all three RHCs were included in the study and Health care professionals who were on leave at the time of data collection were excluded from the study and dependent variable was Understanding of health care professionals towards antibiotic resistance and research was independent of their Socio-demographic features (sex and age), education status (senior consultants, physicians, nurses, pharmacists, dentists, physiotherapists, LHV's, LHW, dispensers etc.) and number of years of experience.

Institutional Review Board from Health Services Academy (HSA) gave the research consent and ethical permission from concerned health facilities was taken accordingly. Participant's privacy and confidentiality was maintained by hiding their names. Written consent through consent form was taken from the study participants. Quantitative data collected from the questionnaire was imported into SPSS (Statistical Package of Social Sciences) version 21 and was checked by the principal researcher and supervisor for errors and data entry. The statistical analysis was done. The responses to the structured questionnaire were analyzed descriptively in the form of percentages, frequencies and were presented in the form of tables, graphs and charts.

Results

The Knowledge, Attitude, Practice was checked in THQ Hospital Gujar Khan and 3 RHC'S (Mandra, Daultala and Qazian). There were 136 participants (n=136) in the study. From a total of 136 study participants (n=136), 80 participants were from THQ Hospital Gujar Khan while the 56 participants were from three RHCs.

Socio-demographic Characteristics

Percentage of female participants was 64.7% (88) while that of males was 35.3% (48). While considering the age group of the respondents, 25-34 age groups has the highest valid percentage i.e. 61% (83) whereas 55-64 age group has the lowest percentage 2.9% (4) as shown in Table 1.

Table 1 Socio demographic characteristic of participants (n=136)

Variables	Categories	Frequency	Percentage (%)
Age (In years)	19-24	9	7
	25-34	83	61
	35-44	28	21
	45-54	12	9
	55-64	4	3
City (Country= Pakistan)	Islamabad	20	15
	Rawalpindi	31	23
	Gujar Khan/Mandra	84	62
	Talagang	1	1
Qualification	Consultant doctor	6	4.4
	Medical officer	13	9.6
	Causality medical officer	6	4.4
	Women medical officer	14	10.3
	Senior women medical officer	1	0.7
	Dentist	1	0.7
	Pharmacist	2	1.5
	Physiotherapist	2	1.5
	Nurse	43	31.6
	Lady Health Worker (LHV)	11	8.1

Results shown in table 1 indicate that there were 55.1% (75) participants who were married and 19.9% (27) were single adults. Participants were of Punjabi background, Urdu speaking, Potohari, Balochi and Sindhi.

Knowledge

Knowledge in 136 respondents was tested and results can be explained as under:

69.6% (95) participants believed that the method by which a patient pays for the medicine influences the type of antibiotic prescription and 30.1% (41) believed that is not true. 14.7% or 20 participants said that they should stop the treatment when they feel better and 1.5% (2) said that they don't know about it.

83.8% and 114 respondents said that they should not take antibiotic treatment anymore

after they have taken all of the doctor's prescription.

On asking the different conditions which can be treated with antibiotics 44.9% means 61 participants said that Urinary-tract-infection and infection of bladder need to be treated with antibiotic which were highest in number among all the conditions mentioned, 34.6% (n=47) responded that Gonorrhoea should be treated with antibiotics which was second highest valid percentage. There were 5.9% (8) participants said that diarrhoea needs to be treated with antibiotics.

Knowledge About Antibiotic Resistance

As indicated in Figure 02, 95.6% (n=130) had already heard about the term antibiotic resistance.

Figure 2 Terminology regarding antibiotic resistance (n=136)

If the graph is plotted according to the highest valid percent for each of the terms, it is quite visible in Figure 02 that 95.6% (130) respondents answered that they have heard about the antibiotic term before, 53.7% (73) heard about the super bugs and same for others.

As per the information sources and terminology 58 respondents and (42.6 %) respondents replied that they heard the term super bugs from the doctor or nurses. Seventy Five (75) respondents 51.5% respondents which were 70 in number said that they heard the term antibiotic resistance from a doctor or nurse. 11 of them heard it from other sources like journals or from some person. Source of information for most of the respondents was Internet webs and online sources which were 50% as said by 68 respondents. 41.9% (57) never gone through medical journals where as 41.2% (56) of them had one on one discussions with co-workers.

Table 2: True/False Statements regarding antibiotic resistance (n=136)

Categories & Variables	Yes	No
When the body is resistant to antibiotics; AB-resistance occurs.	133 (97.8)	3 (2.2)
Several infections are resistant to anti-biotic.	131 (96.3)	5 (3.7)
AB resistant bacteria are difficult to treat.	127 (93.4)	9 (6.6)
AB resistance can affect me/my family.	120 (88.2)	16 (11.8)
Anti-biotic resistance is an issue in other country only.	17 (12.5)	119 (87.5)
Regularise of antibiotics cause problems.	40 (29.4)	96 (70.6)
Antibiotic resistant bacteria can spread from one to another.	75 (55.1)	61 (44.9)
AB-resistant infections could make medical procedures more dangerous.	120 (88.2)	16 (11.8)

On a maximum number 97.8% (n=133) health care professionals said that antibiotic resistance occurs when a person's body becomes resistant to antibiotics where as 96.3% (131 participants) agree that many of the infections are getting resistant to antibiotics. (Table 2)

Attitude

Attitude of the respondents was tested on the Likert scale for n=136 and the responses were as follows:

Table 3 Attitude towards Antibiotics in participants (n=136)

Variables	Responses				
	n (%)	n (%)	n (%)	n (%)	n (%)
	Disagree Strongly	Disagree Slightly	Neither agree nor disagree	Agree Slightly	Agree Strongly
Antibiotics should be used on the prescription of doctor/nurse.	2 (1.5)	1 (0.7)	2 (1.5)	14 (10.3)	117 (86)
Farmers should not give AB to animals who produce food.	9 (6.6)	6 (4.4)	16 (11.8)	54 (39.7)	51 (37.5)
People should not use extra antibiotics later.	6 (4.4)	7 (5.1)	22 (16.2)	31 (22.8)	70 (51.5)
Children's vaccinations should be up-to-date.	5 (3.7)	3 (2.2)	4 (2.9)	24 (17.6)	100 (73.5)
People should wash their hands regularly.	2 (1.5)	0	3 (2.2)	27 (19.9)	104 (76.5)
Doctors should prescribe AB rationally.	1 (0.7)	0	6 (4.4)	21 (15.4)	108 (79.4)
Government should give reward for the development of new AB.	1 (0.7)	0	7 (5.1)	46 (33.8)	82 (60.3)
Pharmaceutical companies should develop new antibiotics.	2 (1.5)	0	11 (8.1)	44 (32.4)	79 (58.1)
Attitude towards antibiotic resistance (n=136)					
Antibiotics resistance is the biggest world problem.	2 (1.5)	0	12 (8.8)	41 (30.1)	81 (59.6)
Medical experts should solve this problem.	2 (1.5)	6 (4.4)	11 (8.1)	63 (46.3)	54 (39.7)

Out of 136 respondents who participated in the study 86%(117) respondents strongly agree that people should use antibiotics treatment only when they are prescribed by a doctor and 79.4% (108) respondents believe that doctors should only prescribe antibiotics when they are required (Table 3). There were 59.6% (81) people who strongly agreed that anti-biotic resistance is one of the world's biggest problems.

Practice

When asked about practice questions out of 136 participants 47 used the antibiotics in the last 6 months and 30 of them used them a month ago. 87.5% (119) got proper counselling advice for the medicine usage. It was found through practice questions that 42.6% (58) of them thought that it was very common that diagnosis was not proper where as 58.8% (80) believed commonly that patient himself demand antibiotics in the Government sector, 54.4% (74) believed that patients fail to adhere the proper

Treatment. Only 4.4% (6) of them thought that sometimes there is lack of counselling to patient whereas 41.9 (57) of them said that counselling was very commonly done. A highest valid percentage of health care professionals in government sector i.e. 78.7% (107) that patient demand himself/herself for antibiotics prescribing which is found the leading factor. 61.8% (84) clinical staff responded that there was lack of knowledge for the correct use of antibiotics. Top most driver for the choice of antibiotic was severity of infection as responded by 88.2% (120) people.

Discussion

Antimicrobial resistance is a very major and alarming-issue for the people's health and economy. In the developing countries, an increased rate of infections usually occurs with a huge spread of microbial resistance (11).

Other considerable factors, the irrational use of antibiotics has contributed to the microbial resistance with influential economic and clinical impacts. (12).

In current study significant percentage of respondents was not properly diagnosed, 34.6% are prescribed the wrong medicine, It was found the study as per knowledge section that 58 respondents (42.6%) are not

properly diagnosed which was very common and it was significant percentage. According to the answers received from Physician's practice of prescriptions 34.6% and 47 of patients were very commonly prescribed the wrong medicine and according to the Likert scale 49.3% means 67 of HCP strongly agreed that antibiotic resistance will affect their family and friend's health. Study findings were similar to studies from other settings where respondents agreed that antibiotic resistance was an alarming problem but less in their own practice compared to national and also the rest of the world (13-16). A study in the Iraqi community in Jordan revealed that the practice of overly requesting antibiotics from physicians is reported (7,17). And same was found in this study that 78.7% (n=107) respondents said that patients were demanding by themselves to prescribe them antibiotic which is more than 2/3rd of the total participants. A study conducted in India revealed that Provider's perceptions of patients demand for antibiotics or the actual demand by

Consumers can influence antibiotic prescription and dispensing practices (10,18-20). Also from education perspective, which is related mainly to the physician's professional as well as cultural background, is thought to play a role (11,21). In current study 84% of patients were not aware of the knowledge about the exact use of antibiotics. A study conducted on effects of Knowledge, Attitudes, and Practices of Primary Care Providers on the selection of Antibiotic in United States ensures that patients demand antibiotics less frequently than providers perceive and then inappropriate prescribing is a common result of the miscommunication (22-24).

90% of respondents in current study believed that antibiotic resistance is one of the critical problems the world is facing and got the similar finding was of 98% of results in a study about Knowledge- attitude and practices of B.Sc. Pharmacy students about antibiotics in Trinidad and Tobago (25). In Vietnam a retrospective study revealed that more than 70% of patients were prescribed inadequate dosage regimen and it was reported that 1 in 4 patients in their medical districts received parenteral antimicrobials (26). And in this study researcher found that 96.3% (n=131) of infections are becoming resistant due to treatment strategies. In Fitche hospital 12.1% of the participants agreed that inappropriate use of antimicrobials can lead to resistance whereas 39.3% of them strongly-disagreed with this statement. Less than half of the respondents (44.9%) believed that "antimicrobial resistance" is a serious public health concern which is comparably similar with the study done in Amara region (6,7).

Limitations Of The Study

The significant limitation is the time period and there was no funding agency.

As Gujar Khan rural area so there is a lesser opportunity as compared to Urban areas where there are always a huge opportunities of training courses. Also it was hospital based study and could not be generalized in community.

I took government sector only and did not include private. The Knowledge, attitude and practice levels of government facilities would definitely be different.

Recommendations And Way Forward

There is need of proper, guidelines and policy at institutional level for the use of antibiotics.

There can be Education programs, training sessions at institutional level.

Patient level counseling regarding medicine prescriptions and antibiotic use can be done as they contribute to main factor for prescription choice at government level facilities and poor awareness is a big issue. Various educational programs to patients should also be focused as an important role in combating microbial resistance.

Conclusion

This study provides an important understanding regarding the knowledge, attitudes, perceptions and practices regarding antibiotic resistance. Overall study revealed that even though there was a varying level of understanding among the health care professionals. This does not mean that everything is under control because varying level of practices were found among the health care professional.

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