Knowledge, approaches and practices of university students towards antibiotics use

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Abstract: The aim of doing this research was to assess the awareness, approach and practices in order to use of antibiotic in the two groups of students at COMSATS University, Abbottabad, Pakistan. Among 5560 pupil registered at the university, 232 were selected as sample by employing convenient sampling technique. They were asked to fill the questionnaire individually. The sample was assigned into two groups. Students from faculty of pharmacy constituted Group A whereas Group B contained students from other faculties. Fisher's exact test was utilised to analyse the replies conferred by the two groups with P-values less than 0.05 being intended significant. Among the university students the antibiotic use was discovered to be irrational. Proper education and encouragement of the university students, proper training and encouragement of health workers, educational programmes for general public and control of without prescription availability of antibiotics must be done to improve rational antibiotic use.

Keywords: antibiotic; approaches; knowledge; practices; Fisher's exact test; college students.

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1 Introduction

Although frequently misused, antibiotics are amongst the most frequently recommended drugs (Laurence, 2006; World Health Organization, 2000). Because of the larger amount of antibiotic used, management of antibiotic ought to comply with guidelines ascribe through the direction 'rational consumption of antibiotics' (Moellering et al., 1995; Beam et al., 1992; Robert and Visconti,1972). Irrational overuse of antibiotics leads to adverse reactions, economical loss and appearance of resistant bacteria (Gyssens, 2001). Adverse effects of irrational use include morbidity and mortality, toxicity due to drug, increased costs, long period of hospitalisation, resistant microorganisms and accompanying infections (Craig et al., 1978; Aswapokee et al., 1990; Kunin, 1978; Nathwani and Davey, 1992). Factors behind excessive use of antibiotics include: economic and political factors, doctor's understanding and practice, ambiguous diagnosis and promotion of pharmaceuticals both in developed and developing countries (Orton, 2001; McManus et al., 2001; Metlay et al,. 1998; Kunin et al., 1990). The wrong consumption of antibiotics in developing countries is even more essential due to the opening of the antibiotic market and the higher incidence of specific infectious diseases (Lee et al., 1991). All Healthcare Professionals (HCPs), as well as nurses, technicians, pharmacists and physicians, possess obligation in their clinical practice in keeping ABs efficient (CDC, 2019; Nahrgang et al., 2018; Pearson and Chandler, 2019; Norris et al., 2013; Dyar et al., 2018; Napolitano, et al., 2019; Rábano-Blanco et al., 2019). About 90% of AB utilisation in human medicine appears in outpatient settings; thus, it is vital to manage these drugs just in cases where it is adequate (Zawahir et al., 2019; Inácio et al., 2017; Jairoun et al., 2019). They have important roles in medicine provision, primary preclusion, patient education, lifestyle-advice and safety monitoring (e.g., pharmaco-vigilance studies) (Scarpitta et al., 2019). Furthermore, a current study in Hungary revealed that scarcity of primary care availability (which is a developing problem) causes to the over-prescription of ABs (Biro and Elek, 2019). The objective of this research was to measure the knowledge approach and practices in order to use of antibiotic amongst the university students in Pakistan. We also tried to find out the amount of antibiotic consumed by this group over the past 6-months.

2 Materials and methods

This study was designed as a prevalence study/transverse study of COMSAT bachelor's students in all departments. It has a student population of 5560. Convenient sampling was employed by presenting a single page questionnaire to simply those who agreed their involvement. The sample survey was segregated into two different groups; pharmacy students comprised Group A, whereas students of other departments constituted Group B. Questionnaire used for study comprises of 15 questions.

True or false questions were used for determining the knowledge. Yes or No and multiple choice questions were used to decide the approach and practices. The proportionality variation between Group A and Group B were examined by true/false and yes/no questions. In addition variation between the answers of multiple choice questions were also examined. Fisher's exact test was utilised to analyse the replies conferred by the two groups with *P*-values less than 0.05 being intended significant.

3 Results

Regarding this study 232 questionnaires were returned out of distributed 250. Mean age of both sample groups was 20.9 ± 1.9. Male respondents constituted 60.8 %. A summary of knowledge, awareness and practices of two groups are shown in Tables 1 and 2. When questioned about what are antibiotics, 94% of respondents answered that antibiotics are drugs while remaining respondents answered others such as 'food item', 'no idea'. The purpose of antibiotic use to decrease fever was 20.2% in group A respondents whereas 40.7% in Group B respondents ($P<.05$). In both group 90.8% of the respondents said that antibiotics are used to overcome infections. Repeated use of antibiotic was 2 to 3 times a year in 31.9% of respondents, more than three times a year in 22.4%, once in a year in 26.3% and on one occasion in last two to three years in 15.9% of respondents. 84.5% of the respondents in A-Group and 87.7% respondents in B-Group said that antibiotics might be started with prescription by a physician ($P>.05$).

Table 1 The knowledge of antibiotic use in two groups

Questions	*a (n)*	*a (%)*	*a (n)*	*a (%)*	*a+b (n)*	*a+b (%)*	*p-value*
Q1. Purpose of using antibiotic?							
For common cold	23/84	27.4	24/145	16.6	47/229	20.5	.062
To decrease fever	17/84	20.2	59/145	40.7	76/229	33.2	.002
To overcome pain	15/84	17.9	52/145	35.9	67/229	29.3	.004
To overcome any infection	83/84	98.8	124/145	85.5	208/229	90.8	.001
Q2. How to start using antibiotics?							
Antibiotic found at home to avoid wasting time	6/84	7.1	31/146	21.2	37/230	16.1	.005
On doctor's prescription	71/84	84.5	128/146	87.7	199/230	86.5	.550
With pharmacists advise	63/84	75.0	50/146	34.2	113/230	49.1	.000
Buy from drug shop	18/84	21.4	34/146	23.3	52/230	22.6	.870
Q3. What is the frequency of Taking the drugs a day?							
After getting up in the morning and before going to bed at night	15/84	17.9	39/146	26.7	54/230	23.5	.147
Once a day	14/84	16.7	39/146	26.7	53/230	23.0	.104
As per health worker advice	77/84	91.7	113/145	77.9	190/229	83.0	.010
Q4. For how long antibiotics should be used?							
Until the pack (bottle/blister) finishes	7/84	8.3	25/145	17.2	32/229	14.0	.075
Until the symptoms disappear	21/84	25.0	55/145	37.9	76/229	33.2	.058
As advised by the doctor	79/83	95.2	120/145	82.8	199/228	87.3	.007
Q5. Do you think regular and unsuitable antibiotic exploit must be discouraged?							
	59/84	70.2	85/145	58.6	144/229	62.9	.090

In Group A 67.9% and 67.1%in Group B of the respondents consumed antibiotics in the past 6-months ($P>.05$). In both groups, antibiotics were used in order not to become sick was 23.8% and 25.5% in Group A and Group B, respectively ($P>.05$). When asked about irregular use of antibiotics 27.4% respondents in A-group and 51.0% in B-Group used them irregularly ($P<.05$) although 83.0% of the respondents in the both group agreed that

drugs should be used as per health worker advice. 57.1% in A-Group and 54.8% in B-Group respondents began to use antibiotics themselves (P>.05) even though 86.5% of the all respondents said that they should be started on doctor's prescription. During their last infection, 28% of the respondents in A-Group and 43.8% of the Group B consumed antibiotics as for as their symptoms gone, although 87.3% of the respondents agreed that antibiotics should be used as recommended by the doctor. In both groups 41.5% of the respondents used the antibiotics antecedently recommended by the doctor. If the antibiotic being used was not helpful then 38.6% of the respondents stopped its use and go to the doctor whereas 28.5% of them use it for the recommended period. The main purpose of taking the antibiotic was sore throat (53.9%) followed by cough (20.7%) and common cold (17.7%) whereas 7.3% (17) respondents did not respond to this question.

Table 2 The approach and practices of antibiotic use in two groups

Questions	*a (n)*	*a (%)*	*b (n)*	*b (%)*	*a+b (n)*	*a+b (%)*	*p-value*
Q1. Had you consumed the antibiotics in the past 6 months?	57/84	67.9	96/143	67.1	153/227	67.4	1.00
Q2. Had you ever use antibiotics to avoid getting sick?	20/84	23.8	37/145	25.5	57/229	24.9	.874
Q3. Had you ever start taking antibiotics by yourself when you are sick?	48/84	57.1	80/146	54.8	128/230	55.7	.783
Q4. Had you often used antibiotics given by the doctor occasionally?	23/84	27.4	74/145	51.0	97/229	42.4	.001
Q5. How did you take antibiotics last time you got infected?							
I have used the antibiotic antecedently used and recommended by my friends	4/84	4.8	18/145	12.4	22/229	9.6	.043
I exploit the antibiotic in the past given by my doctor	33/84	39.3	62/145	42.8	95/229	41.5	
I went to see a doctor and used given antibiotics	35/84	41.7	57/145	39.3	92/229	40.2	
I asked the chemist and used the antibiotic suggested by him	12/84	14.3	8/145	5.5	20/229	8.7	
Q6. How will you react, if you feel those antibiotics you are using are not helpful?							
I stop using antibiotic and go to see a doctor	32/84	38.1	56/144	38.9	88/228	38.6	.092
I stop using antibiotic and go to see another doctor	13/84	15.5	25/144	17.3	38/228	16.7	
I exploit it during the suggested time phase	19/84	22.6	46/144	31.9	65/228	28.5	
Others	20/84	23.8	17/144	11.8	37/228	16.2	
Q7. How long did you consume antibiotics throughout your last infection?							
As for as the drugs got over	4/82	4.9	16/144	11.1	20/226	8.9	.003
As for as the symptoms disappeared	23/82	28.0	63/144	43.8	86/226	38.0	
As advised by the doctor	55/82	67.1	65/144	45.1	120/226	53.1	

4 Discussion

In this study we compared the knowledge and practices of university students belonging to pharmacy faculty and non-pharmacy faculties towards use of antibiotics at a university in Abbottabad, Pakistan. As appeared from the data, the students of pharmacy faculty had more knowledge than students of non-pharmacy faculties. In Group A, 27.4% and 16.6% of respondents in Group B, answered that antibiotics are utilised for common purpose of catching cold. The percentage of pharmacy students group in this regard was unexpectedly high. This high percentage could be correlated with study performed by Eng et al. (2003). They observed that 27% of the respondents thought that when they were suffering from common cold, taking antibiotics could make them healthier more rapidly. Similarly a study performed by Cho et al. (2004) also indicated some believes of pharmacists and physicians that antibiotics showed some advantages in common cold. So these two aspects could be the reason of common cold being answered as a purpose of antibiotic use.

In our study, 55.7% of the respondents in both groups (57.1% in Group A and 54.8% in Group B), began antibiotics by themselves without the recommendation of their doctor, when they experienced an illness. In this regards, there was no significant positive difference between these two groups (A & B group). The high percentage in pharmacy group could be attributed to high level of confidence in them to use antibiotics when they acquired an illness. This statement was also supplemented by a study performed by Hem et al. (2005), who observed a self-prescription tendency among healthcare workers. But in non-pharmacy group the results are surprising. Moreover, 16.1% of the both group respondents agreed that the best thing to do is starting antibiotics present at home. This result was comparable to that reported by Nambatya et al. (2011) and lower than that reported by Buke et al. (2005). There were significant deviations between these two groups because the percentage in Group A was lower. The reason behind this could be the ease of access among healthcare workers as studied by Christie et al. (1998).

Non-prescription (OTC) AB exercises and Antibiotic Self-Medication (ASM) is most important elements in the ridiculous utilisation of ABs and the emergence of MDR bacteria, therefore controlling AB exercise may provide as a feasible resources of mediation (Koji et al., 2019; Nafade et al., 2019; Alhomoud et al., 2019). A comparable proportion of the Albanian pharmacists, 89%, believed that ABs should not be issued without a prescription (Hoxha et al., 2018).

However, there was no statistical variation in the use of prescription antibiotics between the two groups. Although, both groups had sufficient knowledge on duration of antibiotic use as prescribed by a doctor, i.e., in Group A 95.2% and 82.8% in Group B, they did not follow their knowledge during their last use of antibiotic that is 67.1% and 45.1% in Group A and Group B, respectively. Hence, knowledge may not be enough to access the misuse of antibiotics.

Although 62.9% of the respondents approved that frequent and inappropriate use has dangers and must be discouraged, only 40.2% and 53.1% used them during their last infection as prescribed by a physician. It is apparent that antibiotics use with prescription was more proper in pharmacy students group than in non-pharmacy students group. It should be encouraged to take antibiotics as per health worker advice because it gives health worker an opportunity to promote rationale use of antibiotics when prescribing to

the patients. Also training and constant encouragement must be given because these measures proved to be effective in improving antibiotic use among health workers (Gouws et al., 2004).

Further European research have discovered that pharmacist from time to time dole out non-prescribed Abs (Llor and Cots, 2009; Plachouras et al., 2010); nevertheless, there are huge discrepancies within Europe, e.g., in Spain, while the illegal distribution of ABs unless a medical prescription is an ordinary practice, as 65% of the responding pharmacist stated this terrible practical manner. This mismanagement has not been linked with age, gender, or years of professional experience (Zapata-Cachafeiro et al., 2014). In a delegate Portuguese study, 49% of the pharmacy personnel had an inclination to bestow ABs without medical prescription if the patient was familiar to the pharmacist (Roque et al., 2015).

Similarly educating the patient and improving patient-physician communication can possibly help in reducing the irrational antibiotics use Haltiwanger et al. (2001). In general, Hungarian pharmacists have appropriate knowledge concerning antibiotics and antimicrobial therapy, and they understand the public health effect of the increasing antimicrobial resistance. Their theoretical, practical and contraceptive attitude is very optimistic (Gajdács et al., 2020).

5 Conclusion

Present study showed that by proper education and encouragement of the university students would minimise the irrational antibiotic use. Likewise, health workers must also be given proper training and encouragement for improving rational use of antibiotics. Educational programmes for general public must also be started and without prescription availability of antibiotics must be controlled.

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