International Journal of Pharmacy and Pharmaceutical Sciences

ISSN- 0975-1491 Vol 3, Issue 1, 2011

Research Article

STUDENTS' KNOWLEDGE OF ANTIBIOTICS: A CROSS-SECTIONAL STUDY OF STUDENTS IN TAMIL NADU

ARUL PRAKASAM K.C*, SENTHIL KUMAR. N AND RAMESH. J

Department of Pharmacy Practice JKKMMRF College of Pharmacy Komarapalayam Namakkal Dist, Tamil Nadu 638 183, India
Email: kcarul2000@gmail.com

Received: 10 Nov 2010, Revised and Accepted: 11 Dec 2010

ABSTRACT

The knowledge of the general public about the correct use of antibiotics is limited. This contributes to the problem of in appropriate antibiotic use, leading to a progressive loss of bacterial sensitivity to these drugs and the spreading of resistant strains of bacteria. In this study, a questionnaire about antibiotic use was given to a sample of students in secondary class 465 students returned completed questionnaires. Deficits were found in the students' knowledge of antibiotics and their correct use. Only 6% of 9th class students were aware that antibiotics are used to treat bacteria only, while 16% of 10th class students and 31% of 12th class students were aware of this. Fewer students were aware that antibiotics are used to treat tuberculosis. There were deficiencies in the knowledge of timing and duration of therapy. However close to 68/% of these students are aware that inappropriate use of antibiotics can contribute to resistance to these drugs. This study has observed a lack of general knowledge on correct antibiotic use. Since this may be due to a lack of formal education on this subject, we believe that a teaching unit on infectious diseases should be included in the 9th to 12th class. In addition, education on the correct use of medications may need to begin at much earlier ages.

Keywords: Antibiotics, Knowledge of antibiotics

INTRODUCTION

Antibiotics are among the most commonly prescribed medications, however they are very often misused [1, 2]. Among other factors, the indiscriminate use of antibiotics has contributed to the progressive loss of bacterial sensitivity to antibiotics and spreading of resistant strains of bacteria, the clinical effectiveness of antibiotics depends partially on their correct use, depending on patients, physicians and retailers. Patient factors relating to incorrect antibiotic use include self-medication, sharing medication with other people, not taking a full course of treatment and keeping part of the course for another occasion [2, 3]. A study carried out in different countries with more than 5,000 individuals, reported that more than 60% of those studied believed that antibiotics should be prescribed for viral illnesses. Other surveys showed that most of the patients with acute respiratory symptoms expect to receive antibiotics[4-6]. In most countries, antibiotics are dispensed only by prescription however; studies show that people can still obtain antibiotics without prescriptions[7]. The education of the public on correct use of antibiotics is necessary for the success of the treatment and prevention of the spread of bacterial resistance[8]. Given the lack of correct information on antibiotics and its association with antibiotic resistance, an evaluation was planned to test the knowledge of Portuguese students in the 9th calss 10th calss and 12th calss students in different fields of study, regarding antibiotic spectra, indications and their correct use. Differences in the students' knowledge of this subject by calss level and the area of study were to be assessed.

METHODS

This survey was conducted between February and April 2010. A convenience sample was used comprising 465 students including 160 from the 9th and 170 from 10th and 135 from 12th class students from the district of Namakkal. The data were obtained through the administration of a seven-item questionnaire. The questionnaire was designed to assess the student's knowledge on the types of organisms sensitive to antibiotics, the types of infectious diseases treated with antibiotics and the correct use of antibiotics. Data were analysed using the SPSS statistical software Version 14.0. (SPSS Inc. Chicago, IL, USA). Associations between variables were tested with Pearson's Chi-square ($\chi 2$) with significance set at the $p < 0.05$ level

RESULTS

The response rate was 100% among the 465 students asked to participate. The characteristics of the study population are shown in Table 1. Data presented in Table 2 show the knowledge of students on the sensitivity of organisms to antibiotics. There is an increase in the number of correct answers by class level however with significant heterogeneity in answers among university study areas. The students' knowledge of the value of antibiotics in the treatment of common diseases of different aetiologies is presented in Table 3.

The number of correct answers increases with the class level, with marked heterogeneity among study areas in 12th class. There are significant differences between the answers of students from different study areas. The highest scores were obtained by students in the sciences (12th class) and the responses to questions on correct antibiotic use are shown in Table 4. Significant differences were found in the proportion of correct responses among the students from the three class levels assessed, with an increase in the number of correct answers by class level.

Table 1: Characteristics of the study population (n = 465)

Class level	Age (years)	Number of students
9th	14-16	160
10th	15-17	170
12th	17-19	135

Table 2: Percentage of positive answers to question on antibiotic use against bacteria and other organisms

Options	n	Antibiotics are effective Against bacteria only (%)	Antibiotics are effective against bacteria and other organisms (%)	Antibiotics are effective Against other organisms (%)
9th	160	6%	62%	32
10th	170	16%	48%	36%
12th	135	31%	53%	16%

Table 3: Percentage of positive answers to questions on antibiotic use against viral illness (influenza, hepatitis, AIDS) and tuberculosis

Options	n	Antibiotics should be Prescribed for tuberculosis %)	Antibiotics should be prescribed for tuberculosis and viral illnesses (%)	Antibiotics should be prescribed for viral illnesses (%)
9th	160	5	7	88
10th	170	12	15	73
12th	135	15	29	56

Table 4: Percentage of correct answers to questions on antibiotic treatment for bacterial infections

Class level		9th (%)	10th (%)	12th (%)
n	Correct answer	160	170	135
	Study question			
Antibiotics should be taken with milk	F	58	53.8	59. 5
Antibiotics do not interact with alcohol	F	46	65.5	75.0
Antibiotics can be taken at different times each day, if the daily doses are taken.	F	50	49.5	76.0
Antibiotic treatment should be stopped as soon as the patient feels better	F.	57	66.0	77.7
Remaining antibiotic doses can be saved for use on other occasions	F	59	57.5	79.2
The incorrect use of antibiotics can lead to development of resistant bacteria.	T	70	68.0	77.2

T = true; F = false.

DISCUSSION

This study assessed the knowledge of antibiotics among Portuguese school students of 9th 10th class and 12th class. A convenience sample of high-school students was used to allow for rapid collection of data in a short period of time with limited resources. Information about possible confounders, such as socio-economic status and intellectual level, was not collected. These factors may limit the generalizability of our findings. Students' knowledge on antibiotic spectra and indications for use were limited at all three school levels evaluated, and misconceptions were prevalent among students, With respect to correct antibiotic use, our results showed limited knowledge among 9th and 12th class students. This issue is of concern because many students complete their schooling after 9 years of compulsory education and may receive no further instruction on this topic. Recent studies showed that mothers often influence medical decisions on antibiotic prescription[9]. In this context, paediatricians are often pressured to prescribe antibiotics to children with viral infectious[10.11]. In the present study, there was a trend towards an increase in the number of correct answers with the class level. This is in accordance with the study of you and co-workers[12], who suggested that higher education, is a positive predictor for adequate knowledge and appropriate attitudes to antibiotic use. Increasing prevalence of antibiotic resistance by bacteria, partly due to indiscriminate widespread use of antibiotics, is a threat to public health. Increasing public awareness of the problem and education of the general public and retailers on proper usage of antibiotics may help to slow this trend[13, 14] Patient demands for antimicrobials might be triggered by mass media, such as TV, internet, magazine or newspaper advertising, behaviours which also contribute to the development of resistance. These findings highlight the need to educate people about the appropriate use of antibiotics.

CONCLUSION

There were marked deficiencies found in the knowledge of Portuguese students of antibiotics and their correct use. This may be due to a lack of formal education on the subject in schools. Education about the correct use of medication may need to begin at very early ages. We believe that a teaching unit on Microbiology should be included in 9th class curriculum, with emphasis on knowledge of antibiotic spectra/indications and correct antibiotic use. This unit should be reinforced in the 12th class in all curricular areas. We also believe that it is important to design teaching programs to be tested in schools to improve the knowledge of students on this subject. We suggest that this approach may modify behaviours with regard to antibiotic use with benefits for public health.

REFERENCES

1. Chambers HF: General principles of antimicrobial therapy. In Goodman & Gilman's The Pharmacological Basis of Therapeutics 11th edition. Edited by: Brunton L, Parker K, Blumenthal D, Buxton I. New York, USA, Mc Graw Hill; 2006:1095-110. 2.
2. World Health Organization: Report on Infectious Diseases. Overcoming antimicrobial resistance. 2000[http://www.who.int/infectious-disease-report/2000/index.html]. Geneva: World Health Organization
3. Grigoryan L, Burgerhof JG, Haaijer-Ruskamp FM, Degener JE,et al., Is self-medication with antibiotics in Europe driven by prescribed use? J Antimicrob Chemother 2007; 59:152-6.
4. Haltinger KA, Hayden GF, Weber T, Evans BA, Possner AB: Antibiotic- seeking behaviour in college students: what do they really expect? J Am Coll Health 2001; 50:9-13.
5. Mangione-Smith R, McGlynn EA, Elliot MN, McDonald L, Franz CE, Kravitz RL: Parent expectations for antibiotics, hysician-parent communication, and satisfaction. Arch Pediatr Adolescen Med 2001;155:800-6.
6. Cals JWL, Boumans D, Lardinois RJM, Gonzales R, Hopstaken RM, Butler CC, Dinant G-J: Public beliefs on antibiotics and respiratory tract infections: an internet-based uestionnaire study. Br J Gen Pract 2007; 57:942-47.
7. Pechere JC: Patient's interviews and misuse of antibiotics. Clin Infect Dis 2001, 33(Suppl 3): S170-3
8. Grigoryan L, Burgerhof JG, Degener JE, Deschepper R, et al., : Self-Medication with Antibiotics and Resistance (SAR) Consortium.Determinants of self-medication with antibiotics in Europe: the impact of beliefs, country wealth and the healthcare system. J Antimicrob Chemother 2008; 61:1172-9.
9. Cebotarenco N, Bush PJ: Reducing Antibiotics for Colds and Flu: A Student Taught Program. Health Educ Res 2008; 23:146-157.
10. Mangione-Smith R, McGlynn EA, Elliott MN: The relationship between perceived parental expectations and paediatrician antimicrobial prescribing behaviour. Pediatrics 1999; 103:711-8.
11. Palmer DA, Bauchner H: Parents' and Physicians' views on antibiotics.Pediatrics 1997; 99(6):E6.23.
12. You JHS, Yau B, Choi KC, Chau CTS, Huang OR, Lee SS: Public Knowledge, Attitudes and Behavior on Antibiotic Use: ATelephone Survey in Hong Kong. Infection 2008; 36: 153-7.
13. Wenzel RP, Edmond MB: Managing antibiotic resistance. N Eng J Med 2000; 343:1961-3.
14. Wachter DA, Joshi MP, Rimal B: Antibiotic dispensing by drugretailers in Kathmandu, Nepal. Trop Med Int Health 1998; 4:782-8.