

Antibiotics Use With and Without a Prescription in Healthcare Students

Suleiman Ibrahim Sharif^{1,*}, Rubian Suleiman Sharif²

¹Department of Pharmacy Practice & Pharmacotherapeutics, College of Pharmacy-University of Sharjah- United Arab Emirates

²Faculty of Dentistry, Ajman University of Science & Technology, Ajman-United Arab Emirates

*Corresponding author: sharifsi@sharjah.ac.ae

Received December 11, 2012; Revised February 13, 2013; Accepted December 15, 2013

Abstract The aim of the study was to determine the prevalence of self-medication with antibiotics in pharmacy and dental students as compared to their prescribed use. A pre-validated questionnaire was distributed to 300 students in the class rooms and students were asked to report antibiotic use with or without prescription in the year 2012. The questions covered demographic information as well as frequency of antibiotic use, completion of course, condition for which it was used and type of antibiotic used. The response rate was 73%. The majority of students (179, 89.5%) were females and the average age was 20.4 years (range 18-23). Prevalence of antibiotic use with and without a prescription was high (40 %). The pharmacy was the main source where the majority (slightly more than 90%) obtained antibiotics. The course of antibiotic was completed by larger number of respondents with (75.3%) than without (63.2.5%) prescriptions. Influenza, upper respiratory tract infection, skin conditions, gastrointestinal problems and urinary tract infection were the conditions for which antibiotics were used. The most common antibiotics used were amoxicillin, amoxicillin- clavulanic acid, and penicillin. Basis for using antibiotics without a prescription include previous experience (24, 12%), doctors advice on last visit (25.8%), pharmacist advice (21.4 %) and advice of a friend/relative (20.2 %). The results clearly demonstrate high prevalence of antibiotic use with and without prescriptions. Irrational use of antibiotics is common among university students and require effective interventions directed to increase students awareness of the problems associated with such a trend. Educational programs should be instituted to increase awareness of students, the prescribing physicians and the pharmacists of responsible self-medication in general and rational antibiotic use.

Keywords: antibiotics, self-medication, students

Cite This Article: Suleiman Ibrahim Sharif, and Rubian Suleiman Sharif, "Antibiotics Use With and Without a Prescription in Healthcare Students." *American Journal of Pharmacological Sciences* 1, no. 5 (2013): 96-99. doi: 10.12691/ajps-1-5-5.

1. Introduction

Self-medication is a common practice among university students [1,2,3]. Responsible self-medication is encouraged by World Health Organization [4] as it helps in the prevention and treatment of minor illness. However, irrational use of antibiotics for self-medication has been documented in general population in various developing and developed countries [5-11]. Several studies have also demonstrated high prevalence of self-medication with antibiotics among medical and non-medical students [2,12,13,14,15,16]. The misuse of antibiotics is of risk to both the individual and the community at large as it leads to increased risk of adverse effects and the emergence of bacterial resistance ([3] Sharif et al., 2008, [17] Martinez et al., 2007) Among the many factors that contribute to misuse of antibiotics is the liberal dispensing by pharmacists of antibiotics without a prescription. Information about self-medication with antibiotics in university students are, to our knowledge, scarce. Therefore, the present study is undertaken to investigate

the magnitude of self-medication with antibiotics in university students and suggest practical interventions that may reduce the extent of irrational antibiotic use.

2. Methods

This anonymous questionnaire- based study was carried out during November, 2012, using a pre-validated questionnaire consisting of both open-ended and closed-ended item as modified from the questionnaire used by other investigators [14]. The study was approved by the research and Ethics Committee of the Colleges of Medicine and Health Sciences, University of Sharjah, United Arab Emirates. The questionnaire was in English and was first pre-validated on a sample of 6 students. All comments were taken into consideration. A total of 300 questionnaires were distributed to second and third year pharmacy and third year dentistry students. The questionnaire was explained to all students participating in the study. Students were asked to report antibiotic use with or without prescription in the year 2012. The questionnaire contained questions covering demographic

information namely age, sex, living place and questions focusing on antibiotic use with or without a prescription, frequency and duration of use, conditions for which antibiotic was used, type of antibiotic and basis for using it, source of antibiotic and awareness of misuse and bacterial resistance.

Descriptive statistics were calculated using SPSS program version 18. The data were summarized as percentages and frequencies. P-value < 0.05 considered the cutoff for statistically significant differences.

3. Results

Two hundred and nineteen students completed the questionnaire yielding a response rate of 73%. The majority of respondents (179, 89.5%) were females. The average age of respondents was 20.4 years (range 18-23). Respondents living with their families comprised 122 (55.7%) while those living in dormitory were 97 (44.3%). Forty two (19.2%) students did not use antibiotics during the year 2012. Antibiotics were obtained with a medical prescription by 89 (40.6 %) and used for self-medication without medical consultation by 88 (40.2 %) of students. Frequency and completion of course and duration of use are shown in Table 1.

Table 1. Frequency and duration of use, and completion of course of antibiotics. Total number of respondents is 219 including 42 (19.2%) students who did not use antibiotics

	Number of respondents (%)	
	With a prescription (n=89)	without a prescription (n=88)
Used Antibiotics	89 (40.6)	88 (40.2)
How many times:		
Once	39 (43.8)	34 (38.6)
Twice	33 (37.1)	28 (31.8)
Thrice	8 (8.9)	14 (15.9)
More than three times	9 (10.1)	10 (11.4)
Completed the course:		
Yes	67 (75.3)	55 (62.5)
No	22 (24.7)	33 (37.5)
Duration of use:		
Three days	14 (15.7)	23 (26.1)
Five days	35 (39.3)	28 (31.8)
Seven days	26 (29.2)	32 (36.4)
More than seven days	14 (15.7)	10 (11.4)

Types of antibiotics and basis for their use are shown in Table 2. The most common antibiotics used with a

prescription were amoxicillin, amoxicillin with clavulanic acid and azithromycin (Table 2).

The most commonly prescribed antibiotics were amoxicillin (42.1%), amoxicillin-clavulanic acid combination (40.9 %), and penicillin (6.8%). On the other hand, for self-medication respondents, the order was slightly different with amoxicillin-clavulanic acid combination (48.9 %), amoxicillin (27%) and penicillin (10.1%). Similar numbers of respondents obtained prescribed (93.2%) and self-used (92.1 %) antibiotics from pharmacy while the rest used antibiotics stored at home. Surprisingly, large numbers of both groups of students were aware of bacterial resistance associated with misuse of antibiotics.

Table 2. Type and basis of antibiotic used, their source, and awareness of respondents of the risk of bacterial resistance. Total number of respondents is 219 including 42 (19.2%) students who did not use antibiotics

	Number of respondents (%)	
	With a prescription (n=88)	without a prescription (n=89)
Type of Antibiotic:		
Amoxicillin-Clavulanic acid	36 (40.9)	43 (48.9)
Amoxicillin	37 (42.1)	24 (27)
Penicillin	6 (6.8)	9 (10.1)
Azithromycin	5 (5.7)	6 (6.7)
Tetracycline	-	4 (4.5)
Cephalosporins	1 (1.1)	3 (3.4)
Sulphonamides	4 (4.5)	-
Basis for use:		
Doctor's advice on last visit		23 (25.8)
Previous experience		24 (27)
Pharmacist advice		19 (21.4)
Advice of a friend/relative		18 (20.2)
Doctor's prescription to a friend		3 (3.4)
Left over antibiotic		1 (1.1)
Source:		
Pharmacy	82 (93.2)	82 (92.1)
Home drug cabinet	6 (6.8)	7 (7.9)
Awareness of bacterial resistance:		
Yes	68 (77.3)	60 (67.4)
No	20 (22.7)	28 (31.5)

Antibiotics were used with or without a prescription for mainly influenza, respiratory tract infection, skin problems gastro-intestinal problems and urinary tract conditions (Figure 1).

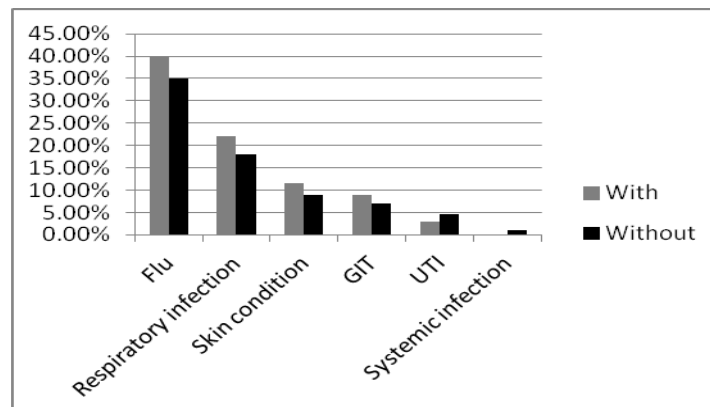


Figure 1. Percentage use of antibiotics with and without prescription for various conditions

4. Discussion

Self-medication among university student is a common practice [2,13,18]. Such a component of self-care has many benefits to the individual as it is economic, saves time, and allows for an opportunity to take responsibility of own health [1]. However, it is also not devoid of hazardous consequences including misdiagnosis of condition, misuse of medication, adverse effects, and drug interaction and abuse. The emergence of resistant pathogenic microorganisms in case of self-medication with antibiotics is a serious problem worldwide [19,20]. This problem is progressively increasing particularly in developing countries where antibiotics can be obtained without a prescription. In the present study, 40.2% of respondents obtained antibiotics for self medication. This is quite similar to the use of prescribed antibiotics (40.6 %). The prevalence of self-medication with antibiotics in the present study is comparable to that reported for the community of Abu Dhabi [10], and Iranian [14] and Jordanian [12] students. However, it is higher than that observed in the general population in many European countries [6], but lower than that reported for Palestinian [2] students. Many factors may contribute to the high prevalence of self-medication with antibiotics including the lack of time to visit a clinic due to study schedule, high economic status of student's families, over confidence of pharmacy and dental students, pattern of prescribing by general practitioners and the liberal dispensing of antibiotics by pharmacists despite the strict bylaws and regulations by health authorities. This is very alarming particularly in the light of the high awareness of respondents of bacterial resistance associated with misuse of antibiotics. Moreover, slightly more than one third of students using antibiotics without a prescription admitted not completing the course of treatment. Similarly the course of prescribed antibiotics was not completed by nearly 25% of students. It is also worth noting that in the present study, antibiotics, whether prescribed or self used, were principally taken to treat flu and respiratory tract infection. In the present study, more than 50% of respondents in both groups used antibiotics to treat those two conditions which are well known to be insensitive to antibiotics as they are mostly due to viral infection [21]. Our findings in this context supports the suggestion that prescribing by physicians is the principal factor leading to inappropriate use of antibiotics [11]. Patient's insistence on physicians to prescribe antibiotics and the liberal dispensing by pharmacists contribute to such irrational use of antibiotics. Incorporation in the curricula of health sciences colleges of topics covering the rational use of drugs in general and antibiotics in particular and also prescription writing would certainly prove useful in reducing antibiotic over prescribing by particularly general practitioners and their liberal dispensing by pharmacists. It is also essential to focus the efforts of health authorities and the academic circles on interventions to increase public awareness of such important health issues.

The most commonly self used antibiotic was the combination of amoxicillin and clavulanic acid despite its high cost (about \$ 30 for a course of 7 days). The frequent

prescribing of this antibiotic by physicians and its wide and probably wild dispensing by pharmacists may have contributed to it being the most commonly used antibiotic. A large number (slightly less than 50%) of self-medicated students relied on the doctor's and pharmacist's advice. This further stresses the important roles of physicians and pharmacists in promoting responsible self medication and the rational use of antibiotics.

5. Conclusion

The prevalence of inappropriate use of antibiotic whether prescribed or employed for self-medication is rather high and common among pharmacy and dental students. More studies using larger sample size and studying the problem in all university students are needed. Moreover, efforts should stress on interventions including educational programs in the form of lectures, campaigns, workshops, seminars, leaflets and preparation of guides of conditions for which antibiotic use is not suitable. Also health authorities should practice more control on pharmacies and also on prescribing of antibiotics by physicians.

Acknowledgements

The authors are greatly indebted to all pharmacy and dental students at the University of Sharjah who responded to the questionnaire and made this study possible.

References

- [1] James, H., Handu, S.S., Al Khaja, K.A., Otoom, S. and Sequeira, R.P, Evaluation of the knowledge, attitude and practice of self-medication among first year medical students. *Med. Princ. Pract.*, 15 (4), 270-275. Jun. 2006.
- [2] Sawalha, A.F., A descriptive study of self-medication practices among Palestinian medical and nonmedical university students. *Res. Social Adm. Pharm.*, 4 (2). 164-172. Jun. 2008.
- [3] Sharif, S., Al-Shaqra, M., Hajjar, H., Shamout, A. and Wess, L., 'Patterns of drug prescribing in a hospital in Dubai, United Arab Emirates,' *Libyan J. Med.*, 3(1).10-12. Mar. 2008.
- [4] World Health Organization: Report of the WHO Expert Committee on National Drug Policies 1995. <http://www.who.int/medicines/library/dap/who-dap-95-9/who-dap-95.9.shtml>.
- [5] Awad A., Eltayeb, I, Matowe L.,and Thalib, L, Self-medication with antibiotics and antimalarials in the community of Khartoum state. *Sudan. J. Pharm. Pharm.Sci.*, 8(2). 326-331.Aug.2005.
- [6] Grigoryan L, Haaijer-Ruskamp FM, Burgerhof JG, Mechtler R, Deschepper R, Tambic-Andrasevic A, Andrajati R, Monnet DL, Cunney R, Di Matteo A, Edelsein H, Valinteliene R, Alkerwi A, Scicluna E, Grzesiowski P, Bara AC, Tesar T, Cizman M, Campos J, Lundborg CS, and Birkin J, Self-medication with antimicrobial drugs in Europe. *Emerg. Infect. Dis.*, 12(3). 452-459. Mar.2006.
- [7] Väänänen, M.H., Pietilä, K., and Airaksinen, M., Self-medication with antibiotics- Does it really happen in Europe? *Health Policy*, 77(2): 166-171. Jul., 2006.
- [8] Sawair, F.A., Baqain, Z.H., Abu Karaky,A., and Abu Eid, R., Assessment of self-medication of antibiotics in a Jordanian population. *Med. Princ. Pract.*, 18(1).1-25. Dec.2009.
- [9] Sarahroodi, S., and Arzi, A., self-medication with antibiotics, is it a problem among Iranian College students in Tehran? *J. Biol. Sci.*,9(8).829-832. 2009.
- [10] Abasaheed, A., Jiri, V., Mohammed A., and Ales, K. Self-medication with antibiotics by the community of Abu Dhabi

- Emirate, United Arab Emirates, *J infect Dev Ctries*;3(7).491-497. Aug. 2009.
- [11] Skliros, E., Merkouris, P., Papazafropoulou, A, Gikas, A., Matzouranis, G., Papafragos, C., Tsakanikas, I., Zarbala, I., Vasibosis, A., Stamataki, P., and Sotiropoulos, A., Self-medication with antibiotics in rural population in Greece: a cross-sectional multicenter study. *BMC Family Practice*, 11.58-60. Aug. 2010.
- [12] Al-Azzam, S.I., Al-Husein, B.A., AlZubi, F., Masadeh, M.M., and Al-Horani, M.A.S, Self-medication with antibiotics in Jordanian population. *Int. J. Occup. Med. Environ. Health*, 20(4). 373-380. Dec. 2007.
- [13] Zafar, S.N., Syed R., Waqar, S., Zubairi, A.J., Vaqar T., Shaikh, M., Yousaf W., Shahid S., and Saleem, S., Self-medication amongst university students of Karachi: prevalence, knowledge and attitudes. *J. Pak. Med. Assoc.*, 58 (4). 214-217. April. 2008.
- [14] Sarahroodi, S., Arzi, A., Sawalha, A.F. and ashtranezhad, A., Antibiotic self-medication among Southern Iranian university students. *Int. J. Pharmacol.*, 6 (1). 48-52. 2010.
- [15] Fadare, J.O. and Tamuno, I, Antibiotics self-medication among university medical undergraduates in Northern Nigeria. *J. Pub. Health & Epidemiol.*, 3(5). 217-220. May. 2011.
- [16] Suaifan, G.A.R.Y., Shehadeh, M., Darwish, D.A., Al-ljel, H., yousef, A.M. and Darwish, R.M., A cross-sectional study on knowledge, attitude and behavior related to antibiotic use and resistance among medical and non-medical university students in Jordan. *Afr. J. Pharmac. & Pharmacol.*, 6 (10). 763-770. Mar. 2012.
- [17] Martinez, J.L., Baquero, F. and Andersson, D.I, Predicting antibiotic resistance. *Nat. Rev. Microbiol.*, 5(12). 958-965. Dec. 2007.
- [18] Klemenc-Ketis, Z., Hladnik, Z., and Kersnik, J., self-medication among healthcare and non-healthcare students at university of Ljubljana, Slovenia. *Med. Princ. Pract.*, 19 (5).395-401. Jul. 2010.
- [19] Harbarth, S. and Samore, M.H., Antimicrobial resistance determinants and future control. *Emerg. Infect. Dis.*, 11(6). 794-801. Jun. 2005.
- [20] Malhorta-Kumar, S., Lammens, C., Coenen, S., Van Herck, K., and Goossens, H., Effect of azithromycin and clarithromycin therapy on pharyngeal carriage of macrolide-resistant streptococci in healthy volunteers: a randomised, double-blind, placebo-controlled study. *Lancet*, 369(9560). 482-490. Feb. 2007.
- [21] Linder, J.A., and Stafford, R.S., Antibiotic treatment of adults with sore throat by community primary care physicians: A national survey, 1989-1999. *JAMA*, 286(10). 1181-1186. Sep. 2001.