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Research Article
Knowledge, Attitude and Practice of Self-Medication with Antibiotics Among Nursing Students

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Abstract

Background and Objective: Self-medication practice is a cause of growing concern among nursing students. Access to drugs and handling them in their future practices make nursing students susceptible to self-medication. This study was carried out to determine knowledge, attitude and practice towards self medication with antibiotic among nursing students. **Materials and Methods:** It was completed with 570 students as a descriptive study. Data were collected between February and March, 2016. The questionnaire was included socio-demographic characteristics, antibiotics knowledge, attitudes and practice associated with antibiotics usage. Descriptive and chi-square tests were used for data analysis. **Results:** It was identified that 31.1% of the students started using antibiotics by their own. The following reasons for starting to use antibiotics: Common cold and flu, sore throat, toothache/swelling, fever, cough, abdominal pain, weakness, urinary burning and skin infection. The decision to start using antibiotics was influenced by being satisfied from previous antibiotics use, test fees, drug store and surrounding advice. Despite the sample group's younger mean age, the rate of starting to use antibiotics on their own was high. It was identified that 66.5% have previously heard of antibiotic resistance; only 29.8% could correctly define antibiotic resistance. **Conclusion:** It was determined that approximately one third of them had started using antibiotics on their own and the majority of them did not understand antibiotic resistance correctly.

Key words: Antibiotic, antibiotic resistance, self-medication, common cold, flu, fever, cough, medication

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Data Availability: All relevant data are within the paper and its supporting information files.

INTRODUCTION

Self-medication is defined as the use of over-the-counter drugs to treat oneself without getting professional advice[1]. It has been reported that the self-medication rate is increasing worldwide[2,3]. Self-medication is a global phenomenon. The World Health Organization reports that self-medication with antibiotics is becoming wide spread, with one of its greatest risks being antibiotic resistance. However, it has been reported that this risk has been gradually increasing as the use of over-the-counter drugs in developing countries is becoming more frequent due to accessibility, cultural customs and a perceived saving of time and money compared to consulting a doctor[2,4-7]. Antibiotics are considered as one of the greatest inventions of the 20th century as they have contributed to higher mortality and morbidity in many infectious diseases. However, these results have been short-lived. Antibiotic resistance has recently become an increasing problem worldwide due to antibiotic abuse or overuse[8-10]. Furthermore, inappropriate antibiotic usage may increase the incidence of side effects, including allergic reactions and may lead to negative results, such as an unrecoverable financial burden[4,11-12]. The Centers for Disease Control and Prevention have described antibiotic-resistant microorganisms as "Nightmare bacteria" that "Pose a catastrophic threat" to people in every country[13]. Therefore, international efforts have begun to develop guidelines for prescribing and using antibiotics and have been focused on encouraging positive behavioural changes regarding antibiotic usage[14]. Turkey is among the developed countries where antibiotic usage has the highest rate. Therefore, in 2015, the Turkish Ministry of Health decided to undertake a national approach to educate the public about antibiotic resistance and excessive and inappropriate antibiotics use[15]. In the literature, it has been reported that the excessive and inappropriate use of antibiotics through self-medication is influenced by many factors in both patients and health workers, such as lack of information, beliefs, expectations, attitudes and past experiences[16-19]. It is also thought that there is not enough attention focused on the use of antibiotics. Moreover, health personel and the community have insufficient information about the adverse consequences resulting from the improper use of antibiotics, which could have important benefits if used properly[20]. When the biological and physiological characteristics of adolescents and young grown-up students are considered. It is thought that they generally refrain from going to the doctor for medical problems because they think that they have sufficient information related to drugs and their usage. Thus, these individuals tend to use medications on their own[21]. Many studies have shown that the practice of self-medication is prevalent among nursing students[4,20]. Nursing students will become members of health teams in following years, the first important step is to scrutinize their behaviours and change their attitudes and knowledge base. Once the causes and severity of the problems are identified, awareness programs can be developed to control antibiotic abuse. Such initiatives to identify the severity can help to plan necessary preventive measures with greater intention to help future generation and can increase the awareness on use and knowledge towards antibiotic resistance and self medication. This study was carried out to determine knowledge, attitude and practice towards self medication with antibiotic among nursing students.

MATERIALS AND METHODS

This study was completed as a cross-sectional survey using a non-random sample of nursing students, who were studying at Gaziantep University Faculty of Health Sciences between February and March, 2016. The study population included all classes of nursing students from Gaziantep University Faculty of Health Sciences. Students who were in the class during the data collection and who agreed to participate in the study were included in the sample. The sample was composed of 570 students.

An "Identification form" that contained a 26-item questionnaire form was developed by investigators in accordance with the literature for the data collection[20,22]. This questionnaire form contained closed- and open-ended questions about various sociodemographic variables, including using antibiotics on their own, the reasons for starting antibiotics and the factors that affected the reasons for starting antibiotics. The questionnaires were filled by the students in the classroom in approximately 20-25 min between February and March 2016.

The dependent variables included the perceived start of antibiotics use on their own. The independent variables were sociodemographic variables and included antibiotics knowledge, attitudes and practice associated with antibiotics usage.

This study was performed in strict accordance with the recommendations in the Helsinki Declaration. Prior to beginning the research, written permission was obtained from the Nursing Department Chair Board and Deanery of Gaziantep University Faculty of Health Sciences (No: 50581566/900/7084) before the data was gathered. The Nursing Department Chair Board and Deanery of Gaziantep University Faculty of Health Sciences have examined and

understand human subject protections, have monitored the behaviours of the University investigators through the ongoing review of research utilizing human research participants and have protected the privacy of the participants. The participants were also protected from the risks of breach of confidentiality and invasion of privacy. Before conducting the research, the researchers explained to the subjects their rights as study participants and the purpose of the study. To protect the confidentiality of the subjects during the study, the researchers asked the students if they wanted to be a part of the study and told the participants that they had the right to terminate and withdraw from the study at any time. This study is subject to ethical standards that promote and ensure respect for all human subjects and protect their health and rights. This study was performed by the careful assessment of predictable risks and burdens to the individuals and groups involved in the research in comparison with the foreseeable benefits to them and to other individuals or groups affected by the conditions under investigation. Each participant was clearly informed that their participation in the study would remain confidential, voluntary and anonymous. Verbal and written consent was obtained by all the students and by the parents or guardians of the students who were under the age of 18 before beginning the data collection (only one student was under the age of 18). All means of identification were removed and the system of numbering ensured that no individual could be identified.

Statistical analysis: Results were statistically analyzed by the chi-square test to assess associations between two dependent variables and the independent variables. Measurements were summarized as numbers and percentages for the categorical measurements and as the means with standard deviations for the quantitative measurements. Data were entered the data into Social Sciences (SPSS, version 22.0 for Windows, SPSS Inc., Gaziantep, Turkey) and descriptive analysis conducted. The authors compared responses regarding the factors affecting the decision to use antibiotics. p-value of 0.05 was considered to be statistically significant[20].

RESULTS

Of the 590 questionnaires that were distributed, 20 were returned as uncompleted and 570 were completed (The response rate was 96.6%). The socio-demographic characteristics of the study population are shown in Table 1.A statistically significant difference was not observed between starting to use antibiotics on their own and age groups, educational level, gender, occupation, income level, living region or chronic disease ($p>0.05$) (Table 1).

It was identified that 31.1% of the students started using antibiotics on their own. In total, 66.8% of the participants used antibiotics in the past year and 32.6% within the last month. The reasons for starting to use antibiotics are shown in Table 2. The factors that affects starting use of antibiotics on their own without getting doctor's advice were scrutinized. It found that 66.1% of nursing students self-medicated with the same antibiotic that would have been prescribed by a doctor for similar conditions. It found that 22.6% did not have time to visit the doctor. It was identified that 16.9% using the drugs were advised by close friends and relatives. Also, it found that 13.6% did not want not to pay for the examination and test fees and 10.7% consulted with a pharmacist regarding the drug. A statistically significant difference was observed between using antibiotics in the past year, using antibiotics in the past month and the demand for requesting an antibiotics prescription from a doctor ($p<0.05$) (Table 2).

It was identified that 48.6% of nursing students maintained antibiotics at home in the case it might be necessary in the future. Among respondents, 83.2% have read the drugs' prospectus before using the antibiotics and 79.1% have used antibiotics at the prescribed dose and over the advised time frame. Further, 18.6% of the respondents reported that they have advised the use to antibiotics therapy to their surrounding community. Of the participants, 66.5% have previously heard of antibiotic resistance; only 29.8% could correctly define antibiotic resistance. Of all the participants who took part in the study, 57.7% have accepted that the decision to start antibiotics should be made with a doctor. There were no significant differences between starting to use antibiotics on their own and reading the its prospectus, using it according to the prescription, thinking that antibiotics might be hazardous, receiving information about unnecessary antibiotics, hearing about antibiotic resistance and defining antibiotic resistance correctly ($p>0.05$). A statistically significant difference was observed between maintaining antibiotics at home, advising antibiotic therapies, thinking that using antibiotics on their own could be unnecessary and making the decision to start using antibiotics ($p<0.05$) (Table 3).

Table 1: Distribution of participants' sociodemographic variables based on self-medication of antibiotics for their own use (n = 570)

	Using antibiotics on their own							
	Yes		No		Total			
Variables	n	%	n	%	n	%	X^2	p-value
Age groups (years)								
17-20	94	53.1	224	57.0	318	55.8	0.836	0.658
21-24	77	43.5	155	39.4	232	40.7		
25 and older	6	3.4	14	3.6	20	3.5		
Educational level (class)								
1. class	49	27.7	135	34.4	184	32.3	3.565	0.312
2. class	53	29.9	114	29.0	167	29.3		
3. class	51	28.8	106	27.0	157	27.5		
4. class	24	13.6	38	9.7	62	10.9		
Gender								
Women	129	72.9	277	70.5	406	71.2	0.342	0.617
Men	48	27.1	116	29.5	164	28.8		
Occupation								
Yes	17	9.6	20	5.1	37	6.5	4.099	0.064
Not working	160	90.4	373	94.9	533	93.5		
Perception of income level								
Sufficient	18	10.2	37	9.4	55	9.6	0.603	0.740
Partially sufficient	102	57.6	240	61.1	342	60.0		
Not sufficient	57	32.2	116	29.5	173	30.4		
Living region								
Province	103	58.2	221	56.2	324	56.8	0.289	0.815
Town	51	28.8	122	31.0	173	30.4		
Village	23	13.0	50	12.7	73	12.8		
Chronic disease								
Yes	16	9.0	33	8.4	49	8.6	2.298	0.371
No	161	91.0	360	91.6	521	91.4		

DISCUSSION

This study demonstrates the status of nursing students beginning to use antibiotics on their own (self-medicating). Today, antibiotic resistance is a rapidly spreading global problem and its prevalence is thought to increase due to antibiotic self-medication[1,22,23]. Self-medication is an increasing concern among nursing students due to easy access to antibiotics[4]. This study determined that more than half of the students had used antibiotics at least once in the past year and that approximately one third of them had started using antibiotics on their own. Similar to this study, Mehta and Sharma[24] and Ali et al.[4] observed that approximately half of undergraduates started using antibiotics on their own. Moreover, another study found that the self-medication rate was considerably higher, especially among nursing students[25]. This situation demonstrates that undergraduates can access antibiotics easily without doctor supervision. In this study, it showed that the antibiotic self-medication usage rate increases as participant age decreases. Similar to this study, the self-medication rate was found to be higher in youths in the literature[25-27]. This situation can be linked to lower risk perception in youths. In this study, the rate of starting self-medicated antibiotics was observed to be lower in senior students compared to others. Similar to this study, Celik *et al.*[20] and Williams and Crawford[27] found lower starting rates related to over-the-counter antibiotics in upper grades. Furthermore, another study reports a higher prescribed antibiotic usage rate in university/high school graduates and emphasized that the over-the-counter antibiotic usage rate decreased as education level increases[28]. In this study, found that self-medication was higher in women. In another study, the rate of self-medication with antibiotics was observed to be higher in male students[4,29]. In contrast, some studies did not observe any differences between antibiotic self-medication by men and women[30,31]. In this study, the most common reasons reported by a large number of participants for self-medication with antibiotics were common cold and flu, sore throat, toothache, fever and cough. Other studies determined that common reasons for self-medication with antibiotics included headache, fever, cough, cold and flu and sore throat[4,21,32,33]. This study found that the decision to start using antibiotics was influenced by being satisfied from previous antibiotics use, test fees and drug store and surrounding advice. Similar to this study, it was

Table 2: Distribution of participants' knowledge about using antibiotics based on self-medication with antibiotics for their own use (N = 570)

	Using antibiotics on their own							
	Yes		No		Total			
Variables	n	%	n	%	n	%	X^2	p-value
Using antibiotics in the past year								
Yes	154	87.0	227	57.8	381	66.8	47.093	0.000*
No	23	13.0	166	42.2	189	33.2		
Using antibiotics in the past month								
Yes	90	50.8	96	24.4	186	32.6	38.749	0.000*
No	87	49.2	297	75.6	384	67.4		
Reasons for starting antibiotics on their own (n = 177)[a,b]								
Common cold/flu	110	62.1	-	-	110	62.1	-	-
Sore throat	73	41.2	-	-	73	41.2		
Toothache/swelling	42	23.7	-	-	42	23.7		
Headache	32	18.1	-	-	32	18.1		
Fever	30	16.9	-	-	30	16.9		
Cough	28	15.8	-	-	28	15.8		
Abdominal pain	23	13.0	-	-	23	13.0		
Weakness	19	10.7	-	-	19	10.7		
Urinary burning	13	7.3	-	-	13	7.3		
Skin infection	11	6.2	-	-	11	6.2		
Factors that affected starting using antibiotics on their own without getting doctor's advice (n = 177) [a,b]								
Using the same antibiotic prescribed by doctor in previous similar conditions	117	66.1	-	-	117	66.1	-	-
there was not time to visit the doctor	40	22.6	-	-	40	22.6		
using the drug advised by close friends and relatives	30	16.9	-	-	30	16.9		
want not to pay the examination and test fees	24	13.6	-	-	24	13.6		
consulting the drug with pharmacist	19	10.7	-	-	19	10.7		
Demand for antibiotics prescriptions from doctors when they visited the doctor for any reason								
Yes	86	48.6	148	37.7	234	41.1	6.023	0.017*
No	91	51.4	245	62.3	336	58.9		

*$p<0.05$, [a]Statistical evaluation was not been made because more than one option is selected, [b]Responses of participants who had been using antibiotics on their own

Table 3: Distribution of participants' knowledge and attitudes about using antibiotics based on self-medication with antibiotics for their own use (n = 570)

	Using antibiotics by their own							
	Yes		No		Total			
Variables	n	%	n	%	n	%	X^2	p-value
Maintaining antibiotics at home in case it might be necessary in the future								
Yes	122	68.9	155	39.4	277	48.6	42.475	0.000*
No	55	31.1	238	60.6	293	51.4		
Reading the prospectus before using antibiotics								
Yes	151	85.3	323	82.2	474	83.2	0.850	0.398
No	26	14.7	70	17.8	96	16.8		
Using antibiotics at the prescribed dose and timeframe								
Yes	143	80.8	308	78.4	451	79.1	0.432	0.578
No	34	19.2	85	21.6	119	20.9		
Thinking antibiotics could be harmful								
Yes	139	78.5	311	79.1	450	78.9	1.385	0.500
No	21	11.9	36	9.2	57	10.0		
No opinion	17	9.6	46	11.7	63	11.1		
Advising antibiotic therapies to their surroundings								
Yes	46	26.0	60	15.3	106	18.6	9.267	0.003*
No	131	74.0	333	84.7	464	81.4		
Thinking that using antibiotics on their own could be unnecessary								
Yes	66	37.3	81	20.6	147	25.8	17.735	0.000*
No	111	62.7	312	79.4	423	74.2		
Receiving information about unnecessary antibiotics to be used								
Yes	109	61.6	239	60.8	348	61.1	0.030	0.926
No	68	38.4	154	39.2	222	38.9		
Who should decide to start using antibiotics								
Only me	12	6.8	6	1.5	18	3.2	13.645	0.001*
Only doctor	58	32.7	165	42.0	223	39.1		
Together	107	60.5	222	56.5	329	57.7		
Hearing the term antibiotic resistance previously								
Yes	120	67.8	259	65.4	379	66.5	0.196	0.702
No	57	32.2	134	34.1	191	33.5		
Defining antibiotic resistance correctly (n = 379)[a]								
Yes	33	27.5	80	30.9	113	29.8	0.450	0.547
No	87	72.5	179	69.1	266	70.2		

*p<0.05, [a]Responses of participants who had heard antibiotic resistance

demonstrated in the literature that the decision to start self-medication with antibiotics is affected by a number of factors, such as family, relatives, pharmacists and being satisfied with previously used antibiotics[23,26-27,34-35]. Additionally, the most common cause for self-medication was stated to be a lack of time and economic reasons[27,36]. This study found that majority of participants did not correctly understand antibiotic resistance and think that antibiotics use could be harmful. Similar to this study, another study conducted on students found that using antibiotics could be harmful to the liver and kidneys[27]. A present study had shown a lack of general information on proper antibiotic use among university students[37]. While another study determined that many of its participants were unaware of the possible health dangers associated with antibiotics misuse[38]. Additionally, similar to this study, a previous study found that many students used antibiotics at the prescribed dose and over the correct timeframes[39]. This study showed that many of students maintained antibiotics at home in case it might be necessary in the future. Similar results were found in two additional studies[25,40]. This study showed that the irrational use of antibiotics was prevalent among nursing students and that this situation is likely to increase the risk of antibiotic resistance in the future.

CONCLUSION

The findings of the present study clearly highlight the need for better implementation of self medication with antibiotic among nursing students. It determined that more than half of the students had used antibiotics at least once in the past year. It was identified that approximately one third of them had started using antibiotics on their own and the majority of them were unaware of antibiotic resistance. The

decision to start using antibiotics was influenced by being satisfied by previous antibiotics use, test fees, drug store and surrounding advice. Despite the sample group's younger mean age, the rate of starting to use antibiotics on their own was high. Further studies should be conducted to evaluate health practitioners' attitudes and behaviours towards antibiotic use. There is a need to improve nursing students' knowledge about antibiotics and to promote healthier attitudes and practices. Achieving these goals will require a multi-sectorial effort. There are several limitations to this study. First, this study was a cross-sectional study with a non-random convenience sample. Therefore, it includes all the limitations of a cross-sectional study. Second, The sample included only one university in Gaziantep and 570 nursing students, which may limit the generalizability of our findings to other populations.

SIGNIFICANCE STATEMENTS

This study discovers the knowledge, attitude and practice towards self medication with antibiotic among nursing students. This study also will help the researcher to uncover the critical area of inappropriate use of antibiotics and its associated factors. Antibiotic use are strongly associated with health professional awareness and knowledge of antibiotics. Health professional play a significant role in reducing the inappropriate and excessive use of antibiotic and it is necessary to understand their antibiotic use knowledge, attitudes and behaviors and if any educational needs exist.

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