



RESEARCH ARTICLE

A SURVEY STUDY ON RATIONAL DRUG USE AMONG PHARMACY
FACULTY STUDENTS IN TURKEY

Nurcan Kilic-Baygutalp* and Dilan Toktanis

Ataturk University Faculty of Pharmacy, Department of Pharmacy Management, Erzurum, Turkey

ARTICLE INFO

Article History:

Received 15th, December, 2015
Received in revised form
28th, December, 2015
Accepted 16th, January, 2016
Published online
28th, January, 2016

Keywords:

Rational drug use, non-rational
drug use, pharmacy, education

ABSTRACT

Aim: Non-rational drug use, one of the most important health problems of this century threatens community health care and economies of countries. In this study, the knowledge and awareness levels of pharmacy faculty students about rational drug use was evaluated.

Material and Method: The study is a sectional, descriptive questionnaire study conducted in January 2014, on a totally of one hundred students (53 student in 4th term and 47 student in 5th term) of Ataturk University Faculty of Pharmacy. Questionnaire was consisted of twenty multiple choice and open-ended questions. Data was evaluated by SPSS 20.0 statistical programme with frequency analysis.

Results: It was seen that, the opinion of students about non prescription drug use was changed positively in seventy-one percent of students by being educated in faculty of pharmacy. On the other hand, fifty-four percent of students declared that they prescribe without illness with the opinion that the drugs may be necessary at a later time. The most commonly used non prescription drugs were analgesics, antibiotics, common cold medications, vitamins, antacids and antihistaminics, respectively.

Conclusion: It was concluded that there was a high disposition to non-rational drug use among pharmacy faculty students and the present education is being given about rational drug use is insufficient.

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INTRODUCTION

Drugs end the negative effects which threaten human health and life when used rationally; however, they may also threaten life when used irrationally; and therefore, they have an important place for human beings and for the society (Phillips & Breder 2002). Drugs have protective and therapeutical effects, they may also have side effects, and they have an important share in health expenses. For these reasons, rational drug use becomes more important (Passmore & Kailis 1994; Pinar 2012). Today, a great deal of drugs are used in the market, which contain thousands of drug substances. With the increase in the number of drugs, the issues like the indications, contraindications, the application way, pharmaceutical forms, pharmacokinetic and pharmacodynamic effect, bio-equality, bio-benefit, the generic, treatment costs have become more important than ever (De Vries *et al.* 1994). Using drugs without consulting a physician may give rise to side effects based on the drug mostly serious "adverse effects" and even sometimes death and lead to much more public health problems

than anyone world estimate (De Vries *et al.* 1994). In addition, the unused drugs at the homes of the patients increase day by day leading to another negative influence on the economy of the country (Ozkan *et al.* 2005).

Pharmacists, who are on duty and are authorized in each stage of drug production through consumption and who are on active duty for health consultancy for patients are the last step between the treatment and the patients. Starting from the very first moment when a patient is supplied with a drug, the numerous responsibilities of pharmacists start with the follow-up of the effects, side effects and adverse effects, which appear in the continuation of the treatment process, and the other drugs that are used by the patients without prescription (Toklu *et al.* 2010; WHO 1987). Appropriate health consultancy of a pharmacists influence the success of the treatment directly, and indirectly, the expenses of the state on drugs and health (WHO 1993). In order for the pharmacists to be able to provide an efficient health consultancy, they must be equipped the necessary skills and trainings before and after their graduation.

In this study, a questionnaire was applied on 4th and 5th grade students, who are future pharmacists and studying at the faculty

*✉ **Corresponding author: Nurcan Kilic-Baygutalp** Ataturk University Faculty of Pharmacy, Department of Pharmacy Management, Erzurum, Turkey

of pharmacy to evaluate their knowledge and awareness levels on rational drug use, and the results were evaluated.

METHODS

The study is a cross-sectional descriptive questionnaire study. The questionnaire consisted of twenty open-ended and multiple-choice questions. 100 students (fifty-three 4th graders, and forty-seven 5th graders) studying at Ataturk University, Faculty of Pharmacy participated in the study. They were informed verbally and in written style and they voluntarily participated in the study. The results obtained with the questionnaire were evaluated with frequency analysis and the SPSS 20.0 Statistical Package Program.

RESULTS

The socio-demographic characteristics of the participants are given in Table 1. The participants showed similar characteristics in terms of age, gender and education (for each parameter $p > 0.05$). The questions, answers and the number and percentages of the answers are given in Tables 2-5.

Table 1 Socio-demographic characteristics of the participants

Demographic Characteristics		Number	%
Age	20-23	88	88
	>24	12	12
Gender	Female	57	57
	Male	43	43
Educational Status	4 th Grade Faculty of Pharmacy Student	53	53
	5 th Grade Faculty of Pharmacy Student	47	47

Table 2 The Attitudes of the Participants on the Use of Drugs without a Prescription

Number and title of the question	Answer choices	Number of Answers	Percentage of Answers
Are there any people in your family that encourage you and other people around to use un-prescribed drugs?	Yes	41	41
	No	59	59
Did your viewpoint change about the use un-prescribed drugs when you entered the Faculty of Pharmacy?	Yes	71	71
	No	29	29
Did you use un-prescribed drugs in the last month?	Yes	57	57
	No	43	43
If yes, did those drugs make you feel healed?	Yes	35	61.4
	Partly healing was observed	12	21.1
	No	10	17.5
If yes, did you encounter any side effects because of the un-prescribed drugs?	es	11	19.3
	No	46	80.7
If your answer is yes to the 5 th Question, how would you define the severity and seriousness of the side effects?	Mild	10	90.9
	Medium	1	9.1
	Serious	0	0
	Very Serious	0	0

DISCUSSION

In this study, the results of the questionnaire that was applied to 100 faculty of pharmacy students to measure the knowledge and awareness levels on rational drug use were evaluated. In 8th question, which said “Which of the following do you do when you get ill?”, 8% of the participants answered as “I do not do anything but wait”.

Table 3 The drugs used without prescription

Number and title of the question	Answer choices	Number of Answers	Percentage of Answers
What is/are the drugs you use without consulting a physician or without a prescription?	Analgesics	95	43.6
	Antibiotics	37	17,0
	Cold medicines	33	15.1
	Vitamins	25	11,5
	Antacids	19	8.7
	Antihistaminics	5	2.3
	Other	4	1.8
I consult the physician right away.		18	18
When you get ill (general pain, flu symptoms, stomach symptoms, etc.) which do you do first?	I treat myself with the drugs I have at hand.	41	41
	I use herbal products.	17	17
I obtain drugs by consulting a pharmacy		16	16
	I do not do anything, just wait.	8	8

41% of the participants stated that they treated themselves with the drugs at hand. It is known that excessive drug use may occur due to misled recommendations, and this may influence the immune and resistance mechanism of the body in a bad way. In answer to the 2nd question, the majority of the participants (71%) accepted that the education provided in the faculty of pharmacy changed the viewpoint on the drug use without a prescription. Although the pharmacology education received by the faculty of pharmacy students contributes to this issue, it is obvious that this education is not sufficient on rational drug use. This sensitivity must be given to the students without any exemptions during the internship in 5th Grade or with a crammer before the students graduate.

In the 3rd question in which the approaches of the participants to the use of drugs without prescription is questioned, 57% of the

participants said that they had used a drug without a prescription in the past 1 month, and 80.7% said that they had not encountered any side effects because of these un-prescribed drugs. The drugs which were used without consulting a physician and without a prescription were mostly analgesics, antibiotics, cold medicines, vitamins, antacids, and antihistaminics. In a study conducted in Ankara it was reported that analgesics were the most-frequently used drugs that were

used without consulting a physician with 54%. Antibiotics follow them with 8%, and cold medicines follow them with 5% (Ozcelikay 2001). Our results support that there is a tendency in this direction. Especially analgesics being used more may be due to their being sold without prescription and their prices being low without a prescription. In our country, the share of the analgesics in total drug consumption in 25%. Although they are used frequently, they may have serious side effects and they may even cause death. In addition, it was reported that gastric-ulcers may also develop in 25-40% of the people using them. Analgesics have important differences in terms of antipyretic, anti-inflammatory and analgesic properties (Karataev *et al.* 2015). Considering these differences, it is another important issue that pharmacists warn patients about the use of analgesics even if they are sold without prescription. The 9th question asked “What are the major factor(s) that increase the tendency to use drugs without prescription?”.

of them said “the examination share for a patient is high” and therefore this tendency appears. In our country, it is known that drugs are being used unconsciously due to some economic problems, and due to not applying to health institutions due to various reasons, stress and psychological problems. The participation shares to examination by doctors being high also prevent the application to a doctor and gives rise to the use of un-prescribed drugs. This situation must not be underestimated by the Ministry of Health. The most important role rests solely on the shoulders of the pharmacists in selling drugs to patients without prescription (Van Mil 2002).

In the 10th question, “What are the most commonly used drugs in your home?”, the participants answered as analgesics, cold medicines, antibiotics, antacids, vitamins and antihistaminics. It is observed that there is a parallelism with the answers given to the question on the use of drugs without a prescription. Based

Table 4 Factors that increase the inclination to use un-prescribed drugs and the approach to the drugs present at home

Number and title of the question	Answer Choices	Number of Answers	Percentage of Answers	
What are the biggest factor(s) that increase the inclination to use un-prescribed drugs?	It is easy to obtain drugs from the pharmacy	18	18	
	Using the same drugs prescribed before again with the thought in mind that this would heal the disease again.	49	49	
	Recommendation of the family or a relative	21	21	
	The examination share being very high. Other		9	9
			3	3
What are the drugs that are most commonly in your home?	Analgesics	89	40.5	
	Cold medicines	61	27.7	
	Antibiotics	24	10.9	
	Antacids	22	10.0	
	Vitamins	18	8.2	
	Antihistaminics	4	1.8	
	Other	2	0.9	
What do you do with the drugs of the members of your family after their diseases are over?	I keep them by paying attention to their expiry dates to be used again when needed.	90	90	
	I give them to a health institution.	1	1	
	I give them to pharmacy.	2	2	
	I give them to relatives who want them.	3	3	
	I throw them away to rubbish.	3	3	
	I throw them away to the toilet.	1	1	
	Other (please state)	0	0	
	Never	4	4	
	1	4	4	
	2	11	11	
How many boxes of drugs are there in your house that are unused or half?	3	13	13	
	4	11	11	
	5	11	11	
	6-10	25	25	
	11 and over	21	21	
	1-3	53	53	
	4-7	22	22	
How many boxes do you throw away every year because they expire?	8-10	6	6	
	11 and over	3	3	
	Not thrown away	16	16	
Do you ever have the doctor prescribe drugs to you even if you are not ill with the thought in mind that you might get ill?	Yes	54	54	
	No	46	46	

49% of the participants answered as “Using the drug which was prescribed before because it will heal again”. 18% of them checked the item “Buying drugs from pharmacies is easy”. 9%

on this, it is concluded that the treatment by using drugs without a prescription is generally left in half-way with the thought in mind that the disease is healed gives rise to the accumulation of

unused drugs at home. In a study conducted in Kayseri it was reported that there was analgesics in 84,6% of the houses which participated in the study; and 24,0% of them were bought from pharmacies without a prescription; and 10,8% of them were bought from other institutions. It was also reported that the rate of using drugs without prescriptions and keeping drugs at home was very high (Balci *et al.* 2003). These studies were conducted regionally in our country. They must be conducted to include more participants and in a multi-central manner, and must include national data will guide the way leading to rational drug use with success.

show the same effect in everybody. The physiological states of people may cause very important changes in the pharmacokinetic and pharmacodynamics of the drugs used. For this reason, our people must be given the conscious that even a patient benefits from a drug, the same drug may not be good for someone else, even it will be not good in many situations. Recommending drugs is never recommended because it may lead to unwanted serious problems. For this purpose, it is possible to claim that both the visual public spot videos and the audio ones prepared by the Ministry of Health to arouse an awareness in public have been beneficial.

Table 5 Approach to the rational drug use

Number and title of the question	Answer Choices	Number of Answers	Percentage of Answers
Have you ever received training on rational drug use?	Yes	46	46
	No	54	54
	Faculty of Pharmacy	23	50
	Public Spot Releases	20	43,4
Where did you receive your training on rational drug use?	Ministry of Health Website and Ministry of Health Publications	1	2,2
	Chamber of Professions	1	2,2
	Drug Company	1	2,2
Have you ever recommended the drug you used to anyone else because it was good for you?	Yes	34	34
	No	29	29
	Sometimes	37	37
Do you use antibiotics for your complaints like the flu and common cold without being examined by a doctor?	Yes; I do.	20	20
	No; I do not use antibiotics in the flu.	51	51
	Yes; I start, but when I feel better, I stop the drug.	6	6
	No; I do not use them without being examined.	23	23
Do you report the unexpected adverse effects that appear due to the use of human medical products?	Yes	18	18
	No	82	82
If your answer to the 19 th Question is yes, how many adverse effect reports have you made so far?	1-2	17	94.4
	3-5	1	5.6
	6-10	0	0

In the 5th question, the participants stated that they had light side effects (90,9%) due to un-prescribed drug use; however, their diseases healed (61.4%). This situation may be influential in encouraging them to use un-prescribed drugs to heal themselves for the next time. In another study conducted in Isparta it was reported that the rate of the people using drugs with the recommendation of some relatives or friends or by deciding on their own was 93,8%; and the rate of those who used drugs with the recommendation of a physician was 78,3%; and those who used drugs with the recommendation of a pharmacist was 70%, and all of these people stated that the drugs they used were not influential (Uskun *et al.*2004). It is even observed that the drugs used with the recommendation of a physician may also cause side effects, it is not rational to -decide on the drugs on one's own. The use of un-prescribed drugs and especially the use of un-prescribed antibiotics must be avoided because of the economic burden in causes in the economy of the country and because of the resistance that develops in the individuals and in the society. In the 17th question the 34% of the participants stated that they recommended the drugs which they benefited to other people; and 29% of them stated that they did not recommend these drugs to any other people. It cannot be expected that the drugs

In the 19th question the participants were asked the question "Have you ever reported adverse effects of a drug?", and 82% of them answered as "No". The fact that a behavior that is expected from health staff and patients is not performed by the majority of the students of faculty of pharmacy (82%) may be a great deficiency. The students in faculty of pharmacy must definitely be informed on this issue. The pharmacists who are considered as the closest health advisor of people being sensitive on this issue is very important for rational drug use. The reporting of a side effect which is not important for use but maybe very important even lifesaving for some other people may sometimes give rise to the removal of a drug from the market. Although reporting side effects is serious and vital, our -as pharmacists- having not reported any side effects is an unexpected situation and must be corrected.

In the 15th question, the participants were asked "Have you ever received training on rational drug use?" 54% of the participants answered as "No", and 46% of them answered as "Yes". 50% of the participants stated that they had received this training while they were at the faculty, 2.2% stated that they had received it "On the website of the Ministry of Health, and Ministry of Health publications". Rational drug use classes being included

in the curriculum will ensure that the pharmacists are trained consciously. Although irrational drug use is a big and serious health problem threatening the whole world, pharmacists being graduated without receiving a training on this issue is the deficiency in the education system.

In the 18th question the question was “Do you use antibiotics because of your complaints like the flu and common cold without being examined by a doctor?”. The majority of the participants answered as (%51) “No, I do not use antibiotics for the flu”. However the number of those who answered as “Yes, I do” (20%) cannot be underestimated. The antibiotics in the 20% group are the drugs that must not be used solely by the preference of an individual. The most important danger that may be brought by the misuse of antibiotics is the decrease of the microorganisms that are sensitive to antibiotics and the increase in the number of the microorganisms that are resistant to antibiotics, and therefore the limitation in the treatment options. Depending on the increment of the microorganisms resistant to infectious diseases also occur more than ever (Karataev *et al.* 2015). In our country, according to the data released by Information Medical Statistics (IMS) 2013, antibiotics are the most commonly used drugs with a percentage of 16. Turkish Ministry of Health has been published Rational Drug Use National Action Plan 2014-2017 in order to reduce the use of antibiotics (Versporten *et al.* 2014). In the studies conducted in Turkey, it was reported that 36-62.3% of the patients who were hospitalized used antibiotics, and 34-58% of them used improper antibiotics (Dundar *et al.* 1991; Turgut *et al.* 1992; Yalcin *et al.* 1995).

Banning the sale of un-prescribed antibiotics must be performed in the first place, and the obedience on this ban must be strictly checked; this is extremely important to ensure rational drug use. The number of the drugs in the boxes must be reduced to ensure that the drugs that are accumulation at homes are reduced, and pharmacies must not sell antibiotics without prescriptions. When the fact that the pharmacist has the basic duty of determining, resolving or preventing any problems about the drugs and the information of the patient for correct drug use is taken into consideration, it is obvious that the education on rational drug use in pharmacy education should be improved.

Conflict of interest statement

The authors declare that there is no conflict of interest

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