Acıbadem Univ. Sağlık Bilim. Derg. 2022; 13 (4): 587-592
https://doi.org/10.31067/acusaglik.1070547

ORIGINAL ARTICLE / ARAŞTIRMA YAZISI

Medical Pharmacology / Tıbbi Farmakoloji

Evaluation of Information Attitudes and Behaviors of Yozgat Bozok University Employees towards Rational Drug Use

Serkan Şahin[1], **Ayça Çakmak Aydın**[1]

[1]Yozgat Bozok University Faculty of Medicine, Department of Medical Pharmacology, Yozgat

ABSTRACT

Purpose: Universities are one of the main institutions which play important roles in the society. The aim of our study was to evaluate the knowledge, attitudes and behaviors of the employees of Yozgat Bozok University in terms of rational drug use.

Materials and Methods: Data was collected by the application of a questionnaire consisting of 4 sections and 41 questions in the electronic environment. All the data was evaluated using descriptive statistical methods. Mann-Whitney U and Kruskall Wallis tests were used to calculate differences between socio-demographic parameters like income, education, occupation, gender and age.

Results: The total number of the participants were 189 and %45 were men and %55 were women. Knowledge of rational drug use was found low in the men, in the primary and high school education groups and in the poor income group ($p<0.05$). Vitamins and analgesics were the main drug groups used without any advice of a physician.

Conclusion : Insufficient knowledge of the rational drug use is much more prominent in the low income group, in men and in low educated population but the role of internet is an additional important factor on the drug use which may become much more important in the future. In order to improve the rational drug use, the actions of the organizations and health institutions are expected to consider the role of socio-economic parameters and the internet.

Keywords: Rational drug use, survey, level of knowledge, drug safety.

Serkan ŞAHİN
Ayça ÇAKMAK AYDIN

Yozgat Bozok Üniversitesi Çalışanlarının Akılcı İlaç Kullanımına Yönelik Bilgi Tutum ve Davranışlarının Değerlendirilmesi

ÖZET

Amaç: Üniversiteler toplumda önemli rol oynayan kurumlardan biridir. Çalışmamızın amacı Yozgat Bozok Üniversitesi çalışanlarının bilgi, tutum ve davranışlarını Akılcı İlaç Kullanımı açıdan değerlendirmektir.

Gereç ve Yöntem: Veriler elektronik ortamda 4 bölüm ve 41 sorudan oluşan anket uygulaması ile toplanmıştır. Tüm veriler tanımlayıcı istatistiksel yöntemler kullanılarak değerlendirildi. Gelir, eğitim, meslek, cinsiyet ve yaş gibi sosyo-demografik parametreler arasındaki farkları hesaplamak için Mann-Whitney U ve Kruskall Wallis testleri kullanıldı.

Bulgular: Toplam katılımcı sayısı 189 olup, %45'i erkek, %55'i kadındır. Akılcı ilaç kullanımı bilgisinin seviyesi, erkeklerde, ilköğretim ve lise mezunlarında ve düşük gelir sahip olanlarda yetersiz bulundu ($p<0.05$). Doktor tavsiyesi olmadan kullanılan başlıca ilaç gruplarının vitaminler ve analjezikler olduğu tespit edildi.

Sonuç: Akılcı ilaç kullanımına ilişkinbilginin yetersizliği, düşük gelirlilerde, erkeklerde ve eğitim seviyesi düşük olanlarda çok daha belirgin olmakla birlikte, ilaç kullanımında internetin rolü gelecekte çok daha önemli hale gelebilecek bir faktördür. Akılcı ilaç kullanımını geliştirmek için, kuruluşların ve sağlık kurumlarının yapacakları faaliyetlerinde sosyo-ekonomik parametreleri ve internetin rolünü dikkate alması yerinde bir davranış olacaktır.

Anahtar Kelimeler: Akılcı ilaç kullanımı, anket, bilgi düzeyi, ilaç güvenliği.

Correspondence: Serkan Şahin
Yozgat Bozok University Faculty of Medicine, Department of Medical Pharmacology, Yozgat
Phone: +905055044996
E-mail: serkansahin42@hotmail.com

Received: 09 February 2022
Accepted: 06 July 2022

The primary aim of the health services is protection of society from diseases. Drugs are one of the important applications for prevention, diagnosis and treatment of diseases (1). Nairobi meeting of the World Health Organization (WHO) in 1985 is a cornerstone for the beginning of Rational Drug Use (RDU) studies. RDU was defined by WHO as "patients use drugs that are appropriate for their clinical needs, in appropriate doses, for a sufficient period of time, at the least cost to themselves and to society" (2–5).

Rational drug use has also an important role on the avoidance of preventable adverse drug reactions (6). Use of medicines without consulting a doctor but with the advice of neighbours, friends or relatives, compliance problems including application of incorrect dose and stopping the treatment early are the most common types of irrational drug use (7,8). Based on the WHO data, irrational use of all medicines are more than 50% resulting many problems including antibiotic resistance (9). Irrational drug use is one of the serious health problems in Turkey and "Rational Drug Use National Action Plan" was started by the Turkish Ministry of Health (10). Studies on RDU of antibiotics were reported for the West, East, North and South regions of Turkey (11) but to the best of our knowledge, there is no report on the RDU of Yozgat, except our first preliminary report (14). Yozgat is a central Anatolian province surrounded by the Kızılırmak (ancient name is Halys) river and 50 km away from Hattusa, the ancient capital of the Hittite civilization and it is located on the ancient migration path of Anatolia and Caucasian highlands (12). The aim of our study is to investigate the RDU of the staff of Yozgat Bozok University.

MATERIALS AND METHODS

Type of Research

This research is a descriptive study for the evaluation of the knowledge, attitudes and behaviors of the academic and administrative staff of Yozgat Bozok University about RDU. The study was approved by the Clinical Research Ethics Committee of Yozgat Bozok University (no: 2017-KAEK-189-2021.04.14_12).

Data Collection Tools

In order to evaluate the rational drug use, a questionnaire consisting of four sections and 41 questions was prepared electronically by the authors. Section I of the questionnaire consists of 13 questions and was prepared to determine the sociodemographic and personal background characteristics of the participants. Section II was prepared to evaluate the level of knowledge of the participants about RDU with 16 questions. Section III was prepared to evaluate the the attitudes and behaviors of the participants on the use of drugs in their suitable form, dose and duration against diseases, with 8 questions and Section IV was aimed to evaluate the rational drug use behavior with 5 questions. The scale was prepared according to a previous study used to evaluate the knowledge level of the participants (13). The questionnaire prepared in the electronic environment was sent to all staff of the university via e-mail and short messages in september-november 2021, ensuring their participation in the study.

The Universe of the Research

The questionnaire was sent to all the staff of the university thus sampling was not performed and the study was completed with 189 academic and administrative personnel who agred to participate in the study.

Analysis of Data

Data analysis was done using IBM SPSS 23.0 package program. Demographic characteristics and attitutes of the participants were analysed using descriptive statistics (frequencies, ratios, mean, median, standard deviation and minimum-maximum). Kolmogorov-Smirnov test showed us that the data was not normally distributed. Kruskal Wallis and Mann Whitney U non parametric tests were used for comparison of differences of the parameters including income, education, occupation, gender and age. Significance level was accepted as $p<0.05$ and denoted by an asterisk.

RESULTS

Gender

55% (n:104) of the participants in the study were male and 45% (85) were female.

Age

The age of participants was found as 36-45 years with 42.9% (n:81).

Educational Status

0.52% (n:4) of the participants were primary school, 4.2% (n:8) high school or equivalent, 29.1% (n:55) associate degree and undergraduate, 64% higher had bachelors and doctorate degrees. 62.2% of the participants (n:115) were academic staff and 37.8% (n:70) were administrative staff.

Income Level

The rate of those with an income level of 7501-10000 TL was 46% (n: 87) and the rate of those with 1-5 years of service was 28.6% (n: 54).

The values about the socio-demographic characteristics of the participants given above were given in Table 1.

Table 1: Distribution of the participants in the study according to their sociodemographic characteristics

Variables		(n)	(%)
Gender	Female	85	45
	Male	104	55
Age groups	25 and less	5	2,6
	26-35	68	36
	36-45	81	42,9
	46-55	25	13,2
	56 and above	9	4,8
Education status	Primary education	4	0,5
	High school and equivalent	8	4,2
	Associate degree (2-year college)	15	7,9
	Undergraduate (At least 4 years of college)	40	21,2
	Postgraduate(Master's)	41	21,7
	Postgraduate (PhD)	80	42,3
Staff status	Academical personnel	115	62,2
	Administrative Staff	70	37,8
Income rate	0 TL – 2500 TL	1	0,5
	2501 TL – 5000 TL	33	17,5
	5001 TL – 7500 TL	39	20,6
	7501 TL – 10000 TL	87	46
	10001 TL and above	29	15,3
Term in Office	1 year and less	10	5,3
	1-5 years	54	28,6
	6-10 years	53	28
	11-15 years	40	21,2
	16 years and above	32	16,9
Presence of chronical disease	No	154	81,5
	Yes	35	18,5
Regularly drug use	No	147	22,2
	Yes	42	77,8

RDU Scale

The mean±standard deviation of scores of the participants obtained from the scale was 29.7±2.5, the median was 30.0, and the extreme values varied between 20.0-32.0. The scores of the RDU scale were low in the following participants:

a) the primary education and high school,
b) those with an income level of 2501-5000 TL, and
c) men (Table 2)

Table 2: Comparison of the median scores of the participants in the study according to their sociodemographic characteristics

Variables		Scale Score Median (minimum-maximum)	Test Value
Age groups	25 and less (n:5)	30 (28-30)	0,423
	26-35 (n:67)	30 (20-32)	
	36-45 (n:78)	30 (23-32)	
	46-55 (n:25)	30 (22-32)	
	56 and above (n:8)	30 (26-32)	
Gender	Male (n:98)	30 (20-32)	**0.028***
	Female (n:85)	30 (20-32)	
Education status	Primary education (n:4)	27,75 (26-32)	**0,018***
	High school and equivalent (n:8)	27,25 (22-32)	
	Associate degree (2-year college) (n:15)	31 (28-32)	
	Undergraduate (At least 4 years of college) (n:40)	30 (20-32)	
	Postgraduate(Master's) (n:41)	30 (20-32)	
	Postgraduate (PhD) (n:80)	30 (23-32)	
Income rate	2501 TL – 5000 TL (n:33)	29,5 (22-32)	**0,046***
	5001 TL – 7500 TL (n:36)	30,5 (20-32)	
	7501 TL – 10000 TL (n:86)	30 (20-32)	
	10001 TL and above (n:28)	30 (26-32)	
	1 years and less (n:10)	30 (27-32)	
Term in Office	1-5 years (n:54)	30 (24-32)	0,656
	6-10 years (n:53)	30 (20-32)	
	11-15 years (n:40)	30,5 (20-32)	
	16 years and above (n:32)	30 (23-32)	
	No (n:154)	30 (22-32)	
Presence of chronical disease	Yes (n:35)	30 (20-32)	0,528
	No (n:147)	30 (22-32)	
Regularly drug use	Yes (n:42)	30 (20-32)	0,486
	Yes	42	

*$p<0.05$

Attitute for RDU

The majority (91.5%) (n:173) of the participants stated that they preferred to consult a physician about their disease and drugs. The rate of non-pharmaceutical product use such as herbal and natural products is 36.5% (n:69). Drug use without an advice of a physician is 57.7% (n: 109) and consequently harmed by drugs without the advice of a physician is 8.7% (n: 14). Most of the participants (94.1%) (n: 176) preferred to consult a physician in case of any adverse drug reaction and 3.8% (n: 7) preferred to find a solution on their own. In case of lack of a physician, 61.6% (n:104) of the participants preferred to get information about drugs from the pharmacist, while 23.7% (n:40) preferred to use the internet. The majority of the participants stated to use the drugs in proper dose (99.5%) (n: 187), duration 92% (n: 173) and storage conditions 98.9% (n: 186) (Table 3).

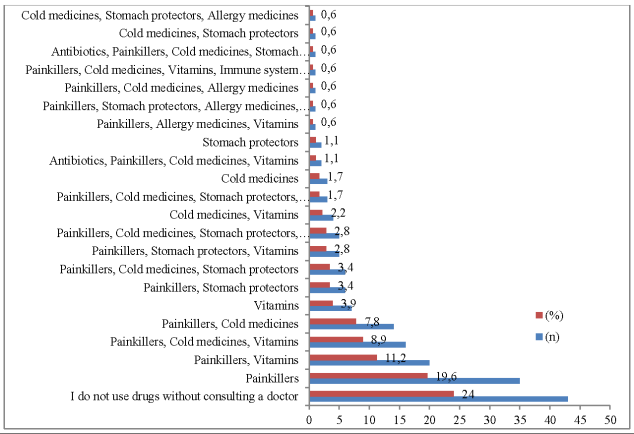

Figure 1: *Which drug(s) the participants used without consulting a physician*

Table 3. Distribution of results related to RDU

Questions		(n)	(%)
Who do you contact first about your illness and medications? (n:189)	Physician	173	91,5
	Pharmacist	3	1,6
	Internet	8	4,2
	Relatives (Spouses, relatives, friends, etc.)	3	1,6
	To myself	1	0,5
	I don't apply	1	0,5
Do you use non-pharmaceutical products such as herbal and natural products? (n:189)	No	120	63,5
	Yes	69	36,5
Have you ever used medication without a doctor's advice at any point in your life? (n:189)	Yes	109	57,7
	No	80	42,3
Have you ever been harmed by the drugs you use without a doctor's advice? (n:161)	No	147	91,3
	Yes	14	8,7
Who do you contact when the drugs you use have side effects? (n:187)	I consult a doctor	176	94,1
	I'm looking for a solution myself	7	3,8
	I consult a pharmacist	4	2,1
From whom do you get the information about the drugs used without a doctor's recommendation? (n:169)	Pharmacist	104	61,6
	Internet	40	23,7
	Pharmaceutical prospectus	8	4,7
	Relatives (Spouses, relatives, friends, etc.)	7	4,1
	Assistant health worker (Nurse, midwife, health officer, etc.)	6	3,5
	I didn't take any medicine without the doctor's advice	4	2,4
Do you use drugs as prescribed? (n:188)	Yes	187	99,5
	No	1	0,5
Do you pay attention to the proper storage of medicines? (n:188)	Yes	186	98,9
	No	2	1,1
Do you use the medicine for the period specified by the doctor? (n:188)	Yes	173	92
	No	15	8
Would you prefer the cheaper one among the drugs with the same effect? (n:186)	No	104	55,9
	Yes	82	44,1

DISCUSSION

The size of the world pharmaceutical industry was 1 trillion 300 billion dollars in 2019, it is expected to grow by 4.5% on average in the 2020-2023 period and exceed the level of 1.5 trillion dollars. The largest market in the world pharmaceutical industry is the United States of America (USA). While 65.2% of the new drugs produced in the 2013-2018 period were sold in the US market, 17.7% were sold in the European markets consisting of Germany, France, Italy, Spain and the United Kingdom. In Turkey, it is stated that the market size has reached the level of 29.5 billion TL as of September 2019 (14). In a report evaluating the pharmaceutical industry, when the number of units of box sold in Turkey is considered, it is reported that 1.7 billion boxes are sold and antibiotics are the most sold drug group on a box basis (14).

Irrational use of antibiotics with excessive antibiotic consumption is regional and also a worldwide health problem. A significant regional variation (east versus west Anatolia) for the antibiotic use for the was reported (11). Although Yozgat is located at the central Anatolia, very few (1.6%) of the participants in our study prefered to use antibiotics without consulting a physician (Figure 1). A possible explanation for this value may be the educational status of the participants which require further investigations.

Analgesic drug use without consulting a physician was found high in our study which was also reported in previous studies (15–18). It is known that non-steroidal anti-inflammatory drugs (NSAID) cause bone marrow depression and serious gastrointestinal side effects, especially cause antihypertensive drug interactions, and aspirin can cause Reye's syndrome in children. The irrational use of analgesics without the advice of a physician will augment the NSAID related adverse drug reactions.

High RDU levels are reported in women, in high education and high income groups (Table 2) which are also reported by previous studies (13,19). These results show that as the socio-cultural, educational and income levels increase, an improvement of the RDU behaviour is expected.

The rate of consulting a physician for diseases and drugs in our study is 91.5%. The value of our study is higher than the same parameters of a study performed in Firat University (69.2%) in 2016 and in Muğla University (58.9%) in 2005 (7,20). They represent west (Muğla) and east (Fırat, Elazığ) and Yozgat is just in between these regions. All the three studies were conducted in the university environments with similar population characteristics. A possible explanation of these different values may be related to time (2005, 2016 and 2021). The role of the time suggests the role of access to the information sources via internet and information technologies. One of the results of our study is a significant value of internet (23.7%) (Table 3) suggesting the growing role of internet on the RDU related information. It is possible to say that one of the striking outcomes of our study is the role and impact of internet on the RDU.

CONCLUSION

To our surprise, irrational antibiotic use was very low in our study. Yozgat is a central Anatolian province and different values of RDU were not related to the regional differences but income and educational factors were much more prominent. Gender specific difference on RDU with higher awareness of women is important and also the role of internet and information technologies were surprisingly playing important role on the RDU which may have much more impact in the future.

DECLARATIONS

Conflict of Interest and Financial Situation

Our work was not funded by an institution or organization. There is no conflict of interest among the authors in this study.

Acknowledgments

The authors would like to thank Dr. Suleyman Aydın of Anadolu University Faculty of Pharmacy, Department of Pharmacology, Eskisehir for contributing to the article.

REFERENCES

1. Baykan Z, Naçar M, Ulusoy HB. Evaluation of feed back of students on rational pharmacotherapy course in Erciyes University Faculty of Medicine. Med Educ World. 2011;30(30):9–16.
2. Ulusoy HB, Sumak T, Şahin S, Gültekin H. The evaluation of a groningen model of pharmacotherapy training for general practitioners in Kayseri. Erciyes Med J. 2011;33(4):309–16.
3. Le Grand A, Hogerzeil H V., Haaijer-Ruskamp FM. Intervention research in rational use of drugs: A review. Health Policy Plan. 1999;14(2):89–102.
4. Kıroğlu O, Berktaş F, Şahan E, Karataş Y. Knowledge and attitudes of research assistants about rational drug use. Cukurova Med J. 2018;43(1):164–71.
5. Almarsdóttir AB, Traulsen JM. Rational use of medicines - An important issue in pharmaceutical policy. Pharm World Sci. 2005;27(2):76–80.
6. Mekonnen BD, Ayalew MZ, Tegegn AA. Rational drug use evaluation based on World Health Organization core drug use indicators in Ethiopia: A systematic review. Drug Healthc Patient Saf. 2021;13:159–70.

7. Pirinçci E, Bozan T. Rational drug use among nurses who work in a university hospital. Firat Med J. 2016;21(3):129–36.
8. Özkan S, Özbay OD, Aksakal N, İlhan M, Aycan S. Attitudes during illness and drug usage habits of patients attending to a university hospital. TAF Prev Med Bull. 2005;4(5):223–37.
9. Khan Z, Ahmed N, Zafar S, ullah Khan F, Rehman AR, Martins MAP, et al. A pilot study on the rational use of medicines in four tertiary care hospitals through validated World Health Organization prescribing drugs indicators. Ann Ig. 2020;32(4):368–75.
10. Ministry of Health Turkish Medicines and Medical Devices Agency. Rational drug use national action plan 2014–2017 [Internet]. [cited 2022 May 12]. Available from: http://www.akilciilac.gov.tr/wp-content/uploads/2014/11/Rational-Drug-Use-National-Action-Plan.pdf
11. Sahin A, Akici A, Aydin V, Melik B, Aksoy M, Alkan A. Variation of antibiotic consumption and its correlated factors in Turkey. Eur J Clin Pharmacol. 2017 Jul 1;73(7):867–73.
12. Skourtanioti E, Erdal YS, Frangipane M, Balossi Restelli F, Yener KA, Pinnock F, et al. Genomic history of neolithic to bronze age Anatolia, Northern Levant, and Southern Caucasus. Cell. 2020 May 28;181(5):1158-1175.e28.
13. Demirtaş Z, Dağtekin G, Sağlan R, Alaiye M, Önsüz MF, Işıklı B, et al. Validity and reliability of rational drug use scale. Estud Public Heal J. 2018;3(3):37–46.
14. Sectoral overview 2020 - pharmaceuticals [Internet]. [cited 2021 Nov 30]. Available from: https://assets.kpmg/content/dam/kpmg/tr/pdf/2020/03/sektorel-bakis-2020-ilac.pdf
15. Özçelikay G, Asil E, Köse K. A study on seeing a physician and self-medication habits of the students of Ankara University. J Fac Pharm Ankara. 1995;24(1):21–31.
16. Türk S. Towards the faculty of dentistry students rational drug use survey work. Master Thesis, Mustafa Kemal University, Institute of Health Sciences, Hatay; 2018.
17. Yıldırım Baş F, Cankara F, Yeşilot Ş. Evaluation of nonprescription drug usage on faculty of medicine students. Süleyman Demirel Univ J Heal Sci. 2013;4(2):46–53.
18. Özçelikay G. A pilot study on rational drug use. J Fac Pharm, Ankara. 2001;30(2):9–18.
19. Bian C, Xu S, Wang H, Li N, Wu J, Zhao Y, et al. A study on the application of the information-motivation-behavioral skills (imb) model on rational drug use behavior among second-level hospital outpatients in Anhui, China. PLoS One. 2015;10(8):1–11.
20. Baybek H, Bulut D, Çakır A. Determination of drug usage habits of the personnel of Mugla University. Muğla Univ J Soc Sci Inst. 2005;(15):53–67.