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Knowledge, Attitudes and Behaviors of Academic and Administrative Staff at Izmir Bakircay University Towards Rational Drug Use

İzmir Bakırçay Üniversitesindeki Akademik ve İdari Personelin Akılcı İlaç Kullanımına Yönelik Bilgi, Tutum ve Davranışları

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Öz

Giriş ve Amaç: Üniversite personelinin akılcı ilaç kullanımına ilişkin bilgi düzeyi, tutum ve davranışlarını değerlendirmek amaçlanmıştır.

Gereç ve Yöntemler: Tanımlayıcı tipteki çalışma İzmir Bakırçay Üniversitesi akademik ve idari personeli arasında online olarak gerçekleştirilmiştir. Evreni 308 üniversite personeli oluşmaktadır ve örneklem seçilmemiştir. Çalışmayı kabul eden tüm personele 20 soruluk anket ve 21 maddelik Akılcı İlaç Kullanımı Ölçeği gönderilmiş, 219 personel (%71,1) katılmıştır. Bağımsız değişkenler, sosyodemografik özellikler ve ilaç kullanım alışkanlıkları, bağımlı değişken ölçek puanıdır. SPSS 20.0 istatistik paket programı kullanılmıştır. Tanımlayıcı istatistikler sayı ve yüzde dağılımları, gruplar arasındaki farklılıklar Ki-Kare ve Fisher'in kesin testleri ile değerlendirilmiştir.

Bulgular: Katılımcıların %82.2'sinin akılcı ilaç kullanımı bilgi düzeyi iyidir, aldıkları ortalama puanlar 38,4±3,5'tir. Kadınların, akademik personelin, 40 yaş ve üzeri katılımcıların bilgi düzeyi daha yüksektir (p=0,015).

Sonuç: Akademik personelin, 40 yaş ve üzeri kadın çalışanlarının akılcı ilaç kullanımı bilgi düzeyleri daha yüksektir. Akılcı İlaç Kullanımı davranışının kazandırılması için hem sağlık çalışanlarına hem de topluma yaygın olarak eğitim olanakları sunulmalı, ilaç politikaları geliştirilmelidir.

Anahtar kelimeler: Akılcı İlaç Kullanımı, Bilgi, Tutum ve Davranış, Anket Araştırması

Abstract

Aim: It is aimed to evaluate the knowledge level and behaviors of university staff about rational drug use.

Methods: The descriptive study was carried out online among the academic and administrative staff of Izmir Bakircay University. Its population consists of 308 university personnel and the sample was not selected. A 20-question questionnaire and a 21-item Rational Drug Use Scale were sent to all personnel who accepted the study, and 219 personnel (71.1%) participated. Independent variables, sociodemographic characteristics and drug use habits are the dependent variable scale score. SPSS 20.0 statistical package program was used. Descriptive statistics, number and percentage distributions, differences between groups were evaluated with Chi-Square and Fisher's exact tests.

Results: The proportion of participants with a proficient level of knowledge in rational medication use is 82.2%. 89.9% of the participants had good knowledge of rational drug use, and their average score was 38.4±3.5. The level of knowledge of women, academic staff and participants aged 40 and over is higher (p=0.015).

Conclusion: Academic staff and female employees aged 40 and over have higher rational drug use knowledge levels. In order to gain Rational Drug Use behavior, both health professionals and the society should be provided with extensive training opportunities and drug policies should be developed.

1. Introduction

The redundant overuse of drugs is a significant public health issue in Turkey as it is in the world. According to the 5th article of the Alma-Ata Declaration published in 1978 at the International Conference on Primary Health Care Services, the provision of essential medicines is one of the indispensable public services [1]. They do not exist only for lifesaving and improving health but also to prevent diseases and pandemics. The World Health Organization (WHO) defined Rational Drug Use (RDU) as; “the ability of individuals to access the appropriate drug with the appropriate time and dosage with the lowest cost possible easily according to their clinical findings and individual characteristics” at a meeting held in Nairobi at 1985 [2]. Violation of any rules of RDU is called Irrational Drug Use (IDU). The main issues of the IDU are the usage of too many drugs, expensive drugs, redundant usage of antibiotics, use of drugs in the false indication, inappropriate doses, wrong treatment period, inappropriate pharmaceutical applications, and usage of excessively expensive and wrong forms, non-provision of understandable information to the patient and non-provision of sufficient communication to the patient. According to data from the WHO, half of the drugs that have been prescribed are inappropriate, and half of the patients do not use their drugs properly [3]. In 2019, Turkish expenses in the medical market reached approximately 41 billion Turkish Liras [4]. “RDU National Action Plan 2014-2017” was prepared by the Turkey Pharmaceuticals and Medical Devices Agency Rational Drug Use and Drug Supply Management Office” to raise awareness about RDU [5].

Inappropriate use of antimicrobials causes microorganisms to become more resistant to drugs [6]. Antimicrobial resistance occurs as a direct result of non-compliance with antimicrobial treatment principles, use of antimicrobials with

wrong indication, insufficient dosage and duration, and inappropriate route [7].

Among the Member States of the European Union (EU), it has been observed that the proportion of individuals utilizing prescribed medications exceeds 55.0% in Portugal, Finland, Belgium, Iceland, and Croatia, while it is below 45% in Turkey [8]. A study conducted on adults aged 18 and above in Turkey revealed that 20.1% of participants utilized over-the-counter medications, 3.4% did not adhere to the recommended dosage and duration, 47.4% consulted a physician to obtain the desired medication prescription, 65% purchased medication for later use, 24.1% did not verify the expiration date, and 45.5% utilized medication without reading

the instructions [9]. Furthermore, in another study, it was found that participants commonly engaged in obtaining prescriptions without undergoing physical examination, with the majority holding the belief that antibiotics cure all illnesses, seeking medication recommendations from relatives when ill, advising medication to their relatives, and prematurely discontinuing medication before the recommended duration [10].

As a result, irrational drug use can trigger patients' demands for inappropriate drugs and this may lead to a shortage of drug stocks and a loss of patients' trust in the healthcare system, which may cause a decrease in drug accessibility and continuation rate [11]. There is an obvious need for intervention studies targeting rational drug use as soon as possible [12].

This study aims to evaluate the knowledge of the knowledge level, attitudes and behaviors of the staff members of a university on rational drug usage.

2. Methods

2.1 Ethical status: The research is a descriptive study conducted online with academic and administrative staff of İzmir Bakırçay University between August and December 2020. The universe of this study is 308 staff of İzmir Bakırçay University without sample selection, but a data collection form was sent and 219 staff (71.1%) agreed to participate. The permission of İzmir Bakırçay University Non-Invasive Clinical Research Ethics Committee (Date: 19.06.2020, decision no: 40) was obtained.

The survey was administered after obtaining consent from the participants. The data were collected by the link of the data collection form being sent twice to the staff members through Google Forms. The data collection form was based on a 20-question survey developed by the researchers and the 21-item ‘Rational Drug Use Scale’ [10]. The Rational Drug Use Scale (RDU) contains 21 articles. As the result of reliability analysis, the Cronbach Alpha value is detected as $\alpha=0,682$ in the research. A scale consisting of 10 true and 11 false statements total of 21 articles, was used. Answers to the scale were evaluated as Yes: 2 points, I don't know: 1 point, and No: 0 points. Article numbers 2, 5, 6, 9, 10, 13, 15, 16, 17, 19, 20 are contrary propositions (obverses) and evaluated as the opposite way. As the points of the scale increase, the knowledge level of rational drug use increases as well. The cutoff value for the scale was determined as 34 points, 35 points, and above as having knowledge of rational drug use.

The independent variables of this study are some of the sociodemographic characteristics of the participants and some of their habits on drug usage, while the dependent variable is the scale score. When evaluating the factors affecting rational drug

use, a new attitude variable was created by dividing the scores obtained from propositions other than similar expressions used in the scale at the median. Participants with higher scores on the attitude questions were assessed as having a higher level of knowledge.

2.2 Statistical Analysis: For the analysis of the data, the SPSS20.0 statistical pack program was used. The correspondence of the data to the normal distribution was examined by the Kolmogorov-Smirnov Test. Descriptive statistics are expressed as number and

percentage distributions. Differences between groups were evaluated with Chi-Square and Fisher's exact tests. The statistical significance level in the analysis was accepted as $p < 0.05$.

3. Results and Conclusion

The participants are 45.2% female (n=99) and 54.8% (n=120) male 53.6% (n=97) are between the age range of 30-40. % 60.9 (n=123) of the participants work as academical staff (Table 1)

Table: 1 Demographic characteristics of the participants

		Mean±SD
Age		33.8±7.3
		n (%)
Age	29 and below	54 (29.8)
	30-40	97 (53.6)
	41 and above	30 (16.6)
Gender	Female	99 (45.2)
	Male	120 (54.8)
Department	Academy	123 (60.9)
	Administration	79 (39.1)

* There is no age data for 38 people

**There is no workplace data for 17 people.

Table 2: Attitudes and behaviors of research participants regarding drug use

	n (%)
Those who say they have had an illness in the last 1 year	107(48.9)
Those who say they have had an upper respiratory tract infection in the last 1 year	112 (51.1)
Those who say they used antibiotics due to an illness they had within the last year.	94(43.5)
Those who use antibiotics with the advice of a doctor	184 (86.8)
Those who say that the purpose of antibiotic use is to kill the microbe and dry the inflammation	122 (56.5)
Those who say that the duration of antibiotic use is as long as the doctor's advice	106 (98.1)
Those who ask the doctor to prescribe antibiotics	137 (62.6)
Those who go to the doctor when they have a fever	127 (59.9)

There are %48.9 (n=107) participants that say they had an illness in the last year and the illness is %51.1 (n=112) upper respiratory tract infection. The number of participants that have used antibiotics in the last year is 94 (%43.5). The number of participants who states the aim of antibiotics is disinfection and drying the inflammation is 122 (%56.5). 184 of the participants who have used antibiotics have used them on a doctor's advice

(%86.8). The number of participants who states the duration of antibiotic usage is what the doctor advises is 106 (%98.1). The number of participants that ask doctors prescribes antibiotics is 137 (%62.6) 127 participants (%59.9) see a doctor when they have a fever (Table 2).

Table: 3 Some characteristics of the participants in the study about drug use

	Yes/Often n (%)	No n (%)
Do you use your medicine in the way that your doctor has told you?	217 (99.1)	2 (0.9)
Do you read the explanations on the box and the prospectus of a medicine that has been prescribed by a doctor before using it?	200 (95.0)	11 (5.0)

Do you ask for further information to the doctor about the medicine that has been prescribed by them?	200 (91.3)	19 (8.7)
Do you use alternative treatment during your illness such as nutritional supplements. herbal treatments. acupuncture. etc.?	150 (68.5)	69(31.5)
Do you use any medication to treat yourself when you are sick before seeing a doctor?	144 (65.8)	75 (34.2)
Do you use medicine when you feel troubled. sad. stressed or depressed?	20 (9.1)	199 (90.9)
Do you use medicine on advice from people who are not medical officials such as relatives. friends. neighbors. etc.?	49(22.4)	170 (77.6)
Do you advice medication to others such as relatives. friends. neighbors. etc.?	71 (32.4)	148 (67.6)
Do you request for prescription of medicine just to keep some in your house?	82 (37.4)	137 (62.6)

Table 4: Range of the answers of the participants to the questions on Rational Drug Use

	Yes n (%)	No n (%)	I Don't Know n (%)
Only doctors can advise medicine.	207 (94.5)	10 (4.6)	2 (0.9)
There is nothing inconvenient about advising medicine to people with similar complaints.	10 (4.6)	201 (91.8)	8 (3.7)
Doctors are the ones to decide if we need any medication when we are ill.	209 (95.4)	2 (0.9)	3 (1.4)
Medicine can have downside effects as much as they have positive effects.	217 (99.1)	1 (0.5)	1 (0.5)
There is no harm to take the medicine more frequent than the doctor's advice.	15 (6.9)	193 (89.4)	8 (3.7)

Table 5: The relation between (gender, age, and department) of the participants and knowledge level of rational drug use

		Poor knowledge level n (%)	Well knowledge level n (%)	p
Gender	Female	10 (10.1)	89 (89.9)	p=0.007
	Male	29 (24.2)	91 (75.8)	
Age	Below 40	34 (24.5)	105 (75.5)	p=0.015
	40 and above	3 (7.1)	39 (92.9)	
Department	Academy	17 (13.8)	106 (86.2)	p=0.039
	Administration	20 (25.3)	59 (74.7)	
Attitude Score	Low	13(24.1)	14(75.9)	p=0.166
	High	20(25.3)	139(84.2)	

* Chi-square test was used. Significance level $p < 0.05$

The proportion of participants with a proficient level of knowledge in rational medication use is 82.2%. (n=180) The rational drug usage knowledge level is examined according to gender. It is observed that the knowledge level of female participants (%89.9) is higher than the male participants (%75.8) ($p=0.007$) As the rational drug use knowledge level is examined according to age. It is observed that the knowledge level of participants aged 40 and above have higher

level of knowledge (92.9) than the participants below age 40 (%81.3) ($p=0.015$). The average points of the participants from the scale are 38.4 ± 3.5 (min: 16.0. max: 42.0) As the knowledge level of rational drug use is examined according to the department. The participants who work in the academy have higher level (%90.2) than the participants who work in administration (%78.5) ($p=0.039$) When the level of rational drug knowledge is assessed based on the

scores obtained from attitude questions, it is observed that participants with higher attitude scores have a higher level of knowledge (84.2%); however, this difference is not statistically significant ($P=0.039$) (Table 5).

This study aims to evaluate the knowledge of the knowledge level, attitudes and behaviors of the staff members of a university on rational drug usage in the study, the proportion of individuals with a good level of knowledge in rational drug usage is 82.2%. According to the results of a study examining these related to rational drug usage, it was concluded that in 44.9% of the studies, the level of rational drug usage was found to be inadequate [13]. In a study conducted at a public hospital in the city center of Kırkkale province involving 120 individuals, efforts were made to determine the knowledge, attitudes, and behaviors of physicians regarding rational drug usage. It was found that 57.5% of the participants had not received any training on rational drug usage, and 89.7% consulted a source of information when prescribing medication [14]. A study conducted in Kenya similarly demonstrates irrational drug usage practices, including non-generic prescribing, excessive antibiotic use, short consultation durations, and inadequate drug labeling [15]. In another study conducted in the United States, it was found that adverse effects associated with antibiotics are prevalent among hospitalized patients receiving antibiotics, and some of these effects could be prevented with more rational antibiotic use [16]. It has been concluded that over 40% of antibiotic prescriptions in Europe are unnecessary and inappropriately used [17]. Accordingly, it is evident that irrational drug usage has emerged as a global issue.

48.9% of the participants stated that they have had an illness in the recent year and the disease is upper respiratory tract infection for 76.1%. The percentage of antibiotic use for the recent year is 43.5%. In the study of Artantaş et al., 28.4% of the participants stated that they had used them once used antibiotics in the past month, and 3.1% of them stated they used them twice [11]. In The study conducted by Yılmaz et al., among Health College students, the percentage of drug use was found to be 26.0%, and 22.6% of it was antibiotics [18]. Yet another study among university students by Iptes and Khorshid, it was found that 51.6% of the participants used medicine in the previous month, and 55.8% of them were using the medication on doctors' advice. It was stated that the drugs used without a doctor's advice were used for headache, flu, menstruation, and acid reflux in respective order [19]. In this study, it is considered that the reason for antibiotic usage is at a high rate may be caused by the accessibility to a doctor being easier in the environment of the participants, and the usage was observed for a longer duration. As the reasons for antibiotic usage for the past year have been examined, it is seen that "upper respiratory tract infection" takes the first place. The

diagnoses in the study are completely based on the statements of the patients. It is seen that the participants used antibiotics at a high rate and the most common reason for use was upper respiratory tract infection. However, the most common reason for upper respiratory tract infections is the viral factor. It has been observed that the reason for prescribing antibiotics almost anywhere in the world is generally for respiratory tract infections and mostly for viral spread [20]. The high rate of antibiotic usage in the group is a result that needs to be analyzed.

The percentage of the participants is 56.5%, who state that the purpose of the antibiotics is to disinfect and dry the inflammation. The irrational use of antibiotics is a risk not only for individual health but also for public health. For antibiotics to be efficient with infectious diseases, it is significant that rational antibiotic use is the only option. In this study, the level of awareness about the main principle of antibiotic use was found to be high. In this study, the percentage of the participants who stated that their use of antibiotics was on a doctor's advice is 98.1%. In a study conducted by Özatik et al. among university students, 88.7% of the participants stated that their drug use was on a doctor's recommendation [21]. It is great to observe the results being higher in this study [19-20]. The difference can be explained as the participants being employees of an educational institution, therefore, having a higher level of awareness.

In this study, the percentage of the participants who state the duration of antibiotic usage must be as much as the doctor's recommendation is 59.9%. In the study led by Mete et al., 50% of the participants stated the duration of antibiotic usage must be a doctor recommended [22]. Şendir et al. observed in their study that the patients quit using their medicine and do it communicate with the doctor who prescribed it once they start to feel better [23]. This situation is like the results of this study. Patients leaving their drugs earlier than the doctor's recommendation leads to ineffective treatment, recurrence of diseases, and complications occur. The necessity of using the drug for the period recommended by the doctor should be insistently stated by the healthcare team.

In this study, the rate of the participants who stated that "only doctors can recommend medicine" is 94.5%. When evaluating these results, most of the patients express that the doctors are the only ones to advise medicine. That rate is 80.6% in Ekici et al.'s study [24]. The improvements recently made in the doctors' prescriptions and medical payments are thought as contribution in special.

91.8% of the participants answered "No" to the statement "There is nothing inconvenient about advising medicine to people with similar complaints". This study showed that people do not use medicine without a doctor's recommendation and do not quit their medication until the treatment period the doctor recommended ends. Hence it is observed that people are conscious and careful about drug use.

95.4% of the participants stated it is correct that “the doctor is the one to decide if we need any medication when we are ill”. In these results, most of the patients stand by the fact that the medication necessity must be stated by doctors. The result is like the study of Ekici et al [24].

99.1% of the participants answered “yes” to the statement “Medicine can have downside effects as much as they have positive effects” and 99.5% of them answered “yes” to the statement “We must consult our doctor if we experience any undesired effects while on medication” while they answered as “no” to the statement “All medicines have the same side effects”. So, it can be said that the participants are careful with the side effects of their medication, and they follow the effects during the medical treatment.

The percentage of the participants who answered “no” to the statement “There is no harm to taking medicine more frequently than the doctor recommended” is 89.4%. The rate of participants who stated “yes” to the statement “Not using the medicine for the duration of the treatment specified by the doctor may prevent healing” is 89.5% and the rate of participants who answered “no” to the statement “We can cut back on drugs when we feel better during the treatment” is 78.1%. In the study applied to the patients by Özçelikay, 76.1% of the patients stated that they completely followed the doctor’s instructions. Also, this result is supported by other studies [25-26]. When these findings are evaluated; it can be said that the doses, timing, and duration of medication are followed as doctor recommendations.

In this study, 75.3% of the participants agreed with the statement “It can be learned from the prospectus whether to take the medicine on an empty stomach or vice versa”. That rate is 83.6% in the study of Karakurt et al [26]. Reading the prospectus leads to leveling up the knowledge of the medicine hence elevating the rational drug use [27].

The rate of those who say "yes" to the statement "herbal products can be used instead of medicine" is 16.6%, the rate of those who say "there is no harm in using herbal products as much as desired" is 3.7%, and the rate of those who say "yes" to the statement "herbal products are completely beneficial" is 4,1%. It can be said that the participants have a high level of awareness of the consumption of herbal products. In the study of Ekici et al., it was observed that the participants were very much interested in herbal products [24].

To the statement “medicine can be applied with the same amount in all age groups”, 95.4% of the participants said “no”. Thus, it can be said that the participants have knowledge of how to use drugs. The study of Ekici et al. concluded with a lack of knowledge (24).

87.2% of the participants answered “no” to the statement “more expensive medicines are more effective”. This is like the study of Ekici et al (24). It is a known fact that patients are informed about the cost as much as they are informed about the drug itself [28,29]. As it is well

known, one of the principles of rational drug use is access to medicine at the most affordable cost possible.

When rational drug use is evaluated for sociodemographic characteristics, the female employees of the academic unit at the age of 40 and above have a higher level of knowledge among the participants. Similarly, in the study of Öztürk H. et al., the female students have higher knowledge (29). In the study of Deniz S., rational drug use is more common for females aged above 46 and with a higher level of education (30). It has been reported in the literature that drug use is affected by sociodemographic characteristics such as gender and age (31).

The world experienced a pandemic with the onset of the new coronavirus disease (COVID-19) in 2019. The atmosphere of fear and uncertainty during the pandemic has negatively impacted the dissemination of accurate health information and behaviors. The rapid increase in COVID-19 cases, the use of newly introduced drugs in treatment, and the accompanying complications have also led to an increase in medication-related problems (32). (The COVID-19 pandemic has led individuals towards irrational drug usage practices as a means of protecting themselves from the virus. These practices include the misuse of medications, unnecessary consumption of antibiotics, overprescription of medications, increased use of vitamin supplements, self-administration of medications at home without consulting a physician, unwarranted requests for medications from healthcare providers, and the use of medications based on recommendations from others [33,34].

This study aims to assess the level of rational drug usage knowledge and behaviors of personnel employed at a single university; however, this may limit the ability to demonstrate and generalize certain differences. The study population is socioeconomically advantaged due to the selected region for the study and the participants' level of education; therefore, this group can be considered to have a high level of awareness regarding rational drug usage. In future studies, a comparison of knowledge levels with more detailed socio-demographic characteristics can be planned.

4. Conclusion and Recommendations

Female employees of the academic unit at the age of 40 and above are found to have a higher level of knowledge of RDU. However, overuse or misuse of medicine both threatens patients’ safety and causes waste of resources. Training opportunities should be widely offered to both healthcare professionals and the public to gain Rational Drug Use behavior; in addition, drug policies should be developed for this purpose.

Ethics Committee Approval: The permission of İzmir Bakırçay University Non-Invasive Clinical Research Ethics Committee (Date: 19.06.2020, decision no: 40) was obtained.

The study was carried out in accordance with the international declaration guideline. etc. An informed volunteer/consent form was signed by the students,

and the study was carried out in accordance with the international declaration guideline. etc.

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REFERENCES

1. Erci B, Tuncel Ş. Ataturk University Medical Bulletin. Basic Health Services.1991;23(3):183-7.
2. World Health Organization. Promoting rational use of medicines [Internet]. Available from: <https://www.who.int/activities/promoting-rational-use-of-medicines>. Accessed: 10 December 2021.
3. Holloway K, van Dijk L. The World Medicines Situation 2011 - Rational Use of Medicines. Geneva: WHO; 2011.
4. T.R. Ministry of Science, Industry and Technology. Pharmaceutical Industry Report 2020.
5. Aksoy M, Alkan A, İşli F. Rational Drug Use Promotional Activities of Ministry of Health. *Türkiye Klinikleri J Pharmacol-Special Topics*. 2015;3(1):19-26.
6. Ergönül O. Antibiotic use and resistance. *Türkiye Klinikleri J Int Med Sci* 2005; 1:1-6
7. Durmaz B. How Can Clinical Microbiology Laboratory Help to Improve Antimicrobial Prescribing. *Journal Of Antibiotics and Chemotherapy*. 2006; 20:191-4.
8. World Health Organization(WHO)(2019). Medication safety in polypharmacy: Technical report. <https://www.who.int/publications/i/item/WHO-UHC-SDS-2019.11>
9. İlhan, S.Ö., Yıldız, M., Tüzün, H., & Dikmen, A. Evaluation of irrational drug use of individuals over the age of 18 who applied to a university hospital. *Turkish Journal of Medical Sciences*. (2022);52(2):484-493.
10. Akıcı A, Mollahaliloğlu S, Dönertaş B, Özgülcü Ş, Alkan A, Başaran NF. Patients' attitudes and knowledge about drug use: A survey in Turkish family healthcare centres and state hospitals. *Turkish Journal of Medical Sciences*.2017;47(5):472-1481.
11. Bozdemir E, Filiz M. A Systematic Analysis of The Studies Conducted on The Determination of Information, Attitudes and Behaviors Regarding The Rational Drug Use In Turkey. *Journal of Dicle University Social Sciences Institute*. 2021;13(27).
12. Artantaş AB, Eray İK, Salmanoğlu G, Kılıç T, Uzun S,Yavaşbatmaz E et al. Assessment of the Attitude, Opinion, and Knowledge of Adults Admitted to a Hospital's Family Medicine Polyclinics About the Rational Use of Antibiotics. *Ankara Med J*. 2015;15(2):38-47.
13. Mete S, Özdi K.Existing Theses on Rational Drug Use in Turkey: Document Analysis, Kırşehir Ahi Evran University Journal of Health Sciences. 2023;(7) 2:109-125)
14. Saygılı M, Özer Ö. An Evaluation on Levels of Knowledge, Attitude and Behavior of Physician About Rational Drug Use. *Hacettepe Journal of Health Administration*, 2015;18(1):35-46.
15. Nyabuti AO, Okalebo FA, Guantai EM. Examination of WHO/INRUD core drug use indicators at public primary healthcare centers in Kisii County, Kenya. *Advances in pharmacological and pharmaceutical sciences*.2020;3173847.
16. Tamma PD, Avdic E, Li DX, Dzintars K, Cosgrove SE.Association of adverse events with antibiotic use in hospitalized patients. *JAMA Internal Medicine*.2017; 177(9): 1308–1315.
17. World Health Organization (2014). The role of pharmacist in encouraging prudent use of antibiotics and averting antimicrobial resistance: A review of policy and experience in Europe, WHO Regional Office for Europe, Denmark.
18. Yılmaz E, Karaca F, Uçar S, Yüce T. The Investigation of the School of Health Students' Drug Usage. *Fırat Journal of Health Services*. 2008; 3:69-83.
19. İptes S, Khorshid L. The Investigation of The University Students' Drug Usage. *Journal of Ege University School of Nursing*. 2004;20(1):97-106.
20. Murphy M, Bradley CP, Byrne S. Antibiotic prescribing in primary care, adherence to guidelines and unnecessary prescribing--an Irish perspective. *BMC Fam Pract*. 2012; 13:43.
21. Özatik FY, Babaloğlu ÜT, Şen M, Yurter K, Akcan Ç, Çevik B, et al. Effect of Peer Group Training on Popularizing of Rational Drug Use Among University Students. *Med J SDU*. 2018;25(3):256-64.
22. Beggi B, Aşık Z. Evaluation of Patients Applying to the Family Medicine Outpatient Clinic in terms of Rational Drug Use. *Ankara Medical Journal*. 2018;(19):251-60.
23. Macit M, Karaman M, Parlak M. Investigation of Rational Drug Use Knowledge Levels of Individuals. *Istanbul Gelisim University Journal of Social Sciences*. 2019; 6:372-87.
24. Mete S, Ünal Z. Determination of Drug Use Habits of the Residents of Cappadocia Region Provincial Centers. *Nevşehir Journal of Science and Technology*. 2017;6(2):661-80.
25. Şendir M, Çelik Z, Güzel E, Büyükyılmaz F. Rational Drug Use Behaviors of Individuals Registered with a Family Health Center. *TAF Preventive Medicine Bulletin*. 2015;14(1).
26. Ekici MA. Measurement of Rational Drug Use Knowledge Level in Adults. *Journal Of Social and Humanities Sciences Research (JSHSR)*. 2019;6(32):179-89.
27. Yılmaz M, Güler N, Güler G, Kocataş S. Some Behaviors a group of the Womens Related Drug Use: Is it Rational. *Cumhuriyet Med J*. 2011; 33:266-77.
28. Özçelikay G. A Pilot Study on Rational Drug Use. *J. Fac. Pharm. Ankara*. 2001;30(2):9-18.
29. Karakurt P, Hacıhasanoğlu R, Yıldırım A, Sağlam R. Medication Use Among University Students. *TAF Prev Med Bull*. 2010;9(5):505-12.
30. Özdemir L. Drug Compliance in Old Age and Factors Affecting Drug Compliance. *The Journal of Geriatrics*. 2012; 4:18-22.
31. Aşiret GD, Kahraman BB, Yeğenoğlu S, Akdemir N, Baydar T. Evaluation of The Knowledge and Experience of The Nurses Those Serving to Geriatric Patients on Rational Drug Use. *Turkish Journal of Geriatrics*. 2013; 16:446-53.
32. Öztürk H. Evaluation of The Perceptions and Attitudes of Higher Education Students to Rational Medicine Use: A State University Example. *International Journal of Health Management and Research*. 2021;7(1):32-46.
33. Deniz S. A Research on Determining Attitudes and Behavior on Rational Drug Use. *Hacettepe Journal of Health Administration*. 2019;22(3):619-32.
34. Kaya H, Turan N, Keskin Ö, Tencere Z, Uzun E, Demir G, Yılmaz T. Rational drug use behavior of university

- students. *Anatolian Journal of Nursing and Health Sciences*.2015;18(1):35-42.
35. Sürmeliöglu N, Demirkan K. Drugs Used in COVID-19 Treatment and Rational Drug Use. *Archive Resource Scanning Journal*.2020;29:44-53.
36. Rençber SY, Ulutaşdemir N. Covid-19 Pandemisinin Akılcı İlaç Kullanımına Etkisi (Batman ili örneği) *Icontech International Journal of Surveys, Engineering, Technology*. ISSN 2717-7270 Journal homepage: <http://icontechjournal.com/index.php/ij> .2023;7(4)
37. Çavdar M, Güç SÖ. The Relationship of Rational Drug Use and Health Literacy In The Under The Pandemic: A Cross-Sectional Research. *Hacettepe Journal of Health Administration*.2023;26(3):655-666

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