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RATIONAL DRUG USE IN HEALTH SCIENCES STUDENTS AND AFFECTING FACTORS: A CROSS-CULTURAL OVERVIEW

Sağlık Bilimleri Öğrencilerinde Akılcı İlaç Kullanımı ve Etkileyen Faktörler: Kültürlerarası Bir Bakış

Hanife ÇELİK[1] *Seher ÇEVİK AKTURA*[2] *Mehmet KAPLAN*[3]
[1,3]*Bingöl Üniversitesi, Sağlık Hizmetleri Meslek Yüksekokulu, Bingöl*
[2]*Fırat Üniversitesi, Sağlık Bilimleri Fakültesi, Elâzığ*

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ABSTRACT

This study aims to examine the Rational drug use (RDU) behaviours and influencing factors of Turkish and Syrian health sciences students to understand the cultural and social factors affecting medication practices. The data were collected between January-May (2024) by face-to-face survey method at a university in eastern Turkey. No sample selection was made among Syrian students and the whole population (n=182) was included in the study. In order to make a comparison, as many Turkish students as the number of Syrian students participating in the study were selected by simple random sampling method. The study was completed with 322 students (Syrian=161, Turkish=161). The mean RDU score of Syrian students was found to be statistically significantly higher than Turkish students ($p<0.05$). Age, gender, marital status, and grade had an effect size of 11% on Syrian students' RDU, while the same predictors had an effect size of 4% in Turkish students. When the cut-off point of the scale was taken as 35 points, it was determined that both Syrian and Turkish students had low RDU levels. In addition, sociodemographic factors were found to be effective in RDU.

Keywords: Cultural diversity, Health, Rational drug, Student.

ÖZ

Bu çalışma, ilaç uygulamalarını etkileyen kültürel ve sosyal faktörleri anlamak için Türk ve Suriyeli sağlık bilimleri öğrencilerinin akılcı ilaç kullanımı (AİK) davranışlarını ve etkileyen faktörleri incelemeyi amaçlamaktadır. Veriler Ocak-Mayıs (2024) ayları arasında Türkiye'nin doğusundaki bir üniversitede yüz yüze anket yöntemiyle toplanmıştır. Suriyeli öğrenciler arasında örneklem seçimi yapılmamış ve tüm popülasyon (n=182) çalışmaya dahil edilmiştir. Karşılaştırma yapabilmek için çalışmaya katılan Suriyeli öğrenci sayısı kadar Türk öğrenci basit tesadüfi örnekleme yöntemi ile seçilmiştir. Çalışma 322 öğrenci ile tamamlanmıştır (Suriyeli=161, Türk=161). Suriyeli öğrencilerin AİK puan ortalaması Türk öğrencilerden istatistiksel olarak anlamlı derecede yüksek bulunmuştur ($p<0.05$). Yaş, cinsiyet, medeni durum ve sınıfın Suriyeli öğrencilerin AİK üzerinde %11'lik bir etki büyüklüğü varken, aynı yordayıcılar Türk öğrencilerde %4'lük bir etki büyüklüğüne sahiptir. Ölçeğin kesme noktası 35 puan olarak alındığında hem Suriyeli hem de Türk öğrencilerin AİK düzeylerinin düşük olduğu belirlenmiştir. Ayrıca sosyodemografik faktörlerin de AİK üzerinde etkili olduğu bulunmuştur.

Anahtar kelimeler: Akılcı ilaç, Kültürel farklılık, Öğrenci, Sağlık.

Mehmet KAPLAN ✉, m.kaplan1071@gmail.com
Bingöl Üniversitesi, Sağlık Hizmetleri Meslek Yüksekokulu, Bingöl

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INTRODUCTION

Drug use is a vital part of healthcare and plays an important role in saving millions of lives every day. While drugs are one of the cornerstones of modern medicine, their misuse can lead to serious health problems. Therefore, the correct and effective use of drugs plays a critical role in the processes of protecting the health of individuals and treating diseases. However, incorrect or unnecessary use of drugs can both harm the health of individuals and bring additional financial burden to the health system. Therefore, rational use of drug, which refers to the use of medicines in the right dosage, at the right time and for the right duration, is becoming increasingly important in global health systems. In particular, problems such as side effects and resistance development due to misuse of drugs are among the leading factors that adversely affect public health (Atif et al., 2019; Goruntla et al., 2023; Kshirsagar, 2016; Wiedenmayer et al., 2021). Furthermore, the latest data from IQVIA highlights that global pharmaceutical spending has grown by 35% over the last five years, with a further 38% increase expected by 2028 (IQVIA, 2024). Türkiye rank 19th in the world pharmaceutical market in 2022 (İEİS, 2023). In the next five years, it is estimated that there will be a significant increase in pharmaceutical expenditures both in Türkiye and the rest of the world (IQVIA, 2024; İEİS, 2023). This situation shows that more rational use of drugs will come to the fore in parallel with the increase in drug expenditures.

While medicines help prevent and treat diseases when used rationally, irrational drug use has become a significant global health issue that is affecting societies by causing serious hazards that threaten human health and even result in death (Akkaya & Koçaşlı, 2022; Yin, He, Shen, Mu & Tang, 2022). Rational drug use (RDU) refers to the process of prescribing, dispensing, and utilizing medications in the most effective, safe, and cost-efficient manner for the prevention, diagnosis, and treatment of diseases. This approach ensures that the right medication is provided to the right patient, in the correct dosage, for the appropriate duration, and at the most reasonable cost. The goal of RDU is to maximize therapeutic outcomes while minimizing adverse effects and unnecessary expenditures (IQVIA, 2024). The World Health Organization (WHO) has developed various indicators to ensure the effective, safe, and equitable use of medications in healthcare services. These indicators range from prescription processes to the functioning of healthcare facilities and patient care (WHO, 2022), and it is critical for health sciences students to comprehend these indicators. Irrational drug use has many negative consequences for society, the environment, patients, the economy and resources. Drug wastage, environmental pollution, increased mortality and morbidity, increased adverse

drug reactions and hospitalisations are some of the consequences of irrational drug use (Genç, 2020). Excessive and inappropriate use of antibiotics has become an important global public health problem that may affect future generations because it causes problems such as development of bacterial resistance, frequent drug side effects, formation of resistant bacterial infections and economic burden in health (Şahin, Apak, & Atar, 2017). Therefore, it is of great importance that health sciences students, who will be the health professionals of the future, are aware and knowledgeable about drug use. It is thought that it is important to determine the RDU of health sciences students and the factors affecting it in order to prevent health problems caused by irrational drug use in the future.

Cultural values, beliefs and practices, how individuals access health services, how they perceive diseases and how they react to treatment methods are influential in drug use (Agbor, Shey & Vubu, 2024; Ruiz, Vallejo, Abrigo & Salgado, 2023). In addition to biology and environment, culturally determined attitudes towards illness and its treatment may also influence how an individual responds to medication. While some cultures view suffering and illness as inevitable and inappropriate for medication, others treat symptoms with polypharmacy and often mix medications with herbal remedies. Cultural differences may have an impact on adherence to medication regimens, as well as affect the placebo effect (McQuaid & Landier, 2018). In a previous study, it was determined that some individuals avoid taking medication due to the side effects of certain drugs or religious beliefs (Dzansi, Tornu & Chipps, 2020). Therefore, understanding the attitudes of individuals with different cultural backgrounds towards medications can provide a more effective delivery of health services. Health sciences students, who will be the health professionals of the future, may have different attitudes towards rational drug use despite receiving similar training on the subject. These differences in attitudes may be due to various cultural, educational, and personal factors. Therefore, the present study aims to examine the level of rational drug use of health sciences students from different cultures and to determine the factors affecting these attitudes.

Study Questions

- What is the level of knowledge of Turkish and Syrian health sciences students on rational drug use?

- Is there a statistically significant difference between the RDU knowledge levels of Turkish and Syrian health sciences students?

- What are the factors affecting the rational drug use knowledge levels of Turkish and Syrian health sciences students?

MATERIAL AND METHOD

Study design

The present study employs a descriptive and cross-sectional design to compare the level of knowledge of Syrian and Turkish health sciences students regarding rational drug use and the factors affecting it.

Participants and sampling

The population of the study consisted of students studying at the Vocational School of Health Services of a state university in eastern Turkey. The whole population of Syrian students (n=182) was included in the study and 161 Syrian students participated in the study. In order to make a comparison, as many Turkish students as the number of Syrian students participating in the study were selected by simple random sampling method. The study was completed with a total of 322 students, 161 Syrian and 161 Turkish students.

Inclusion criteria

-Studying in health sciences,
-Being between the ages of 18-25,
-Having no communication barriers,
-Agreeing to participate in the study,
-Having no chronic diseases,
-Having no psychiatric or neurological conditions.

Exclusion criteria

-Filling in the survey forms incorrectly/incompletely,
-Asking to withdraw from the study whilst it is in progress,
-Having frozen enrollment/ being a passive student,
-Not being a Turkish/Syrian student.

Data collection tools

Data were collected using the "Participant Introduction Form" and the "Rational Drug Use Scale", which were developed by the researchers based on a review of the relevant literature.

Participant Introduction Form: The form inquiring about the sociodemographic information of the students.

Rational Drug Use (RDU) Scale: The scale was developed by Demirtaş et al. in 2018 (Demirtaş et al., 2018). The three-point Likert scale consists of 21 questions in total. Each proposition has the options ‘true’, ‘false’ and ‘don't know’. There are 10 true and 11 false statements in the scale. Correct answers are evaluated as 2 points, the answer "don't know" as 1 point, and incorrect answers as 0 points. A maximum of 42 points and a minimum of 0 points can be obtained from the scale. Higher scores indicate higher levels of knowledge on rational drug use. The cut-off point of the scale is 35 points. Individuals who score 35 points and above on the scale are considered to have adequate knowledge of rational drug use. The original Cronbach alpha value of the scale was reported to be 0.79 (Demirtaş et al., 2018). In the present study, the Cronbach alpha value of the scale was found to be 0.74.

Data collection

The study data were collected by face-to-face interview technique after the necessary permissions were obtained by the researchers. Foreign students studying at universities in Turkey are required to have a Turkish Proficiency Certificate. Additionally, the scale questions were prepared in Turkish and English so that Syrian students could understand the questions. It took approximately 10-15 minutes for the participants to fill in the questionnaire forms. After the study data were collected, it was determined that among the participants, there were students from different countries (Afghanistan: 1, Azerbaijan: 1, Ghana: 1, Iraq: 3, Iran: 1, Egypt: 1, Somalia: 1, Sudan: 1). Since a small number of participants from different countries could not accurately represent the population, these students were excluded from the study.

Data analysis

The data obtained from the study were evaluated in the SSPS 22 program. The Shapiro-Wilk test was used to determine the normality of data distribution. Descriptive statistics, independent groups t-test, multiple regression analysis and Cronbach's alpha tests were used to analyze the data. $p<0.05$ was accepted as statistically significant. In addition using Kernel Density Estimation (KDE), the distribution of the answers given by the Turkish and Syrian students to the rational drug use questions were analyzed.

Limitations of the study

The limitations of the study include the fact that the study data were collected from only one university and only two different cultures were compared, therefore, the data could not be generalized to the population.

Ethical considerations

Permission was obtained from the Health Sciences Scientific Research and Publication Ethics Committee of a state university (2024-E.141803). Researchers followed the rules stated in the Declaration of Helsinki throughout the research. Participants were informed about the research by the researcher and their consent was obtained.

RESULTS

In the present study, it was found that the mean age of the Turkish health sciences students was (20.83±2.41), 61.49% were female, 95.65% were single and 52.79% were second-year students. The mean age of the Syrian participants was (21.25±6.33), 54.66% were male, 80.75% were single and 50.31% were first-year students (Table 1).

Table 1. Frequency Analysis of Demographic Data

	Variable	Group	n	Percent
Turkish	The average age= 20.83±2.41			
	Gender	Male	62	38.51
		Female	99	61.49
	Marital status	Single	154	95.65
		Married	7	4.35
	Grade	1st grade	76	47.21
		2nd grade	85	52.79
	Total		**161**	**100**
Syrian	The average age= 21.25±6.33			
	Gender	Male	73	54.66
		Female	88	45.34
	Marital status	Single	130	80.75
		Married	31	19.25
	Grade	1st grade	81	50.30
		2nd grade	80	49.70
	Total		**161**	**100**

In the study, the mean total score of rational drug use was (23.24±7.98) for the Syrian students and (20.20±3.56) for the Turkish students. It was found that both the Syrian and Turkish students had low levels of rational drug use. It was also determined that the Syrian students had statistically significantly higher scores on rational drug use compared to the Turkish students ($p<0.05$) (Figure 1).

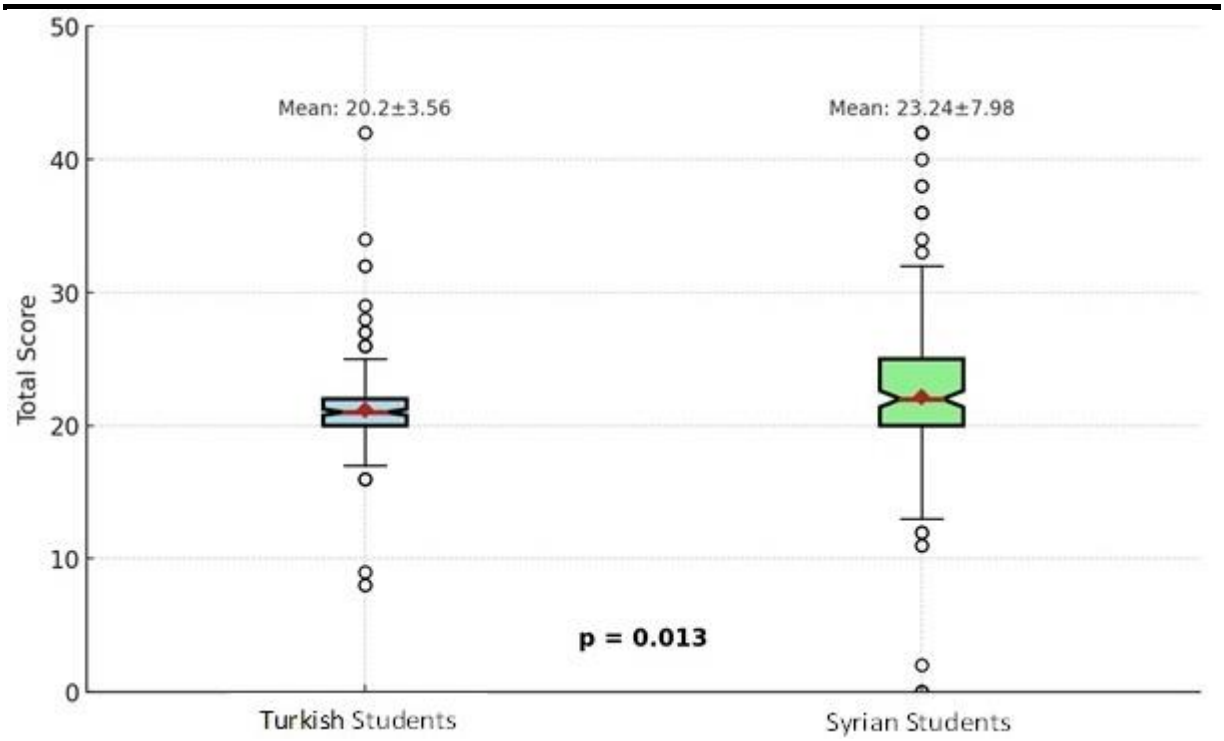

Figure 1. Box Plot: Total Rational Drug Use Scores of the Turkish and Syrian Students

Using Kernel Density Estimation (KDE), the distribution of the answers given by the Turkish and Syrian students to the rational drug use questions were analyzed. It was determined that both groups were concentrated in the range of 20-25 points. The wide distribution of the Syrian students' scores indicates that they possess more diverse attitudes and levels of knowledge on rational drug use (Figure 2).

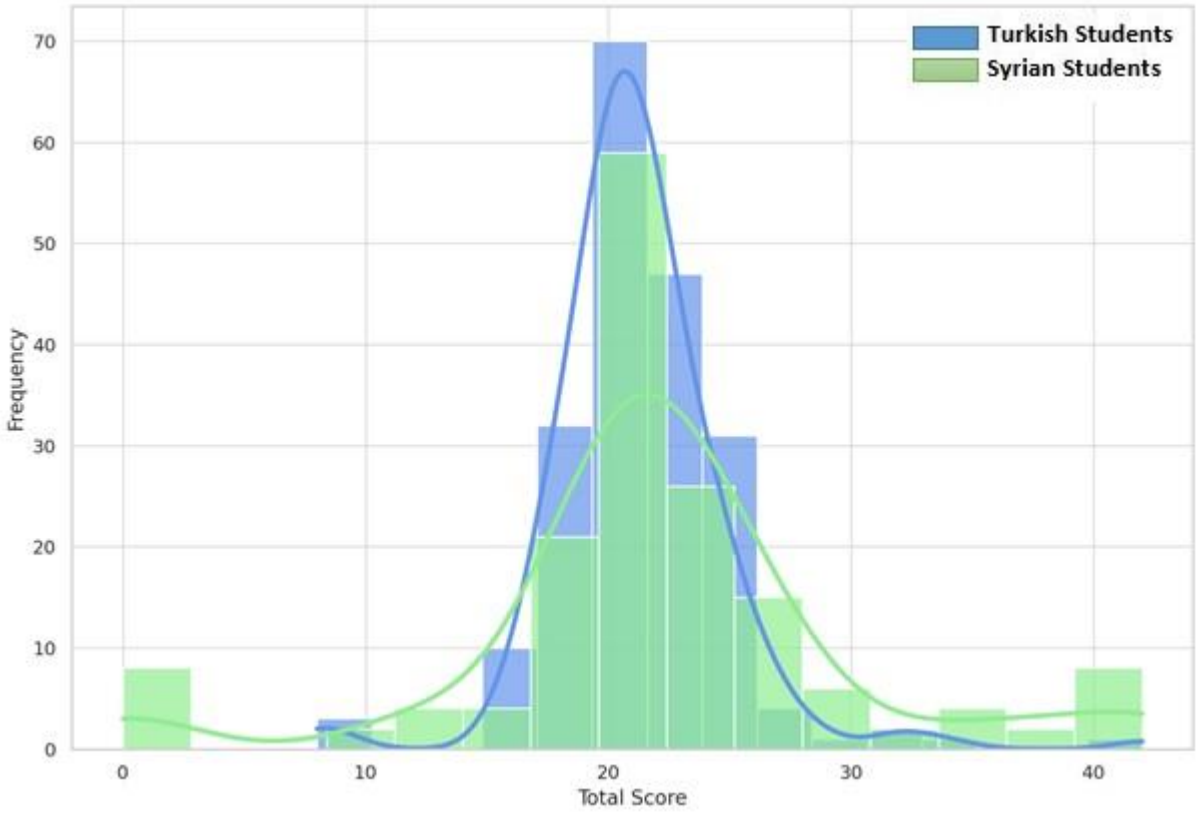

Figure 2. "Histogram Comparative with KDE: Total Rational Drug Use Scores"

The results of the regression analysis performed among the Turkish students revealed that variables such as age, gender, marital status, and grade level had a statistically significant effect on rational drug use. The constant of the model was calculated as 22.90 (t=9.07, p<0.001), which represents the expected rate of rational drug use when the values of all independent variables in the model are zero. The analyses for the age variable show that the beta coefficient is 0.30 (t=3.00, p=0.010) and has a positive effect, indicating that rational drug use increases with increasing age. In terms of gender, the beta coefficient was 1.40 (t=2.14, p=0.027), indicating that the male students used drugs more rationally compared to the female students. The beta coefficient for marital status was -0.51 (t=-4.39, p=0.016), indicating a negative effect; the married students were found to use drugs less rationally than the single students (Table 2).

According to the results of the regression analysis performed for the Syrian students, the constant of the model was determined as 20.28; this value is statistically significant (t=7.38, p<0.001). According to the results of the analysis, the beta coefficient of the age variable was found to be 0.44, higher among the Syrian students compared to the Turkish students (t=5.20, p=0.041). The beta coefficient calculated for the gender variable was 1.91 (t=2.14, p=0.033), indicating that the male students used drugs more rationally than the female students. In terms

of marital status, the beta coefficient was 0.62 (t=0.41, p=0.040), indicating that the married Syrian students used drugs more rationally compared to the single Syrian students (Table 2).

Table 2. Factors Affecting the Rational Drug Use of the Turkish and Syrian Health Sciences Students

	Model	**Unstandardized coefficients**		**Standardized coefficients**						
	Model	**B**	**SE**	**Beta**	**t**	**Sig**	**R**	**R-squared**	**F**	**p**
Turkish	Constant	22.90	1.052	-	9.07	0.000	0.15	0.04	0.74	0.037[a]
	Age	.04	.007	.30	0.30	0.010				
	Gender	.78	.178	1.40	2.14	0.027				
	Marital status	.81	.253	-.51	4.39	0.016				
	Grade	.15	.125	.29	1.01	0.001				
Syrian	Constant	20.28	.93	-	7.38	0.000	0.34	0.11	3.27	0.004[b]
	Age	.06	.007	.44	0.52	0.041				
	Gender	2.33	.178	1.91	2.14	0.033				
	Marital status	.87	.229	.62	.41	0.040				
	Grade	.30	.84	.43	.45	0.038				

a Predictors: (Constant), age, gender, marital status, grade
b Predictors: (Constant), age, gender, marital status, grade
c Dependent Variable: Rational drug use

DISCUSSION

In the present study, the rational drug use habits of students from different cultural backgrounds and the sociodemographic factors affecting these habits were examined. Considering that there is a limited number of studies on drug use in developing countries, this study is considered to be significant in terms of revealing the current situation regarding rational drug use on the basis of cultural factors. The findings show that cultural differences can play a decisive role in drug use decisions.

The cut-off point of the rational drug use scale is 35 points. The level of rational drug use knowledge of participants who score at or above the cut-off point is considered adequate. In the present study, the mean rational drug use scores of both the Turkish and Syrian students were found to be low. The mean rational drug use score of the Syrian students (23.24±7.98) was statistically significant compared to the mean score of the Turkish students (20.20±3.56) (Figure 1). The Syrian students had a higher mean score compared to the Turkish students, which suggests that the Syrian students' scores exhibited a wider variation (higher standard deviation), which may indicate the diversity of the impact of different cultural backgrounds on rational drug use attitudes. In a previous study, Turkish adults were found to have poor rational drug use attitudes (Yilmaz, Altun, & Kılıç, 2016). Similarly, in a study conducted by Aslan et al. with university students, it was reported that the participants had poor attitudes towards rational drug use (Aslan, Çinar, Ertürk & Baysal, 2023). In a study, it was reported that Syrian

migrants exhibited deficiencies in general drug use, treatment compliance and understanding of herbal medicines (Değer, Sezerol & Atak, 2023). Another study conducted in Syria showed that antibiotic combinations are alarmingly widely prescribed and pose a risk to global health by promoting the development of resistance (Tomas & Aljadeeah, 2022).

Kernel Density Estimation (KDE) was used to examine the distribution of the Turkish and Syrian students' responses to questions on rational drug use. The majority of the scores of the Turkish students were concentrated in the range of 20 to 25 (Figure 2). This indicates that the Turkish students generally have similar attitudes and knowledge regarding rational drug use. Moreover, the distribution is narrower and has a distinct peak, indicating that the responses are more consistent. The distribution of the Syrian students' scores is broader, with a wider range from 0 to 40+ (Figure 2). This indicates that the Syrian students have a more diverse range of attitudes and knowledge on rational drug use. Syrian students studying in Turkey migrated to the country due to the civil war in their homeland and come from different regions of Syria. Therefore, it is expected that the score distribution of Syrian students would be in a wide range. Additionally, the fact that the score distributions of both the Turkish and Syrian students are concentrated in the range of 20-25 points may indicate a common level of knowledge and attitude.

Multiple regression analysis was performed to determine the factors affecting rational drug use among health sciences students. The results of the analysis show that age has a positive effect on rational drug use in both groups; however, this positive effect was more pronounced in the Syrian student group. The effect of gender was much more pronounced among the Syrian students, which may stem from different cultural or social factors. Significant effects of marital status were observed for both groups; however, the low number of married participants (Table 1) limits the interpretation of the validity of these results for a general population. The present study revealed that the effect of educational level on rational drug use was larger among the Syrian students compared to the Turkish students.

In the study, the capacity of sociodemographic characteristics to explain the variance of rational drug use was 4% in the Turkish students and 11% in the Syrian students. The data revealed that the model explained rational drug use more effectively for the Syrian students compared to the Turkish students (Table 2). This emphasizes the differences in sociodemographic factors affecting rational drug use between the Turkish and Syrian students. It is observed that the Syrian students have sociodemographic characteristics that are more explanatory of rational drug use in comparison to the Turkish students. This may be due to the

fact that the Syrian students have different living conditions, cultural differences and perhaps a more troubled background compared to the Turkish students. In particular, the fact that the Syrian students have suffered traumatic experiences such as war and migration may increase the impact of psychosocial factors on drug use.

CONCLUSION

The present study revealed that both the Syrian and Turkish students had low levels of rational drug use. The Syrian students were found to use drugs more rationally than the Turkish students. In the study, sociodemographic characteristics explained 4% of the variance of rational drug use for the Turkish students and 11% for the Syrian students. It was found that the students' own cultural and social norms were effective in their decisions concerning medication use. Based on these findings, it can be suggested to raise awareness regarding the differences in intercultural rational drug use, particularly among students who will be future health professionals, to consider sociodemographic characteristics when evaluating rational drug use, and to conduct future studies with larger groups and different cultures.

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