Original Article

Self-Medication Properties of Nursing Students in the COVID-19 Pandemic

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Aim: The research was conducted to evaluate the prevalence of self-medication and the affecting factors among nursing students during the COVID-19 pandemic.

Material and Methods: A descriptive study. The study was carried out with 560 students who were receiving education in Kirsehir Ahi Evran University Faculty of Health Sciences nursing department during the 2020-2021 academic year and agreeing to participate in the study. The data were collected using the "Data Collection Form" which was prepared by the researchers upon the relevant literature review.

Results: It was determined that more than half of the nursing students who participated in the study (63.6%) applied to self-medication, they used medication mostly due to headache, cold/flu and period pain and the most frequently used medication was analgesic (69.8%). The most frequent self-medication reasons of the nursing students were taking the same drug before (56.2%), having medical knowledge about the drug (26.8%), having the drug available at home (26.8%), considering health problem unimportant (16.8%), having an emergency situation (14.6%) and the pandemic (COVID-19) (13.4%). It was determined that there was no statistically significant difference between the self-medication and sociodemographic characteristics of the students (p>0.05). The students, whose mother's educational background was secondary education and above and those who kept drugs in a medicine chest, fridge or cupboard at home, had a higher rate of self-medication.

Conclusions: The nursing students had a very high rate of self-medication. It is recommended that nursing undergraduate curricula include the subject of self-medication. In addition, it is recommended to train students on the outcomes of self-medication.

Keywords: Self-medication, nursing student, drugs.

Introduction

The World Health Organization (WHO) defines self-medication as the use of medicinal products to treat self-diagnosed disorders or symptoms, or the intermittent or continued use of a medication prescribed for chronic or recurring diseases or symptoms and this definition covers the use of drugs by family members (World Health Organization, 2021). Many diseases are self-medicated by individuals, causing public and professional concerns in underdeveloped and developing countries. In the self-medication, the use of drugs in inappropriate doses and frequencies brings about undesirable effects related to the drug. These undesirable effects may include development of antimicrobial resistance, adverse drug reactions and even death (Karakurt et al., 2010; Kaya et al., 2015).

Numerous studies investigating the self-medication in different groups of the population have been conducted in different countries. The results of these studies indicate that the reasons of self-medication are neglecting the disease symptoms, having history of the disease, having insufficient knowledge about the disease, saving time, thinking that they know the treatment, having

financial problems to go to the hospital, having no enough time to see a doctor, and having easy access to drugs, especially in developing countries (Aciksoz et al., 2020; Karakurt et al., 2010; Kasulkar & Gupta, 2015; Iptes & Khorshid 2004). The studies have also reported that self-medication is very common for findings such as fever, cold, and pain (Karakurt et al., 2010; Kaya et al., 2015; Abdi et al., 2018; Araia et al., 2019; Karaman et al., 2019). For example, in their study, Kifle et al. (2021) reported headache/fever (37.8%) as the first complaint for self-medication. Analgesics, antipyretics, antibiotics, antacids, cough medicines, antihistamines, cold tablets/syrups, and vitamins are commonly used drugs for self-medication (Aciksoz et al., 2020; Shehnaz et al., 2013; Yıldırım Baş et al., 2013). It has been stated that in Spain, the over-the-counter drugs (88.91%) most frequently used by nursing students were analgesics (Galán Andrés et al., 2021).

In a systematic review, it was found that the prevalence of self-medication among adolescents in different countries ranged between 2% and 92% (Shehnaz et al., 2014). The related studies have reported that the prevalence of self-medication is quite high and is 78.2% in Ethiopia (Kifle et al., 2021), 79.2% in Eritrea (Araia et al., 2019), 89.6% in Iran (Abdi et al., 2018), 73% (Galán Andrés et al., 2021).) in Spain and 76% (Gama & Secoli, 2017) in Brazil. On the other hand, the prevalence of self-medication among students and adolescents in Turkey has been reported as 58.1% by Karaman et al., (2019), 89.9% by Aciksoz et al., (2020), and 54.8% by Koc and Kocoglu Tanyer (2020).

Due to the high prevalence of self-medication among students, the dosage of some self-administered drugs used below their reliability and efficiency values, and their different biological activity properties, it may lead to unexpected effects on humans and animals, in short on the ecosystem (Sahan et al., 2012). For this reason, it is important to identify the variables necessary to prevent self-medication of students. In the literature, it is stated that self-medication of the students, their socio-demographic characteristics are considerably associated with age, gender (Araia et al., 2019; Kaya et al., 2015; Karaman et al., 2019; Ozyigit & Arıkan, 2015), social security (Abdi et al., 2018;

Celik et al., 2010;), parental education level, employment status of parents, (Aslan et al., 2019; Karakurt et al., 2010; Celik et al., 2010), medical knowledge, diseases (Altuntas et al., 2015; Karakurt et al., 2010), family type (Kaya et al., 2015), and monthly income (Aslan et al., 2019; Araia et al., 2019; Karakurt et al., 2010; Kaya et al., 2015; Karaman et al., 2019; Ozyigit & Arıkan, 2015; Celik et al., 2010).

Medicine, which is an essential tool in the protecting, regaining, and maintaining health, can lead patients to experience many problems when they use it without following rational principles. One of major responsibilities of nurses is safe drug administration. The nurse can fulfill this responsibility successfully by following the principles of rational drug use (RDU) and helping others about RDU and can also assume important roles for making RDU widespread (Ulupinar & Akici, 2015). Nurses should provide training and counseling to the society on issues such as not using drugs without prescription and consulting a physician an effective treatment. The lack of knowledge of nurses about rational drug use is also regarded as an important issue in Turkey (Pirincci & Bozan, 2016). It is thought that the self-medication of nursing students who are going to work as a member of the medical team in the future would influence the health behaviors and practices of both themselves and patients and the society. It is also crucial to detect the self-medication levels of nursing students and the influencing factors in terms of taking educational and administrative measures. Therefore, the aim of the study is to assess the prevalence of self-medication among nursing students and the influencing factors.

Methods

Study design and the participants: This descriptive study was conducted to assess the prevalence of self-medication among nursing students during the COVID-19 pandemic and the influencing factors. The population of the study consisted of 912 daytime and evening nursing students studying at the Faculty of Health Sciences in Kirsehir Ahi Evran University in the 2020-2021 academic year. No sample selection method was used in the study and it was targeted to include all

students studying in daytime and evening education at the nursing department of the Faculty of Health Sciences. The study was completed with 560 nursing students who were studying in daytime and evening education, were able to use a smart phone, were able to fill out an online survey, and were voluntary to participate in the study.

Instrument: A survey form prepared based on the literature was used to collect the study data. The data collection tools were prepared through Google forms and shared via the WhatsAPP groups of the students after the researchers informed the students through the WhatsAPP groups. The participants were informed that the confidentiality of their answers would be ensured and the answers would be displayed on Google forms only via e-mails set up on behalf of the researchers.

The survey form used in the study includes four parts and questions about personal, familial, health-related, and self-medication characteristics.

Data analysis: SPSS 22.0 packaged software was utilized for the analysis of the data obtained in the study. Number, percentage, mean and standard deviation values were used in the data analysis, and chi-square analysis was applied, as well. The value of $p < 0.05$ was accepted as statistically significant.

Ethical considerations: Before starting the study, approval was obtained for the study in electronic environment from the Department of Nursing (number: E-92802276-302.05.01-00000323159) of the related faculty and the Ministry of Health by applying to the Scientific Research Platform of the General Directorate of Health Services of the Ministry of Health. Ethics committee approval (2021-10/117) was obtained from Kirsehir Ahi Evran University. Before filling out the surveys, the students were informed about the study on the first page of the online link, and if they agreed to participate in the study, they were asked to mark the statement "I approve to participate in the study". Nursing students who completed the online survey were deemed as having accepted to participate in the research. This study was conducted in accordance with the Declaration of Helsinki. There was no conflict of interest between the researchers and the students.

Results

It was found that 72.3% of the students were female and the mean age was 21.11 ± 1.66. While 66.2% of the students were attending daytime education, 33.8% were attending evening education. 28.0% were the first-year students, 22.7% were the second-year students, 17.5% were the third-year students, and 31.8% were the four-year students. 58.8% of the students assessed their academic success as fair-bad. 93.0% of the students stated that they were living with their families, 41.8% stated the Central Anatolia Region as the geographical region where they have spent most of their lives. 17.7% of the students were smoker and 7.3% were consuming alcohol (Table 1).

It was determined that 51.2% of the nursing students went to the pharmacy by themselves, 17.9% used the medicine given by the acquaintances, 54.3% used the medicine without seeing a doctor, 78.0% took the initiative to self-medicate, 63.6 % of them applied to self-medication in the last year. Headache (58.0%), cold/flu (22.1%) and period pain (27.9%) were top three complaints/disorders that caused self-medication. Analgesics (69.8%), vitamins (11.1%) and stomach medicines (10.5%) took the first three ranks among types of drugs the nursing students self-mediated. It was determined that 64.8% of the nursing students read the prescribing information before self-medication. The most common reasons of the nursing students for self-medication were using the same drug before (56.2%), having medical knowledge about the drug (26.8%), having the drug at home (26.8%), and considering health problems unimportant (16.8%), having an emergency situation (14.6%) and pandemic process (COVID-19) (13.4%). The frequency of self-medication was reported by 48.2% of nursing students as rare and 26.4% as sometimes, and 37.3% of the nursing students acquired the information about self-medication from their families (Table 2).

When the distribution of self-medication of the nursing students in terms of some socio-demographic characteristics was examined, no significant correlation was observed that the nursing students' gender, education type, grade, academic success, who they live with, geographical region of Turkey where they have spent most of their life, smoking and alcohol consumption and self-medication

(Table 3).

There was no significant correlation between nursing students' social security status, access to health institutions, existing chronic disease diagnosed by a doctor, regular drug use and self-medication according to health perception. However, the rate of self-medication of nursing students differed with the presence of drugs in the medicine chest, fridge or cupboard at home, and the rate of self-medication was higher for students who had drugs in the medicine chest, fridge or cupboard at home ($p<0.05$) (Table 4).

Table 1: Socio-demographic characteristics of the nursing students

Variables	Number (n)	Percentage (%)
Age	(Min-Max) (17-26)	(x±SD) 21.11±1.66
Gender		
Male	155	27.7
Female	405	72.3
Education type		
Daytime education	371	66.2
Evening education	189	33.8
Grade		
1st year	157	28.0
2nd year	127	22.7
3rd year	98	17.5
4th year	178	31.8
Academic success		
Good	231	41.2
Fair-bad	329	58.8
With whom they live		
With family	521	93.0
Alone at home	39	7.0
Geographical region of Turkey where they have spent most of their life		
Marmara Region	33	5.9
Aegean Region	36	6.4
Mediterranean Region	105	18.8
Black Sea Region	48	8.6
Central Anatolia Region	234	41.8
Southeastern Anatolia Region	85	15.2
Eastern Anatolia Region	19	3.4
Smoking		
Yes	99	17.7
No	461	82.3
Alcohol consumption		
Yes	41	7.3
No	519	92.7

Table 2: Self-medication characteristics of the nursing students

Self-medication Characteristics	Number (n)	Percentage (%)
Status of going to the pharmacy by yourself		
Yes	287	51.2
No	273	48.8
The status of using the drug given by acquaintances		
Yes	100	17.9
No	460	82.1
The status of using the drug without seeing a physician		
Yes	304	54.3
No	256	45.7
The status of taking the initiative for self-medication		
Yes	437	78.0
No	123	22.0
Self-medication in the last year		
Yes	356	63.6
No	204	36.4
Complaints/disorders causing self-medication at most		
Headache	325	58.0
Cold/flu	124	22.1
Period pain	156	27.9
acid reflux / gastritis	66	11.8
Stress	15	2.7
Fever	42	7.5
Skin disease	31	5.5
sleep problem	10	1.8
Other*	19	3.4
Type of drug used for self-medication*		
Analgesics	391	69.8
Vitamins	62	11.1
Stomach medicines	59	10.5
Nasal spray	38	6.8
Allergy drugs	38	6.8
Ointments	33	5.9
Eye drop	31	5.5
Antibiotics	30	5.4
Antipyretic	22	3.9
Skin drugs	21	3.8
Anxiety Drugs	9	1.6

Sleep Drugs	4	.7
Self-medication Characteristics	**Number (n)**	**Percentage (%)**
Status of reading prescribing information before self-medication (n=437)		
Yes	363	64.8
No	74	13.2
Most common reasons for self-medication		
Using the same drug previously	315	56.2
Having medical information about the drug	150	26.8
availability of drugs at home	150	26.8
Considering the health problem unimportant	94	16.8
An emergency condition	82	14.6
Pandemic (COVID-19)	75	13.4
Lack of time	22	3.9
Difficulty going to health institutions	21	3.8
Lack of social security	9	1.6
High treatment costs	7	1.2
Frequency of self-medications (n=437)		
Often	19	3.4
Sometimes	148	26.4
Rarely	270	48.2
Source of information about self-medication *		
Family	209	37.3
Internet	190	33.9
Book, Newspaper, Magazine	41	7.3
Other**	72	12.9
Friends	41	7.3
Television	12	2.1

*Toothache, Vitamin deficiencies, Diarrhea, Goiter, Constipation, Ankylosing Spondylitis, Eye Pain
** Information at school, Previous treatments or drugs used, healthcare professionals in relatives, by reading the prescribing information.

Table 3: Comparison of some socio-demographic characteristics and self-medication use of nursing students

Socio-Demographic Characteristics	Those who self-medicated		Those who did not self-medicate		Test value and p value
	Number (n)	**Percentage (%)**	**Number (n)**	**Percentage (%)**	

Gender					
Female	266	65.7	139	34.3	$\chi^2=2.807$
Male	90	58.1	65	41.9	p=0.094
Education type					
Daytime education	238	64.2	133	35.8	$\chi^2=0.159$
Evening education	118	62.4	71	37.6	p=0.690
Grade					
1st year	87	55.4	70	44.6	
2nd year	84	66.1	43	33.9	$\chi^2=6.792$
3rd year	63	64.3	35	35.7	p=0.079
4th year	122	68.5	56	31.5	
Academic success					
Good	154	66.7	77	33.3	$\chi^2=1.627$
Fair-bad	202	61.4	127	38.6	p=0.202
With whom they live					
With family	327	62.8	194	37.2	$\chi^2=2.106$
Alone at home	29	74.4	10	25.6	p=0.147
Geographical region of Turkey where they have spent most of their life					
Marmara Region	21	63.6	12	36.4	
Aegean Region	24	66.7	12	33.3	
Mediterranean Region	64	61.0	41	39.0	
Black Sea Region	32	66.7	16	33.3	$\chi^2=4.745$
Central Anatolia Region	157	67.1	77	32.9	p=0.577
Southeastern Anatolia Region	48	56.5	37	43.5	
Eastern Anatolia Region	10	52.6	9	47.4	
Smoking					
Yes	66	66.7	33	33.3	$\chi^2=0.498$
No	290	62.9	171	37.1	p=0.481
Alcohol consumption					
Yes	28	68.3	13	31.7	$\chi^2=0.426$
No	328	63.2	191	36.8	p=0.514

Table 4: Comparison of nursing students' health-related characteristics with self-medication

Characteristics	Those who self-medicated		Those who did not self-medicate		Test value and p value
	Number (n)	Percentage (%)	Number (n)	Percentage (%)	
Social Security					
Yes	301	65.0	162	35.0	$\chi^2=2.391$

No	55	56.7	42	43.3	p=0.122
Having Problems in Reaching the Health Institution					
Yes	31	63.3	18	36.7	χ^2=0.002
No	325	63.6	186	36.4	p=0.963
Existing Chronic Disease Diagnosed by a Doctor					
Yes	50	67.6	24	32.4	χ^2=0.588
No	306	63.0	180	37.0	p=0.443
Regular Drug Use					
Yes	41	60.3	27	39.7	χ^2=0.359
No	315	64.0	177	36.0	p=0.549
Health Perception					
Good	208	60.8	134	39.2	χ^2=2.875
Moderate+bad	148	67.9	70	32.1	p=0.090
Availability of drugs in the medicine chest, fridge or cupboard at home					
Yes	317	65.2	169	34.8	**χ^2=4.349**
No	39	52.7	35	47.3	**p=0.037**

Discussion

In this study, it was aimed to assess the prevalence of self-medication among nursing students and the influencing factors. The results of the study indicated that more than half of the nursing students (63.6%) applied self-medication in the last year, and also 78.0% of these students took the initiative to self-medicate. In a systematic review, it was determined that the prevalence of self-medication among adolescents in different countries ranged between 2% and 92% (Shehnaz et al., 2014). In their study, Karaman et al. (2019) and Aciksoz et al. (2020) determined that the majority of the students used the over-the-counter drugs in the last year. The prevalence of self-medication among nursing students is 89.6% in Iran (Abdi et al., 2018) and 76.0% in Brazil (Gama & Secoli, 2017). In the undergraduate nursing education, there are courses that include drug information in the education curricula starting from the first year. In the teaching of drugs and drug administrations in nursing undergraduate education, primarily theoretical information about drug information and administrations is given, and then students are expected to reflect this information to laboratory and clinical practices. The high prevalence of self-medication among nursing students as a result of these trainings suggests that they do not have sufficient pharmacology knowledge and they receive insufficient training on rational drug use.

In the study, headache, cold/flu, and period pain were top three complaints/disorders that caused self-medication among nursing students. Analgesics, vitamins and stomach medicines took the first three ranks among the types of drugs used by the nursing students for self-medication. Likewise in the literature, it was determined that the students took drugs frequently due to pain, cold, cold-flu, and fever, and the over-the-counter drugs used by these students at the highest rate were analgesics, anti-flu drugs, antipyretics, and vitamins (Aciksoz et al., 2020; Karakurt et al., 2010; Karaman et al., 2019; Kaya et al. 2015; Shehnaz et al., 2013; Yıldırım et al., 2013). The first behavior developed by people in order to get rid of pain, which is an important variable affecting their quality of life, is to the use of analgesics. In the finding of this study similar to the findings of other studies, the most common reason for medication was pain and the most common use of drugs were analgesics and this can be accepted as an expected result. Moreover, the reasons for the students' self-medication and the similar drugs used by them both in the literature and in the study may be associated with the

perception of students' having sufficient knowledge and/or experience regarding the drug(s) and easy access to these drugs.

The most common sources of information about the drugs the nursing students self-medicated were their families, internet, and their friends. Likewise in other studies, internet, family, pharmacist advice, textbooks, classmates or final year students as well as old prescriptions were used by students as the most common source of information (Abdi et al., 2018; Shehnaz et al., 2013; Bhagunde et al., 2017). In the study, it was determined that half of the nursing students went to the pharmacy by themselves (51.2%) and the students used drugs without seeing a doctor. They used drugs given by their acquaintances at a substantial rate (17.9%) (Table 2). The students used the drugs of their family members in the study by Ozyigit and Arıkan (2015). The students used drugs upon advice in the study by Santas and Demirgil (2017). In their study, Koc and Kocoglu Tanyer (2020) stated that the adolescents went to the pharmacy on their own and took medicine from their friends.

In the study, it was determined that more than half of the nursing students (64.8%) read the prescribing information before self-medication. Although the rate of reading the prescribing information before medication was high in the study, it was observed that the frequency of reading the prescribing information was higher in other studies conducted in Turkey (Karakurt et al., 2010; Kaya et al. 2015; Karaman et al., 2019; Ozyigit & Arikan, 2015).

The most common reasons for self-medication may include previous illness experience, insufficient knowledge about the disease, financial problems to see a doctor, lack of time to see a doctor, and easy access to drugs, especially in developing countries (Kasulkar & Gupta, 2015). The findings of the study revealed that the first three factors affecting the reasons for students to use over-the-counter drugs included using the same drug before, having medical knowledge about the drug, and having the drug available at home. The results of the study are compatible with the results of the literature. Using the same drug before was one of the reasons for students' using over-the-counter drugs at the

rate of 64.1% in the in the study by Karakurt et al. (2010), 64.1% in the study by İptes and Khorshid (2004), 89.4% in the study by Karaman et al. (2019). Even though it was not in the top three among the reasons for students' self-medication, students applied to self-medication (13.4%) due to the pandemic process (COVID-19). The coronavirus (COVID-19) pandemic has become a global health crisis and continues to spread at an alarming rate. The coronavirus has affected millions of people in the world and has led to serious health, economic and social disruptions. Moreover, millions of people had to be isolated at home due to the restrictions imposed due to the pandemic. These restrictions experienced during the pandemic have also affected the usability and accessibility of health services. Therefore, it can be asserted that the restrictions necessarily experienced during the COVID-19 pandemic were effective on students' self-medication.

The results of the study indicated that students' self-medication was not affected by socio-demographic characteristics such as gender, education type, grade, academic success, who they lived with, geographical region of Turkey where they have spent most of their life, smoking and alcohol consumption. The related studies reported that self-medication or rational drug use was affected and was not affected by some socio-demographic characteristics such as gender and age (Abdi et al., 2018; Aciksoz et al., 2020, Araia et al., 2019; Kaya et al., 2015; Karakurt et al., 2010; Karaman et al., 2019; Ozyigit & Arikan, 2015).

The mean age of the students was 21.11±1.66, and it is known that the class of the students increases with increasing age. In the study, the results of the correlation between self-medication and the age variable of the students were not examined; however, the correlation between self-medication and grade was assessed and no significant correlation was found. This result can be explained by the fact that the age groups of the students were close to each other in their classes. Furthermore, taking courses in daytime education and evening education did not affect their self-medication. The only difference between daytime education and evening education is the start and end times of

the courses. Curricula of both daytime education and evening education are the same, and their theoretical and practical courses are exactly the same.

Nearly half of the students (41.8%) stated the Central Anatolia Region as the geographical region where they have spent most of their lives. Also, the university where the study was conducted is located in the Central Anatolia Region. There are differences between regions in terms of health indicators and cultural characteristics in Turkey; however, it was determined that students' self-medication was not affected by the geographical region in Turkey, where they have spent most of their lives. In this study, it was thought that the lack of difference between the regions of the students was associated with the similar socio-economic and cultural characteristics of the region where the study was conducted.

Almost all of the students (93.0%) were living with their families, and even though self-medication rate was higher in those living with their families than those living alone at home, the difference was not statistically significant. This result indicated that self-medication was not affected by living with family or alone.

Smoking usually starts during adolescence and one of the risk groups for smoking is adolescents. Alcohol and tobacco use cause many health problems such as cardiovascular, diabetes, depression, weak immune system, liver damage, and respiratory diseases (Akdeniz, 2019; Memis, 2020). It was determined in the study that smoking and alcohol consumption, which cause many health problems, did not affect the students' self-medication. Likewise, Karaman et al. (2019) also found in their study that smoking and alcohol consumption did not have any effect on rational drug use behaviors.

In the distribution of nursing students' self-medication according to their health-related characteristics, there was no significant correlation between students' social security status, access to a health institution, existing chronic disease diagnosed by a doctor, regular drug use, and self-medication according to health perception. However, the rate of self-medication was higher in nursing students who kept drugs in a medicine chest, fridge or cupboard at home than the students who did

not. In a study conducted in Turkey, the rate of having drugs at home was found to be 84.2% (Beggi & Asik, 2019). Again, studies conducted with different age groups have reported that people had drugs at home and a substantial part of them used these drugs at home in case of health problems (Ayabakan Cot et al., 2019; Elmas et al., 2020; İlhan et al., 2014) These results suggested that individuals did not have accurate information about drug use, the treatment of diseases was interrupted, and drugs became waste and were kept in the medicine chest, fridge or cupboard at home.

Conclusions: It was determined that more than half of the nursing students applied to self-medication, their most common reason for self-medication was headache, and the most frequently used drug was analgesics. The students stated the use of the same drug before as the most common reason for self-medication. It was found that the rate of self-medication was higher for students who kept drugs in the medicine chest, fridge or cupboard at home. It is suggested to include the subject of self-medication in the curricula of undergraduate nursing education in more detail.

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