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Analysis of over-the-counter medicines use among nursing students

Analiza uzimanja lekova bez recepta među studentima zdravstvene nege

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Abstract

Background/Aim. The use of over-the-counter (OTC) medication is widespread among the adult and student populations in Slovenia. The aim of the study was to analyse the prevalence of OTC medicines use among nursing students with respect to sociodemographic characteristics. **Methods.** A total of 241 nursing students in the Faculty of Health Sciences, Ljubljana, were included in the cross-sectional study. A questionnaire was created for the purposes of the study. Statistical analysis was performed with SPSS 20. Descriptive statistics, *t*-test and the contingency coefficient were calculated. Statistical significance was set at the p-value of < 0.05. **Results.** The study showed that the use of prescription drugs was significantly higher in women ($p = 0.029$), students living in rural areas ($p = 0.005$) and students who described themselves as being of bad health ($p = 0.008$). At the same time, a third of the respondents had been taking one OTC medicine within the last month; those taking several prescription drugs commonly administered several over-the-counter medicines ($p = 0.027$). Women used OTC medicines to treat pain and fever ($p = 0.001$), respiratory issues ($p = 0.015$), and fungal infections ($p < 0.000$) more often than men. OTC medicines were also used to treat minor mental health issues by a higher proportion of respondents over 21 years of age ($p = 0.005$) and women ($p < 0.000$), while over-the-counter medicines for treating skin conditions were more frequently used in rural areas ($p = 0.006$). **Conclusion.** Nursing students tend to use OTC medicines on their own accord, receiving instructions for safe use with their purchase, which points to adequate promotion of safe use of medications in Slovenia. Men's assessment of their personal health tends to be better than that of women, who also use medication more frequently. A connection between poor health and a higher incidence of the use of OTC medicines was established. The use of OTC medicines to treat minor mental health issues increased with age and was more typical of women. The results obtained demonstrate the importance of personal control over the safe use of medicines, motivation for personal good health and a healthy lifestyle.

Key words:
nonprescription drugs; questionnaires; students; medical staff; socioeconomic factors; decision making.

Apstrakt

Uvod/Cilj. Uzimanje lekova bez recepta veoma je rašireno među odraslima i među studentima u Sloveniji. Cilj ove studije bio je da se prouči prevalencija uzimanja lekova bez recepta među studentima zdravstvene nege u odnosu na njihove sociodemografske karakteristike. **Metode.** Ova unakrsna studija obuhvatala ja ukupno 241 studenta medicinske nege sa Fakulteta medicinskih nauka u Ljubljani. Za potrebe ove studije sastavljen je upitnik. Statistička analiza podataka urađena je pomoću SPSS 20. Uradili smo deskriptivnu statistiku, *t*-test i izračunali koeficijent kontingencije. Statistička značajnost stavljena je na *p*-vrednost manju od 0,05. **Rezultati.** Studija pokazuje da je uzimanje lekova na recept značajno učestalije među ženama ($p = 0.005$) i među studentima koji su naveli da su lošijeg zdravlja ($p = 0.008$). Istovremeno, trećina ispitanika uzimala je jedan lek bez recepta tokom prethodnog meseca, a oni koji su pili nekoliko lekova na recept obično su uzimali po nekoliko lekova bez recepta ($p = 0.027$). Žene su uzimale lekove bez recepta za ublažavanje bola i groznice ($p = 0.001$), kao i gljivičnih infekcija ($p < 0.000$) mnogo češće nego muškarci. Veći broj ispitanika starijih od 21 godine (muškarci: $p = 0.005$; žene: $p < 0.000$), takođe, uzimali su lekove bez recepta protiv manjih psihičkih smetnji, dok su lekove bez recepta za lečenje kožnih oboljenja češće uzimali oni iz seoske sredine ($p = 0.006$). **Zaključak.** Među studentima zdravstvene nege postoji tendencija uzimanja lekova bez recepta za koje dobijaju uputstvo prilikom kupovine. Ovo ukazuje na potrebu odgovarajućeg promovisanja bezbednog uzimanja lekova u Sloveniji. Muškarci bolje procenjuju svoje sopstveno zdravlje nego žene koje, takođe, mnogo češće uzimaju lekove. Utvrđena je veza između lošeg zdravlja i veće incidencije uzimanja lekova bez recepta. Uzimanje lekova bez recepta protiv manjih psihičkih smetnji povećava se sa godinama i tipičnije je za ženski pol. Dobijeni rezultati ističu važnost lične kontrole bezbednog uzimanja lekova, brige o ličnom zdravlju i zdravom životu.

Ključne reči:
lekovi bez recepta; upitnici; studenti; kadar, medicinski; socioekonomski faktori; odlučivanje.

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Introduction

Health is a dynamic process that involves constant changes; however, it is necessary to take into account the fact that sometimes environmental stimuli (physical, psychological) are so strong that can cause illness [1]. Health is an important human value. If healthy, we want to do our best to maintain or even strengthen it; if sick, we endeavour to recover as soon as possible and as much as possible. Since prehistoric times, we have tried to help ourselves when ill, namely, to use all the resources at our disposal, in particular those that are efficient from our point of view. And the same is true today; now individuals with deteriorating health first try to help themselves, by means of over-the-counter (OTC) medicines [2]. OTC medicines are drugs sold directly to consumers without prescriptions and are safe to use and labelled for use without the supervision of a healthcare professional [3]. In Slovenia, OTC medicines are available in pharmacies and specialised stores, they are also available on the Internet; in general, they are the most commonly purchased in pharmacies [4, 5].

Use of OTC medicines is an individual choice that is likely to be made in the event of milder symptoms that do not need treatment provided by a physician [6]. An individual decides to take them with reference to the expressed symptoms, as well as general knowledge and personal experience in the use of such products [2]. Taking OTC medicines to relieve health problems without consulting your physician, with the advice of a pharmacist or other health workers, constitutes a form of self-medication [7]. It can last for three to seven days and cannot be longer than seven days [7]. It is an effective method for the treatment and relief of minor health problems, such as flu, colds, coughs, sore throat, headaches and muscle pain [8].

OTC medicines only provide benefits for a user when taken properly. Users often falsely believe that two tables provide twice as much benefit as one [9]. In taking OTC medicines, there is a greater likelihood that a user will not be provided with any instructions from a healthcare professional, compared to the use of prescription drugs [9]. Thus, users of OTC medicines should be informed about the benefits and risks of use of such products [8]; an important role thereof should be assumed by pharmacists, physicians and nurses. Risks associated with the use of OTC medicines or side-effects may occur even if used correctly; in fact, taking OTC medicines increases the likelihood of drug-drug interactions, including interactions with alcohol [9]. Using OTC medicines may affect the individual's consistency in treatment and thus its quality of life [3]. Self-medication is a form of self-help and also an important part of individual behaviour and the perception of health maintenance [10]. It is therefore important that self-medication is designed on the basis of expert advice to the user regarding correct, safe and efficient treatment [11] and moreover, characterised by strict adherence to the instructions for the safe use of such drugs. In Slovenia, the use of OTC medicines among the adult population is widespread (84.0%), in particular among students and the economically active population; women are also more likely to take OTC medicines and vitamins and minerals than men [5]. Some authors note that OTC medicines are used more frequently by women than men, as well as the better educated population with a higher income, white men and elderly persons [12–14]. In 2008 at the University of Ljubljana, 92.8% of health care students and 91.9% of non-healthcare students undertook self-medication. Among the health care students of the University of Ljubljana, there was a significant increase in self-medication among students in the previous academic year compared to the first academic year [4]. Due to the widespread use of OTC medicines, it is important that users get appropriate and professional information on the safe use of such products for self-medicating minor health problems before taking OTC medicines. This is of particular importance since it is known that students rarely visit a physician and often purchase OTC medicines in pharmacies [4].

The aim of the study was to analyse the prevalence of the use of OTC medicines among nursing students of the Faculty of Health Science, Ljubljana, in relation to sociodemographic characteristics.

Method

The cross-sectional study included nursing students of the Faculty of Health Science, a first-cycle programme in the 2012/13 academic year. The students were not divided according to the different years of study. The respondents who attended lectures on pharmacology in the first semester of the program, were eligible for the study. Thus, the sample represents the direction of healthcare students, irrespective of secondary education. Students were informed about the purpose of the study and their anonymity was assured.

Data was collected using an anonymous questionnaire. The study was conducted from February to April 2013. The survey questionnaire was designed for the purpose of this study; the choice of questions was based on the findings of previous studies [4, 5, 15, 16]. The questionnaire included sociodemographic data, personal assessment of health status, frequency of use of prescription and non-prescription drugs, the decision to use OTC medicines, received instructions on safe use, symptoms and the decision to purchase OTC medicine. The Cronbach's alpha coefficient was used to calculate the questionnaire's consistency, with the resulting value of 0.682. A pilot study was not carried out. Instructions for filling out the questionnaire were enclosed. A total of 65.8% of the correctly filled-out questionnaires were included in the analysis.

A statistical analysis of the data was carried out using SPSS v. 20 (SPSS Inc., Chicago, Ill., USA). Descriptive statistics was calculated, *t*-test performed in order to determine differences according to gender and contingency coefficient to identify differences due to place of residence, age and current health status assessment. A p value ≤ 0.05 was considered statistically significant.

Results

The sample included 241 nursing students, aged 18 to 30 years, mean age 20.43 ± 1.67 years. Among them were 17.4% males and 82.6% females. Other sociodemographic data is de-

scribed in Table 1. The study did not find any significant differences between healthcare (Secondary Nursing School) and non-healthcare (Grammar School or Other Vocational Secondary Schools) respondents by secondary education.

Table 1

Sociodemographic characteristics of the study population (n = 241)

Variables	Participants	
	n	(%)
Gender		
men	42	(17.4)
women	199	(82.6)
Secondary education		
Secondary Nursing School	156	(64.7)
Grammar School	41	(17.0)
Other Vocational Secondary Schools	44	(18.3)
Place of residence		
countryside	130	(53.9)
suburb	44	(18.3)
city/town	67	(27.8)
Age (years)		
18–20	153	(63.5)
21–30	88	(36.5)

Less than half of the respondents (45.6%) assessed their current health status as very good, 24.1% as good and 20.3% as excellent (Table 2). The average value of health assessment from 1 to 5 was 3.74 (SD = 0.97), which mean a tendency towards very good health. Men assessed their health status better than women ($p = 0.050$). No significant differences in assessing the health status by place of residence and age was observed.

In the previous year, 70.5% respondents visited their physician due to health problems that was statistically significant for those who rated their health as poor or satisfactory ($p = 0.011$).

In the previous month, 57.7% of the respondents had not been treated with prescription drugs; 31.1% had been treated using one prescription drug, and 7.5% with two different prescription drugs (Table 3). In the previous month, more women than men ($p = 0.029$), more of those who lived in rural areas and in the suburbs ($p = 0.005$) and those who assessed their health status as worse ($p = 0.008$) had administered prescription drugs. The use of several prescription drugs

Table 2

Personal assessment of the current health status by participants

Assessment of the current health status	Participants		Gender		Place of residence		Age		Secondary education	
			t	*p*	CC	*p*	CC	*p*	CC	*p*
	n	(%)	2.177	0.050	0.191	0.328	0.152	0.223	0.191	0.336
Excellent	49	(20.3)								
Very good	110	(45.6)								
Good	58	(24.1)								
Satisfactory	16	(6.6)								
Poor	8	(3.3)								

$p \leq 0.05$ was considered statistically significant; CC – contigency coefficient.

Table 3

Taking prescription drugs and over-the-counter (OTC) medicines by students in the previous 30 days

Variables	Participants		Gender		Place of residence		Age		Secondary education		Assessment of health	
	n	%	CC	*p*	CC	*p*	CC	*p*	CC	*p*	CC	*p*
Different prescription drugs taken in the previous month			0.207	0.029	0.289	0.005	0.106	0.600	0.171	0.512	0.346	0.008
none	139	(57.7)										
one	75	(31.1)										
two	18	(7.5)										
three	5	(2.1)										
four	4	(1.7)										
Different OTC medicines taken in the previous month (n)			0.116	0.509	0.173	0.494	0.129	0.399	0.173	0.489	0.350	0.006
none	104	(43.2)										
one	81	(33.6)										
two	36	(14.9)										
three	17	(7.1)										
four	3	(1.2)										
Different OTC medicines taken compared to two years ago (n)			0.175	0.055	0.128	0.674	0.104	0.453	0.091	0.920	0.252	0.173
a larger	21	(8.7)										
a smaller	50	(20.7)										
approximately the same	123	(51.0)										
I do not know	47	(19.5)										
OTC medicines taken compared to two years ago (frequency)			0.086	0.613	0.173	0.494	0.122	0.303	0.115	0.777	0.164	0.877
more often	25	(10.4)										
less often	50	(20.7)										
the same	122	(50.6)										
I do not know	44	(18.3)										

$p \leq 0.05$ was considered statistically significant; CC – contigency coefficient.

in the previous month correlated with the concomitant use of several OTC medicines ($p = 0.027$).

In the previous month 43.2% of the respondents used no OTC medicines, 33.6% one and 14.9% two different OTC medicines (Table 3). Respondents who had been taking several different OTC medicines in the previous month assessed their health status as worse ($p = 0.006$).

Approximately the same number of OTC medicines were taken by 51% of the respondents as they did two years ago (50.6%); 20.7% used a small number and 20.7% less often than two years ago. In the previous month, 8.7% of the respondents used a greater number of OTC medicines and 10.4% more often than two years ago. There was a trend toward statistical significance for the use of more OTC medicines in women than men in the previous month ($p = 0.055$), compared to two years ago (Table 3).

When purchasing OTC medicine, 76.3% respondents received an explanation on safe use. A total of 68.5% of the respondents decided themselves to use OTC medicines, 12.9% on the basis of physician's recommendation, 7.9% on the basis of pharmacist's recommendation and 10.8% for other reasons (Table 4). Those who assessed their health status as poor or satisfactory were more often advised to use OTC medicines by a physician or by a pharmacist compared to those who assessed their health status as good or satisfactory ($p = 0.026$).

In the previous six months, 79.3% of the respondents used OTC medicines for pain and fever relief (significantly more women than men, $p = 0.001$), 44.8% for respiratory problems (significantly more women than men, $p = 0.015$) and 41.9% of respondents for better overall health. OTC medicines for skin problems were significantly more likely to be used by respondents who lived in rural areas and suburbs ($p = 0.006$) and those for ease of psychological disorders were significantly more likely to be used by individuals of 21 years and more ($p = 0.005$) and women ($p < 0.001$); drug use for fungal infections was statistically significant for women ($p < 0.001$). Respondents who rated their health status as poor had statistically significant problems with fungal infection ($p = 0.011$), allergies ($p = 0.048$) and minor mental health issues ($p < 0.001$) and those who rated their health status as good suffered from respiratory problems ($p < 0.001$) (Table 5).

In the previous six months only 4.1% respondents had not used any OTC medicines, 34.9% used one drug, 27.0% two different drugs and 18.3% three different OTC medicines (Figure 1). The majority of the respondents (68.9%) purchased OTC medicines in the event of suffering from health problems, others (14.9%) because they had such products at their disposal before suffering from health problems and the rest (12.0%) to be safe from the possible occurrence of seasonal diseases. Given the sociodemographic information, no

Table 4

Person advising use of over-the-counter medicine

The type of person	Person		Gender		Place of Residence		Age		Secondary education		Assessment of health	
	n	(%)	t 0.941	*p* 0.350	CC 0.158	*p* 0.401	CC 0.045	*p* 0.920	CC 0.150	*p* 0.479	CC 0.296	*p* 0.026
Physician	31	(12.9)										
Pharmacist	19	(7.9)										
Own decision	165	(68.5)										
Other	26	(10.8)										

$p \leq 0.05$ was considered statistically significant; CC – contigency coefficient.

Table 5

Taking over-the-counter medicines within the previous six months to facilitate health problems

Health status			Gender		Place of residence		Age		Secondary education		Assessment of health	
	n	%	t	*p*	CC	*p*	CC	*p*	CC	*p*	CC	*p*
Pain and fever	191	(79.3)	-3.622	0.001	0.118	0.183	0.079	0.217	0.025	0.929	0.183	0.080
Respiratory problems	108	(44.8)	-2.490	0.015	0.081	0.447	0.077	0.233	0.090	0.371	0.279	0.000
Allergies	24	(10.0)	-0.745	0.459	0.135	0.106	0.051	0.431	0.118	0.182	0.196	0.048
Indigestion	49	(20.3)	-0.230	0.819	0.115	0.201	0.083	0.196	0.083	0.436	0.182	0.083
Minor mental health issues	14	(5.8)	-3.871	0.000	0.122	0.161	0.177	0.005	0.077	0.490	0.284	0.000
Fungal infections	16	(6.6)	-4.161	0.000	0.093	0.349	0.029	0.651	0.057	0.672	0.226	0.011
Skin problems	28	(11.6)	-1.163	0.249	0.200	0.006	0.205	0.001	0.138	0.097	0.168	0.136
Better general well-being	101	(41.9)	-0.552	0.583	0.074	0.514	0.089	0.165	0.043	0.801	0.190	0.062

$p \leq 0.05$ was considered statistically significant; CC – contigency coefficient.

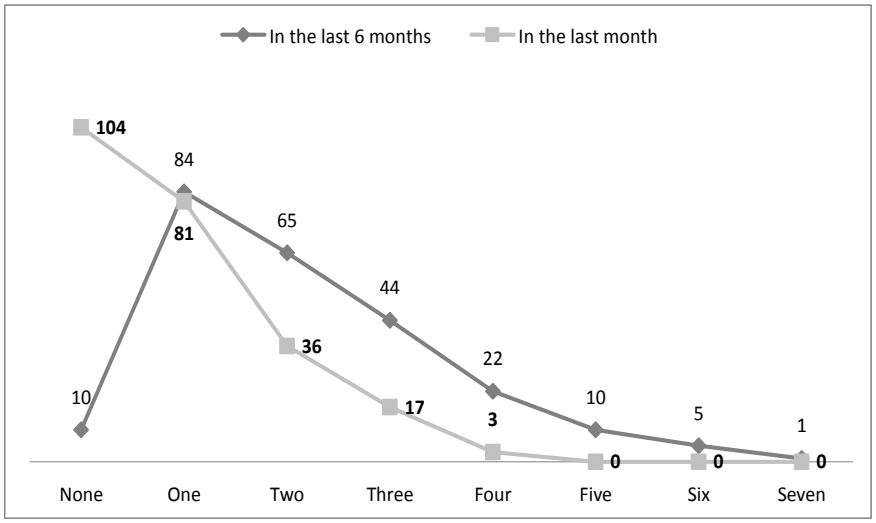

Fig. 1 – Comparison of taking different over-the-counter medicines in numbers of students.

statistically significant differences were found in the decision on when to purchase an OTC medicine.

Discussion

The results of this study suggest that 65.9% of nursing students, the average age of 20 years, assessed their health as excellent and very good, of which men assessed their health status as being better compared to women. A third of the Brazilian students assessed their health status as excellent and one in three consulted a physician in the previous year [17]. Half of Americans aged 18 years assessed their health status as excellent and very good and among them 74% of people consulted a physician [15]. In the previous year more than two-thirds of the respondents consulted a physician, among them all those who assessed their health status as worse. The link between the self-assessment of health status and using OTC medicines is well known, poorer self-perceived health status promotes the use of OTC medicines [18]. A study of self-medication and drug use among adult Slovenian showed that in 2008, 70.5% of the population aged 18 years or more had experienced health problems [5].

In the previous month, more than half of the respondents used prescription drugs and a third used one prescription drug. Among them women and people living in rural areas statistically dominated. In the previous month, 43.2% of the respondents did not take any OTC medicines and one third of the respondents used one OTC medicine. A total of 38.6% of medicine and pharmacy students of the University Zagreb used vitamins and minerals [19]. Among adult Slovenians, 84% used OTC medicines and vitamins and minerals [5]. We found that half of the respondents estimated their use of OTC medicines in the previous month at the same level as two years ago. Among adult Americans, there is a very small percentage of people who do not take drugs at all, more than a third use an OTC medicine and a third a prescription drug, with half of the people stating that their consumption of OTC medicines is about the same as three years ago [15].

An important benefit of OTC medicines is that they are intended for milder symptoms that require immediate treatment, such as an acute headache for which the immediate use of over-the-counter painkillers is recommended and their efficacy is increased if immediately consumed [20]. In case of migraine, headache treatment in the first hour since the onset of pain significantly reduces the duration and strength compared to beginning the treatment after one hour [20]. For the effective relief of symptoms, an OTC medicine consumer should ensure the safe and effective use of such products [21]. Therefore, OTC medicine consumers should receive relevant information about the product, they should be provided with a range of products so they can choose the most relevant for their health status and expressed symptoms [21]. A total of 76.3% of the respondents indicated they had been provided with clarification on the safe use of OTC medicines. Advice from pharmacists on using OTC medicines lead to better treatment outcomes [21]. A pharmacist is usually the first professional person that an individual may turn to when considering self-medication [3]. The pharmacist plays the important role in providing advice and assistance to consumers and should thus ensure that a product properly addresses the symptoms [22]. The important role is also assumed by the physician, who should be aware of the self-medication of each patient. Among many tasks a physician should provide is guidance on the safe and rational use of OTC medicines [3]. However, in our study 68.5% respondents decided themselves to use OTC medicines, 12.9% on the basis of their physician's advices, 7.5% on the basis of pharmacist's advice.

We found that physicians significantly provide advice on OTC medicines to those who assessed their health status as worse and pharmacists to those who assessed their health status as better. Taking into account the results of this study, it can be concluded that physicians and pharmacists are consistently engaged in advising consumers on the consumption of OTC medicines. Many individuals choose to use OTC medicines after consulting their physician or a pharmacist,

but their final decision is autonomus [23]. Therefore, OTC medicine consumers need to be educated for responsible self-medication and the safe use of drugs. The use of OTC medicines is useful, users describe it as easy to use, safe, convenient, at your "fingertips" and easily and quickly accessible [24]. The decision on self-medication is also based on knowledge of OTC medicines and confidence in their own abilities to undertake a proper decision [17, 23]. Brazilian health care students are more likely to opt for self-medication compared to non-health care students [17].

The study found that women are significantly more likely to use OTC medicines to relieve pain and fever, respiratory problems, fungal infections and minor mental health issues. More respondents aged 21 years or more and a statistically significant larger number of women used OTC medicines to relieve minor psychological problems; and significantly more respondents living in rural areas used OTC medicines to relieve skin problems. Women more often used OTC medicines [14], in particular painkillers, compared to men [25]. Individuals older than 30 years, employed and in a relationship are in general more inclined to self-medicate; authors indicate the male gender and having children as protection factors against self-medication [17].

The participants in this study most often purchased OTC analgesic and antipyretic drugs, drugs for respiratory problems and drugs to improve general well-being. Surprisingly, the study conducted in North Carolina in 2003 also observed the use of the same OTC medicines to treat minor health problems [26]. Even students of the University of Zagreb frequently self-medicated due to respiratory problems [19], while Brazilian students used OTC drugs for fever, menstrual cramps, muscle pain and coughs [17]. Since OTC medicines quickly and effectively help with disease problems, respondents often purchase them in the event of health problems that are already expressed.

Three important limitations of the study should be noted. The first is a small sample; as we included nursing students from only one Slovenian faculty, the results cannot be generalised to all Slovenian nursing students or the occupational group of nurses. The questionnaire did not include questions on the experience of stress and the rate thereof. Since we observed that using OTC medicines increases with age, it would be reasonable to determine the level of stress and its connection to the administration of OTC medicines. Also, the questionnaire did not include questions on taking the prescription contraceptive pill and questions about taking OTC medicines exclusively for menstrual cramps (pain, nausea).

An important finding of this study is that nursing students who used multiple prescription drugs in the previous month assessed their health status as poor and used several different OTC medicines, as well. The decrease in the number of different drugs used by respondents in the previous six months compared to the previous month was statistically significant – probably at the expense of prescription drugs or due to the implementation of the survey in the spring months. Half of the respondents used about the same number and at the same frequency of OTC medicines in the previous month as they did two years ago. This is a good indicator of the rational use of OTC medicines among nursing students; in fact, drugs are more accessible today. Self-control over the safe use of drugs and motivation for health and healthy lifestyle are of paramount importance.

Conclusion

Based on the obtained results, we can conclude that in Slovenia the safe use of drugs is ensured as most of the respondents received an explanation about the safe use of OTC medicines. We observed that men felt healthier and women were more likely to take drugs. We found that the use of OTC medicines to relieve minor psychological problems increased significantly with age and it was typical of women. Therefore, it would be worth exploring the relationship between stress and taking OTC medicines in the future.

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