NEMEDICINSKA UPOTREBA LEKOVA KOJI SE IZDAJU NA RECEPT U SRBIJI: REZULTATI NACIONALNOG ISTRAŽIVANJA O STILOVIMA ŽIVOTA - ZLOUPOTREBA SUPSTANCI I KOCKANJE

ORIGINALNI RAD   ORIGINAL ARTICLE

NON-MEDICAL PRESCRIPTION DRUG USE IN SERBIA: RESULTS FROM THE NATIONAL SURVEY ON LIFESTYLES – SUBSTANCE ABUSE AND GAMBLING

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SAŽETAK

Uvod: Nemedicinska upotreba lekova koji se izdaju na recept (engl. *non-medical prescription drug use – NMPDU*) za lekove iz grupe anksiolitika je rastući javno-zdravstveni problem. Cilj ovog istraživanja je bio da ispita učestalost upotrebe anksiolitika i faktore povezane sa nemedicinskom upotrebom ovih lekova među odraslim osobama u Srbiji.

Materijali i metode: Studija predstavlja sekundarnu analizu podataka iz Nacionalnog istraživanja o stilovima života – zloupotreba supstanci i kockanje, sprovedenog 2014. i 2018. godine, na ukupno 7.385 učesnika.

Rezultati: Učestalost upotrebe lekova iz grupe anksiolitika isključivo na recept je bila 13,5% (995/7.385), dok je učestalost nemedicinske upotrebe anksiolitika bila 5,04% (372/7.385). Multinomijalna logistička regresiona analiza je pokazala povezanost nemedicinske upotrebe lekova koji se izdaju na recept sa ženskim polom (*OR*: 3,23), sa starošću između 35 i 44 godine (*OR*: 1,91), 45 i 54 godine (*OR*: 2,40) ili sa starošću između 55 i 64 godine (*OR*: 2,97), sa lošim (*OR*: 2,40) ili prosečnim zdravstvenim stanjem (*OR*: 1,67), pušenjem (*OR*: 1,62), umerenim (*OR*: 2,35) ili visokim rizikom za psihološki distres (*OR*: 4,56), te niskim/umerenim rizikom za razvoj patološkog kockanja (*OR*: 1,86).

Zaključak: Postoji jasna potreba za uključivanjem zdravstvenih radnika i medija u edukaciju pacijenata o rizicima samomedikacije, razmene ili nelegalne kupovine ovih lekova.

Ključne reči: *NMPDU*, anskiolitici, Srbija, faktori

ABSTRACT

Background: Non-medical prescription drug use (NMPDU) of anti-anxiety medications is a growing public health concern. The aim of this study was to examine the prevalence of the use of anti-anxiety medications, as well as the factors associated with the NMPDU of these medications among adults in Serbia.

Materials and methods: The study is a secondary analysis of the data from the National Survey on Lifestyles in Serbia – Substance Abuse and Gambling, conducted in 2014 and 2018, with 7,385 participants.

Results: The prevalence of prescription only use of anti-anxiety medications was 13.5% (995/7,385), while the prevalence of the non-medical prescription drug use was 5.04% (372/7,385). Multinomial logistic regression analysis showed an association between non-medical prescription use of anti-anxiety medications and the female sex (OR: 3.23), the age between 35 and 44 years (OR: 1.91), the age between 45 and 54 years (OR: 2.40), or the age between 55 and 64 years (OR: 2.97), reporting a low (OR: 2.40) or average (OR:1.67) satisfaction with health status, being a smoker (OR: 1.62), having moderate (OR: 2.35) or high (OR: 4.56) psychological distress, and having a low/moderate risk for pathological gambling (OR: 1.86).

Conclusion: There is a clear need for the inclusion of health care professionals and media in the education of patients on the risks of self-medication, medication exchange, or illegal purchase of these medications.

Keywords: NMPDU, anti-anxiety medications, Serbia, factors

Terzić-Šupić Z. i sar.

NEMEDICINSKA UPOTREBA LEKOVA KOJI SE IZDAJU NA RECEPT U SRBIJI:
REZULTATI NACIONALNOG ISTRAŽIVANJA O STILOVIMA ŽIVOTA – ZLOUPOTREBA SUPSTANCI I KOCKANJE
NON-MEDICAL PRESCRIPTION DRUG USE IN SERBIA: RESULTS FROM THE NATIONAL SURVEY
ON LIFESTYLES – SUBSTANCE ABUSE AND GAMBLING

UVOD

Nemedicinska upotreba lekova koji se izdaju na recept (engl. *non-medical prescription drug use – NMP-DU*), posebno lekova protiv anksioznosti – anksiolitika, predstavlja sve veći problem širom sveta [1]. *NMPDU* se najčešće definiše kao upotreba lekova na recept na bilo koji način koji se razlikuje od uputstava lekara, uključujući tu i upotrebu lekova bez recepta izdatog na sopstveno ime, korišćenje lekova u dozama većim od prepisanih, kao i češće korišćenje lekova ili korišćenje tokom dužeg perioda nego što je prepisano [2]. Svetska zdravstvena organizacija (SZO) definiše nemedicinsku upotrebu lekova koji se izdaju na recept kao svaku upotrebu lekova na recept u obliku ili u vreme koje nije prepisano od strane lekara. *NMPDU* je dostigla epidemijske razmere u Sjedinjenim Američkim Državama (SAD) [3].

NMPDU se najčešće javlja kod opijata, zamenskih lekova za opijate i anksiolitika. Dosadašnja istraživanja su pokazala da su najčešće prepisivani lekovi iz grupe anksiolitika benzodiazepini, koji uz „Z-lekove", imaju najveću nemedicinsku upotrebu lekova koji se izdaju na recept, u ovoj grupi lekova [4]. Upotreba anksiolitika na recept i nemedicinska upotreba anksiolitika su porasle u poslednjih 10 godina, i u SAD i u Evropi [5,6]. Nacionalno istraživanje o upotrebi lekova i zdravlju je pokazalo da je skoro pola miliona Amerikanaca prijavilo nemedicinsku upotrebu anksiolitika, u 2016. godini [7], pri čemu je prevalencija među mladim odraslim osobama, starosti od 18 do 25 godina, iznosila 6,5%, u 2018. godini [8]. Izveštaji o prevalenciji nemedicinske upotrebe anksiolitika objavljeni su samo za mali broj evropskih zemalja, i ona varira između 2,8%, u Nemačkoj, i 9,2%, u Španiji, u 2016. godini, odnosno između 1%, u Nemačkoj i Velikoj Britaniji, i 4%, u Španiji, u 2017. godini [5].

Do sada objavljene studije su pokazale da su faktori povezani sa nemedicinskom upotrebom anksiolitika sledeći: starost, pol, kultura, karakteristike životnog stila i rizična ponašanja, kao i lak pristup ovim lekovima [9]. Pokazalo se da su mlađe odrasle osobe, starosti između 18 i 35 godina, kao i starije osobe i žene, pod većim rizikom od nemedicinske upotrebe sedativa i hipnotika [10]. U nekim studijama, nemedicinska upotreba anksiolitika je bila povezana sa upotrebom/zloupotrebom drugih supstanci, kao što su pušenje duvana, konzumiranje alkohola i upotreba psihoaktivnih supstanci [11]. Anksiolitici se često koriste za lečenje po sopstvenom nahođenju (samolečenje). U ovim slučajevima, lek se uzima za glavnu farmaceutsku indikaciju što isključuje uzimanje leka sa alkoholom, sa drugim lekovima ili uzimanje leka alternativnim načinom primene [12].

Prevalencija upotrebe anksiolitika u Srbiji ispitivana je u okviru različitih nacionalnih istraživanja zdravlja, i pokazalo se da varira između 13,7%, u 2000. godi-

INTRODUCTION

Non-medical prescription drug use (NMPDU), especially of anti-anxiety medications is a growing problem worldwide [1]. NMPDU is most commonly defined as the use of prescription medication in any way other than instructed by a physician, including the use of medication without having a prescription in one's own name, using medication in doses higher than prescribed, as well as using medication more frequently or for a longer period than prescribed [2]. The World Health Organization (WHO) defines NMPDU as any use of prescription medication in a form or at a time other than prescribed by a physician. NMPDU has reached epidemic proportions in the United States of America (USA) [3].

NMPDU is the most frequent for opiates, opiate substitute medications, and anti-anxiety medications. Previous studies have shown that the most frequently prescribed medications from the group of anti-anxiety medications are benzodiazepines, which, along with Z-drugs, have the highest NMPDU in this group of medications [4]. Prescription use and NMPDU of anti-anxiety medications have risen over the past 10 years, in USA and Europe [5,6]. The National Survey on Drug Use and Health has shown that almost half a million Americans reported NMPDU of these medications in 2016 [7], with the prevalence among young adults, aged 18 to 25 years, being 6.5%, in 2018 [8]. The prevalence of NMPDU of anti-anxiety medications has been reported for only a small number of European countries, varying between 2.8%, in Germany, and 9.2%, in Spain, in 2016, and between 1%, in Germany and the UK, and 4%, in Spain, in 2017 [5].

Studies published so far have shown that the factors associated with NMPDU of anti-anxiety medications are the following: age, sex, culture, lifestyle characteristics and risk behaviors, as well as easy access to these medications [9]. Young adults, aged between 18 and 35 years, elderly individuals, and women have been shown to be at a higher risk of NMPDU of sedatives and hypnotics [10]. In some studies, NMPDU of anti-anxiety medications was associated with other substance use/abuse, such as tobacco smoking, alcohol consumption, and the use of psychoactive substances [11]. Anti-anxiety medications are commonly used for self-medication. In these cases, medication is taken for the main pharmaceutical indication which excludes taking the medication with alcohol, other medications or by alternative ways of administration [12].

The prevalence of the use of anti-anxiety medications in Serbia has been examined as a part of different national health surveys, and has been shown to vary from 13.7%, in 2000, to 13.4%, in 2006, and 18.1%, in

NEMEDICINSKA UPOTREBA LEKOVA KOJI SE IZDAJU NA RECEPT U SRBIJI:
REZULTATI NACIONALNOG ISTRAŽIVANJA O STILOVIMA ŽIVOTA – ZLOUPOTREBA SUPSTANCI I KOCKANJE

NON-MEDICAL PRESCRIPTION DRUG USE IN SERBIA: RESULTS FROM THE NATIONAL SURVEY
ON LIFESTYLES – SUBSTANCE ABUSE AND GAMBLING

Terzić-Šupić Z. et al.

ni, i 13,4%, u 2006. godini, te 18,1%, u 2013. godini [13], među odraslim osobama, odnosno licima starijim od 15 godina.

Istraživanja koja su do sada sprovedena u Srbiji ispitivala su samo prevalenciju upotrebe anksiolitika, dok, prema našim saznanjima, nijedna studija do sada nije ispitivala prevalenciju nemedicinske upotrebe anksiolitika i faktore povezane sa upotrebom lekova protiv anksioznosti i nemedicinskom upotrebom anksiolitika, među odraslim licima u Srbiji. Naša studija je imala za cilj da ispita prevalenciju upotrebe lekova protiv anksioznosti i faktore povezane sa upotrebom i sa nemedicinskom upotrebom ovih lekova, među odraslim osobama u Srbiji.

MATERIJALI I METODE

Studija predstavlja sekundarnu analizu podataka iz dva nacionalna istraživanja sprovedena u Srbiji o upotrebi lekova: Nacionalno istraživanje o stilovima života – zloupotreba supstanci i kockanje 2014 i Nacionalno istraživanje o stilovima života – zloupotreba supstanci i kockanje 2018. Ukupan broj učesnika je iznosio 7.385 [14].

Populaciju uključenu u studiju činile su odrasle osobe starosti između 18 i 64 godine. Kriterijumi za isključivanje iz studije su bili sledeći: starost ispod 18 godina, lica na izdržavanju zatvorske kazne ili lica institucionalizovana na druge načine, kao što su pacijenti u bolnicama, ljudi koji žive u terapijskim zajednicama ili ustanovama socijalne zaštite, kao i beskućnici i osobe koje žive u "divljim" naseljima.

Uzorkovanje zasnovano na verovatnoći izbora proporcionalnoj veličini (engl. *probability-proportional-to-size sampling – PPS*) je primenjeno u obe studije. U prvom koraku *PPS*-a, teritorijalne jedinice su nasumično birane na osnovu verovatnoće izbora koja je bila proporcionalna veličini stanovništva. U drugom koraku, domaćinstva su nasumično odabrana u svakoj teritorijalnoj jedinici, pri čemu je nacionalni registar domaćinstava korišćen kao okvir za uzorkovanje. Treći korak je bio slučajni odabir po jednog učesnika iz svakog domaćinstva, uz korišćenje tzv. Kiš rešetki (engl. *Kish grid*). Nacionalni reprezentativni uzorak dobijen je ponderisanjem prema polu, starosti, obrazovanju, regionu i tipu naselja.

Korišćeni instrument je bio upitnik sastavljen od 158 pitanja, od kojih je 35 pitanja korišćeno za ovu studiju. Pitanja su se odnosila na socio-demografske karakteristike (10 pitanja), Keslerovu skalu psihološkog distresa – K6 (6 pitanja) [15], kockanje procenjeno Indeksom ozbiljnosti kockanja (9 pitanja) [16], upotrebu alkohola i duvana (3 pitanja), upotrebu psihoaktivnih supstanci (1 pitanje), upotrebu opijata (1 pitanje) i upotrebu anksiolitika (5 pitanja).

2013 [13] among adults, i.e., persons above the age of 15 years.

Research conducted in Serbia so far has examined only the prevalence of the use of anti-anxiety medications, while, to the best of our knowledge, no study has examined the prevalence of NMPDU of anti-anxiety medications and the factors associated with the use of anti-anxiety medications and with NMPDU of anti-anxiety medications, among the adults in Serbia. Our study aimed to examine the prevalence of the use of anti-anxiety medications and the factors associated with the use and with NMPDU of these medications, among the adults in Serbia.

MATERIALS AND METHODS

The study is a secondary analysis of the two national surveys conducted in Serbia regarding the use of medications: the National Survey on Lifestyles in Serbia 2014 – Substance Abuse and Gambling and the National Survey on Lifestyles in Serbia 2018 – Substance Abuse and Gambling. The total number of participants was 7,385 [14].

Adults aged between 18 and 64 years comprised the population included in the study. The exclusion criteria were as follows: age under 18 years, persons serving prison sentences or persons institutionalized in other ways, such as patients in hospitals, people living in therapeutic communities or in social care centers, as well as homeless persons and persons living in illegal settlements.

Probability-proportional-to-size sampling (PPS) was applied in both studies. In the first step of PPS, territorial units were randomly chosen based on the likelihood which was proportional to the population size. In the second step, households were randomly chosen in each territorial unit, with the national household registry used as a sampling frame. The third step was the random selection of one participant from each household with the use of Kish grids. The national representative sample was obtained by using weighting by sex, age, education, region, and type of settlement.

The instrument used was a questionnaire composed of 158 questions, of which 35 questions were used for this study. The questions referred to socio-demographic characteristics (10 questions), the Kessler psychological distress scale – K6 (6 questions) [15] which we refer to as the K10 and K6, were constructed from the reduced set of questions based on Item Response Theory models. The scales were subsequently validated in a two-stage clinical reappraisal survey (N = 1000 telephone screening interviews in the first stage followed by N = 153 face-to-face clinical interviews in the second stage that oversampled first-stage respondents who screened positive for emotional problems,

Terzić-Šupić Z. i sar.

NEMEDICINSKA UPOTREBA LEKOVA KOJI SE IZDAJU NA RECEPT U SRBIJI:
REZULTATI NACIONALNOG ISTRAŽIVANJA O STILOVIMA ŽIVOTA – ZLOUPOTREBA SUPSTANCI I KOCKANJE

NON-MEDICAL PRESCRIPTION DRUG USE IN SERBIA: RESULTS FROM THE NATIONAL SURVEY
ON LIFESTYLES – SUBSTANCE ABUSE AND GAMBLING

Samoprocenjeno materijalno stanje procenjivano je pomoću pitanja: „Kako biste opisali svoje materijalno stanje?" (Mogući odgovori: veoma loše, loše, prosečno, dobro, veoma dobro). Konzumenti alkohola su bili svi učesnici koji su prijavili konzumiranje alkohola tokom prethodnih 12 meseci, što je utvrđivano pitanjem: „Da li ste konzumirali neko alkoholno piće tokom prethodnih 12 meseci?" (Mogući odgovori: Da/Ne). Opijanje je definisano kao konzumiranje ukupne količine od 60 g čistog alkohola, u jednoj prilici, najmanje jedanput u prethodnih 12 meseci. (Detalji o definiciji opijanja u ovom istraživanju objavljeni su na drugom mestu) [17].

Analizirano je ukupno 13 varijabli: starosno doba, pol, godina sprovođenja istraživanja, tip prebivališta, stepen obrazovanja, bračno stanje, zaposlenost, religijska uverenja, zadovoljstvo zdravstvenim stanjem, samoprocenjeno imovinsko stanje, Keslerova skala psihološkog distresa, konzumacija alkohola, opijanje, pušački status, kockanje visokog rizika.

Podaci su predstavljeni apsolutnim brojevima i procentima. Na osnovu odgovora na pitanje: „Kada ste tokom proteklih 12 meseci koristili anksiolitike, kako ste ih nabavili?", učesnici su podeljeni u tri grupe. Prva grupa je bila sastavljena od učesnika koji su prijavili da nisu koristili anksiolitike u prethodnih 12 meseci, tzv. „grupa nekorisnika" (N = 6.018 učesnika). Druga grupa se sastojala od učesnika koji su prijavili upotrebu anksiolitika isključivo na recept (N = 995). Poslednja grupa je bila grupa učesnika koji su prijavili upotrebu ovih lekova bez recepta, tzv. „NMPDU grupa" (N = 372).

Etička komisija Instituta za javno zdravlje Srbije je odobrila Nacionalno istraživanje o stilovima života – zloupotreba supstanci i kockanje (Br. 178/1, 16. januar, 2014.).

Hi-kvadratni test je korišćen za ispitivanje razlika u karakteristikama među učesnicima u tri navedene grupe. Multinomijalni model logističke regresije uključio je sve varijable za koje se pokazalo da su značajne za vrstu upotrebe sedativa i hipnotika kao varijable ishoda, sa "bez upotrebe sedativa i hipnotika" kao referentnom grupom. Statistička analiza je rađena u softverskom paketu *Statistical Package for Social Science, SPSS 22.0.*

REZULTATI

Prevalencija upotrebe anksiolitika isključivo na recept je bila 13,5% (995/7.385), dok je prevalencija nemedicinske upotrebe lekova koji se izdaju na recept bila 5,04% (372/7.385).

Postojale su značajne razlike između polova u učestalosti upotrebe isključivo na recept i nemedicinske upotrebe lekova koji se izdaju na recept (*p* < 0,001). Među učesnicima koji su prijavili upotrebu isključivo na recept, bilo je 71,7% žena, dok je među učesnicima

gambling assessed with the Problem Gambling Severity Index (9 questions) [16] non-problem, low-risk, moderate-risk and problem gamblers, only the latter category underwent any validity testing during the scale's development, despite the fact that over 95% of gamblers fall into one of the remaining three categories. Using Canadian population data on over 25,000 gamblers, we conducted a comprehensive validity and reliability analysis of the four PGSI gambler types. The temporal stability of PGSI subtype over a 14-month interval was modest but adequate (intraclass correlation coefficient = 0.63, alcohol and tobacco use (3 questions), psychoactive substance use (1 question), opiate use (1 question), and the use of anti-anxiety medications (5 questions).

Self-perceived financial status was assessed with the question: "How would you describe your financial status?" (Possible answers: very poor, poor, average, good, very good). Alcohol consumers were all participants who reported alcohol consumption during the previous 12 months, which was determined with the question: "Did you consume any alcoholic beverages during the previous 12 months?" (Possible answers: Yes/No). Binge drinking was defined as consuming a total of 60 g of pure alcohol, on one occasion, at least once during the previous 12 months. (Details on the definition of binge drinking in this research have been published elsewhere) [17].

A total of 13 variables were analyzed: age, sex, year of survey, type of residence, education, marital status, employment status, religion, satisfaction with health status, self-perceived financial status, Kessler distress score, alcohol consumption, binge drinking, smoking status, high risk gambling.

The data are presented with absolute numbers and frequencies. Based on the answer to the question: "During the past 12 months, when you used anti-anxiety medications, how did you obtain them?", participants were divided into the three groups. The first group was composed of participants who reported no use of anti-anxiety medications in the past 12 months, i.e., the 'no use group' (N = 6,018 participants). The second group included participants who reported prescription only use (N = 995). The final group was the group with participants who reported the use of these medications without a prescription, i.e., the 'NMPDU group' (N = 372).

The ethics committee of the Institute of Public Health of Serbia approved the National Survey on Lifestyle – Substance Abuse and Gambling 2014 (No. 178/1, January 16, 2014).

The chi-square test was used to examine the differences in characteristics of the participants in the three groups. The multinomial logistic regression model in-

NEMEDICINSKA UPOTREBA LEKOVA KOJI SE IZDAJU NA RECEPT U SRBIJI:
REZULTATI NACIONALNOG ISTRAŽIVANJA O STILOVIMA ŽIVOTA − ZLOUPOTREBA SUPSTANCI I KOCKANJE

NON−MEDICAL PRESCRIPTION DRUG USE IN SERBIA: RESULTS FROM THE NATIONAL SURVEY
ON LIFESTYLES — SUBSTANCE ABUSE AND GAMBLING

Terzić-Šupić Z. et al.

koji su prijavili nemedicinsku upotrebu anksiolitika bilo 68,8% žena.

Prevalencija nemedicinske upotrebe anksiolitika je bila najveća među učesnicima starosti između 45 i 54 godine. Socio-demografske, socio-ekonomske i životne karakteristike učesnika iz sve tri grupe prikazane su u Tabeli 1.

cluded all variables which were shown to be significant in the type of sedative and hypnotics use as an outcome variable, with the 'no use of sedatives and hypnotics' as a reference group. Statistical analyses were done in the Statistical Package for Social Science, SPSS 22.0.

Tabela 1. Karakteristike učesnika sve tri grupe

Table 1. Characteristics of the participants from all three groups

Karakteristike / *Characteristics*	Ukupno / *Total* No (%)	Bez upotrebe anksiolitika / *No use of anti-anxiety medications* No (%)	Upotreba anksiolitika isključivo na recept / *Prescription only use of anti-anxiety medications* No (%)	*NMPDU* anksiolitika / *NMPDU of anti-anxiety medications* No (%)	p-vrednost / *p-value*
Pol / *Sex*					
Muški / *Male*	3,571 (48.4)	3,173 (52.7)	282 (28.2)	116 (31.2)	
Ženski / *Female*	3,814 (51.6)	2,845 (47.3)	713 (71.7)	256 (68.8)	**< 0.001**
Starosno doba / *Age*					
18 – 24 godine / *years*	1,432 (19.4)	1,360 (22.6)	27 (2.7)	45 (12.1)	
25 – 34 godine / *years*	2,299 (31.1)	2,080 (34.6)	132 (13.3)	87 (23.4)	
35 – 44 godine / *years*	1,225 (16.6)	1,005 (16.7)	149 (15.0)	71 (19.1)	
45 – 54 godine / *years*	1,107 (15.0)	787 (13.1)	226 (22.7)	94 (25.3)	
55 – 64 godine / *years*	1,322 (17.9)	786 (13.1)	461 (46.3)	75 (20.2)	**< 0.001**
Godina sprovođenja istraživanja / *Year of survey*					
2014.	5,385 (72.9)	4,402 (73.1)	732 (73.6)	251 (67.5)	
2018.	2,000 (27.1)	1,616 (26.9)	263 (26.4)	121 (32.5)	0.051
Tip prebivališta / *Type*					
Ruralni / *Rural*	3,044 (41.2)	2,498 (41.5)	410 (41.2)	136 (36.6)	
Urbani / *Urban*	4,337 (58.8)	3,516 (58.5)	585 (58.8)	236 (63.4)	0.167
Bračno stanje/partnerski status / *Relationship status*					
Neoženjen/neudata/bez partnera / *Single*	3,720 (50.4)	3,186 (52.9)	363 (36.5)	171 (46.0)	
Oženjen/udata/u dugoj vezi / *Married/ long-term relationship*	3,665 (49.6)	2,832 (47.1)	632 (63.5)	201 (54.0)	**< 0.001**
Stepen obrazovanja / *Education*					
Osnovna škola / *Primary*	1,321 (17.9)	1,031 (17.2)	251 (21.6)	75 (20.2)	
Srednja škola / *Secondary*	4,677 (63.4)	3,837 (63.8)	606 (60.9)	234 (62.9)	
Visoko i više obrazovanje / *College/Faculty*	1,380 (18.7)	1,143 (19.0)	174 (17.5)	63 (16.9)	**0.009**
Zaposlenost / *Employment status*					
Nezaposlen-a / *Unemployed*	2,245 (30.4)	1,743 (29.0)	370 (37.2)	132 (35.5)	
Zaposlen-a / *Employed*	3,426 (46.5)	2,956 (49.2)	304 (30.6)	166 (44.6)	
Student/penzioner / *Student/retired*	1,704 (23.1)	1,309 (21.8)	321 (32.3)	74 (19.9)	**< 0.001**
Religijska uverenja / *Religion*					
Religiozan-na / *Not religious*	3,088 (41.8)	2,560 (42.6)	370 (37.2)	158 (42.5)	
Nije religiozan-na / *Religious*	4,294 (58.2)	3,455 (57.4)	625 (62.8)	214 (57.5)	**0.006**
Stepen zadovoljstva zdravstvenim stanjem / *Satisfaction with health status*					
Nizak / *Low*	803 (10.9)	386 (6.4)	326 (32.8)	91 (24.5)	
Prosečan / *Average*	1,120 (15.2)	745 (12.4)	294 (29.6)	81 (21.8)	
Visok / *High*	5,459 (74.0)	4,885 (81.2)	374 (31.6)	200 (53.8)	**< 0.001**

Terzić-Šupić Z. i sar.

NEMEDICINSKA UPOTREBA LEKOVA KOJI SE IZDAJU NA RECEPT U SRBIJI:
REZULTATI NACIONALNOG ISTRAŽIVANJA O STILOVIMA ŽIVOTA – ZLOUPOTREBA SUPSTANCI I KOCKANJE

NON-MEDICAL PRESCRIPTION DRUG USE IN SERBIA: RESULTS FROM THE NATIONAL SURVEY
ON LIFESTYLES — SUBSTANCE ABUSE AND GAMBLING

Materijalno stanje domaćinstva / *Financial status of the household*					
Siromašno / *Poor*	2,826 (38.3)	2,145 (35.6)	498 (50.1)	183 (49.2)	
Prosečno / *Average*	3,765 (51.0)	3,203 (53.2)	413 (41.5)	149 (40.1)	
Dobro / *Good*	794 (10.8)	670 (11.1)	84 (8.4)	40 (10.8)	**< 0.001**
Konzumiranje alkohola / *Alcohol consumption*					
Apstinenti / *Non-consumers*	783 (10.7)	646 (10.8)	105 (10.6)	32 (8.7)	
Konzumenti alkohola / *Consumers*	6,559 (89.3)	5,340 (89.2)	884 (89.4)	335 (91.3)	0.458
Opijanje / *Binge drinking*					
Ne / *No*	6,365 (86.2)	5,099 (84.7)	947 (95.2)	319 (85.8)	
Da / *Yes*	1,020 (13.8)	919 (15.3)	48 (4.8)	53 (14.2)	**< 0.001**
Pušački status / *Smoking status*					
Nepušač / *Non-smoker*	4,422 (59.9)	3,679 (61.1)	565 (56.8)	178 (47.8)	
Pušač / *Smoker*	2,963 (40.1)	2,339 (38.9)	430 (43.2)	194 (52.2)	**< 0.001**
Psihološki distres / *Psychological distress*					
Nizak / *Low*	6,039 (81.8)	5,230 (86.9)	608 (61.1)	201 (54.0)	
Umeren / *Moderate*	991 (13.4)	632 (10.5)	256 (25.7)	103 (21.7)	
Visok / *High*	355 (4.8)	156 (2.6)	131 (13.2)	68 (18.3)	**< 0.001**
Kockanje / *Gambling*					
Ne kocka se / *No gambling*	4,186 (93.5)	3,339 (93.2)	618 (96.9)	229 (89.5)	
Malo/umereno kockanje / *Low/moderate*	258 (5.8)	222 (6.2)	15 (2.4)	21 (8.2)	
Puno / *High*	34 (0.8)	23 (0.6)	5 (0.8)	6 (2.3)	**< 0.001**

Tabela 2. Modalitet pribavljanja anksiolitika

Table 2. The modality of obtaining anti-anxiety medications

Modalitet nabavljanja anksiolitika / *The modality of obtaining anti-anxiety medications*	N	%
Nije prijavio-la upotrebu anksiolitika / *Did not report use of anti-anxiety medications*	6,012	81.4
Koristio-la anksiolitike / *Used anti-anxiety medications*	1,373	18.6
Upotreba anksiolitika isključivo na recept / *Prescription only use*	995	13.5
Lekovi kupljeni u apoteci bez recepta / *Bought medication in a pharmacy without prescription*	77	1.0
Lekovi pribavljeni od prijatelja ili članova porodice / *Obtained medication from friends or family members*	129	1.7
Lekovi nabavljeni preko interneta / *Obtained medication on the Internet*	3	0
Lekovi pribavljeni na neki drugi način / *Obtained medication in some other way*	5	0.1
Upotreba na recept + lekovi kupljeni u apoteci bez recepta / *Prescription use + bought medication in a pharmacy without prescription*	88	1.2
Upotreba na recept + lekovi pribavljeni od prijatelja ili članova porodice / *Prescription use + obtained medication from friends or family members*	36	0.5
Lekovi kupljeni u apoteci bez recepta + lekovi pribavljeni od prijatelja ili članova porodice / *Bought medication in a pharmacy without prescription + obtained medication from friends or family members*	14	0.2
Upotreba na recept + lekovi kupljeni preko interneta / *Prescription use + bought medication on the Internet*	2	0.0
Upotreba na recept + lekovi kupljeni u apoteci bez recepta + lekovi pribavljeni od prijatelja ili članova porodice / *Prescription use + bought medication in a pharmacy without prescription + obtained medication from friends or family members*	14	0.2
Lekovi kupljeni u apoteci bez recepta + lekovi pribavljeni od prijatelja ili članova porodice + lekovi pribavljeni na neki drugi način / *Bought medication in a pharmacy without prescription + obtained medication from friends or family members + obtained medication in some other way*	2	0.0
Upotreba na recept + lekovi kupljeni u apoteci bez recepta + lekovi kupljeni preko interneta + lekovi pribavljeni na neki drugi način / *Prescription use + obtained medication from friends or family members + bought medication on the Internet + obtained medication in some other way*	2	0.0

NEMEDICINSKA UPOTREBA LEKOVA KOJI SE IZDAJU NA RECEPT U SRBIJI:
REZULTATI NACIONALNOG ISTRAŽIVANJA O STILOVIMA ŽIVOTA − ZLOUPOTREBA SUPSTANCI I KOCKANJE

NON−MEDICAL PRESCRIPTION DRUG USE IN SERBIA: RESULTS FROM THE NATIONAL SURVEY
ON LIFESTYLES — SUBSTANCE ABUSE AND GAMBLING

Terzić-Šupić Z. et al.

Tabela 3. Multinomijalna logistička regresiona analiza sa tipom upotrebe anksiolitika kao varijablom ishoda

Table 3. The multinomial logistic regression analysis with the type of use of anti-anxiety medications as an outcome variable

Karakteristike / *Characteristics*	Upotreba anksiolitika isključivo na recept / *Prescription only use of anti-anxiety medications* OR (95% CI)	*NMPDU* anksiolitika / *NMPDU of anti-anxiety medications* OR (95% CI)
Pol / *Sex*		
Muški / *Male*	1.0 (referentna kategorija) / *(reference category)*	1.0 (referentna kategorija) / *(reference category)*
Ženski / *Female*	**2.85 (2.28 – 3.56)**	**3.21 (2.33 – 4.41)**
Starosno doba / *Age*		
18 – 24 godine / *18 – 24 years*	1.0 (referentna kategorija) / *(reference category)*	1.0 (referentna kategorija) / *(reference category)*
25 – 34 godine / *25 – 34 years*	**2.82 (1.67 – 4.77)**	1.14 (0.69 – 1.89)
35 – 44 godine / *35 – 44 years*	**6.46 (3.76 – 11.09)**	**1.91 (1.10 – 3.30)**
45 – 54 godine / *45 – 54 years*	**6.68 (3.88 – 11.47)**	**2.40 (1.39 – 4.13)**
55 – 64 godine / *55 – 64 years*	**16.26 (9.73 – 27.16)**	**2.97 (1.73 – 5.10)**
Bračno stanje/partnerski status / *Relationship status*		
Neoženjen/neudata/bez partnera / *Single*	1.06 (0.85 – 1.31)	1.0 (0.74 – 1.35)
Oženjen/udata/u dugoj vezi / *Married/long-term relationship*	1.0 (referentna kategorija) / *(reference category)*	1.0 (referentna kategorija) / *(reference category)*
Stepen obrazovanja / *Education*		
Osnovna škola / *Primary*	0.92 (0.67 – 1.28)	1.03 (0.67 – 1.59)
Srednja škola / *Secondary*	1.03 (0.79 – 1.34)	0.98 (0.69 – 1.38)
Visoko i više obrazovanje / *College/Faculty*	1.0 (reference category)	1.0 (referentna kategorija) / *(reference category)*
Zaposlenost / *Employment status*		
Nezaposlen-a / *Unemployed*	**0.71 (0.53 – 0.96)**	1.08 (0.70 – 1.67)
Zaposlen-a / *Employed*	0.91 (0.67 – 1.23)	1.20 (0.77 – 1.85)
Student/penzioner / *Student/retired*	1.0 (referentna kategorija) *(reference category)*	1.0 (referentna kategorija) / *(reference category)*
Religijska uverenja / *Religion*		
Religiozan-na / *Not religious*	0.90 (0.73 – 1.10)	1.04 (0.79 – 1.37)
Nije religiozan-na / *Religious*	1.0 (referentna kategorija) / *(reference category)*	1.0 (referentna kategorija) / *(reference category)*
Stepen zadovoljstva zdravstvenim stanjem / *Satisfaction with health status*		
Nizak / *Low*	**4.29 (3.22 – 5.72)**	**2.40 (1.60 – 3.61)**
Prosečan / *Average*	**2.73 (2.14 – 3.48)**	**1.67 (1.17 – 2.36)**
Visok / *High*	1.0 (referentna kategorija) / *(reference category)*	1.0 (referentna kategorija) / *(reference category)*
Materijalno stanje domaćinstva / *Financial status of the household*		
Siromašno / *Poor*	0.90 (0.62 – 1.30)	0.73 (0.46 – 1.16)
Prosečno / *Average*	0.93 (0.65 – 1.33)	0.66 (0.43 – 1.03)
Dobro / *Good*	1.0 (referentna kategorija) / *(reference category)*	1.0 (referentna kategorija) / *(reference category)*
Opijanje / *Binge drinking*		
Ne / *No*	**1.69 (1.30 – 2.53)**	0.68 (0.45 – 1.01)
Da / *Yes*	1.0 (referentna kategorija) / *(reference category)*	1.0 (referentna kategorija) / *(reference category)*
Pušački status / *Smoking status*		
Nepušač / *Non-smoker*	1.0 (reference category)	1.0 (referentna kategorija) / *(reference category)*
Pušač / *Smoker*	**1.48 (1.21 – 1.81)**	**1.62 (1.23 – 2.13)**
Psihološki distres / *Psychological distress*		
Nizak / *Low*	1.0 (referentna kategorija) / *(reference category)*	1.0 (referentna kategorija) / *(reference category)*
Umeren / *Moderate*	**2.08 (1.62 – 2.65)**	**2.35 (1.71 – 3.24)**
Visok / *High*	**3.57 (2.45 – 5.20)**	**4.56 (2.87 – 7.25)**
Kockanje / *Gambling*		
Ne kocka se / *No gambling*	1.0 (referentna kategorija) / *(reference category)*	1.0 (referentna kategorija) / *(reference category)*
Malo/umereno kockanje / *Low/moderate*	0.73 (0.40 – 1.32)	**1.86 (1.10 – 3.14)**
Puno / *High*	1.41 (0.45 – 4.35)	2.48 (0.82 – 7.52)

*Bez upotrebe anksiolitika, kao referentna kategorija / *No use of anti-anxiety medications as a reference category*

Terzić-Šupić Z. i sar.

NEMEDICINSKA UPOTREBA LEKOVA KOJI SE IZDAJU NA RECEPT U SRBIJI:
REZULTATI NACIONALNOG ISTRAŽIVANJA O STILOVIMA ŽIVOTA - ZLOUPOTREBA SUPSTANCI I KOCKANJE

NON-MEDICAL PRESCRIPTION DRUG USE IN SERBIA: RESULTS FROM THE NATIONAL SURVEY
ON LIFESTYLES – SUBSTANCE ABUSE AND GAMBLING

Većina učesnika koji su prijavili nemedicinsku upotrebu anksiolitika izjavili su da su ih nabavili od prijatelja ili člana porodice (129: 1,7%), dok je na drugom mestu kombinacija upotrebe na recept i kupovine anksiolitika u apoteci bez recepta (88; 1,2%). Modaliteti nabavljanja anksiolitika su predstavljeni u Tabeli 2.

Multinomijalna logistička regresiona analiza je pokazala da postoji povezanost između upotrebe isključivo na recept i ženskog pola (OR: 2,85, 95% CI: 2,28 – 3,56); starosti između 25 i 34 godine (OR: 2,82, 95% CI: 1,67 – 4,77), starosti između 35 i 44 godine (OR: 6,46, 95% CI: 3,76 – 11,09), starosti između 45 i 54 godine (OR: 6,68, 95% CI: 3,38 – 11,47), i starosti između 55 i 64 godine (OR: 16,26, 95% CI: 9,73 – 27,16), u poređenju sa uzrastom između 18 i 24 godine; nezaposlenosti (OR: 0,71, 95% CI: 0,53 – 0,96), u poređenju sa statusom student/penzioner; prijavljivanja niskog (OR: 4,29, 95% CI: 3,22 – 5,72) ili prosečnog (OR: 2,73, 95% CI: 2,14 – 3,48) zadovoljstva zdravstvenim stanjem; prijavljivanja da nije bilo opijanja u poslednjih 30 dana (1,69, 95% CI: 1,30 – 2,53); pušačkog statusa (OR: 1,48, 95 % CI: 1,21 – 1,81); i umerenog (OR: 2,08, 95% CI: 1,62 – 2,65) ili visokog (OR: 3,57, 95% CI: 2,45 – 5,20) stepena psihološkog distresa (Tabela 3).

Multinomijalna logistička regresiona analiza je pokazala da postoji povezanost između nemedicinske upotrebe anksiolitika i ženskog pola (OR: 3,23, 95% CI: 2,33 – 4,41); starosti između 35 i 44 godine (OR: 1,91, 95% CI: 1,10 – 3,30), starosti između 45 i 54 godine (OR: 2,40, 95% CI: 1,39 – 4,13), i starosti između 55 i 64 godine (OR: 2,97, 95% CI: 1,73 – 5,10); prijavljivanja niskog (OR: 2,40 95% CI: 1,60 – 3,61) ili prosečnog (OR: 1,67, 95% CI: 1,17 – 2,36) zadovoljstva zdravstvenim stanjem; pušačkog statusa (OR: 1,62, 95% CI: 1,23 – 2,13); umerenog (OR: 2,35, 95% CI: 1,71 – 3,24) ili visokog (OR: 4,56, 95% CI: 2,87 – 7,25) stepena psihološkog distresa; i niskog/umerenog rizika od patološkog kockanja (OR: 1,86, 95% CI: 1,20 – 3,14).

DISKUSIJA

Naša studija je pokazala da je skoro svaka četvrta odrasla osoba u Srbiji koristila anksiolitike u prethodnih 12 meseci, a jedna četvrtina njih je prijavila nemedicinsku upotrebu anksiolitika. Prevalencija nemedicinske upotrebe anksiolitika tokom života u SAD varira od 2,3% do 18% [18]. Nemedicinska upotreba anksiolitika privlači sve veću pažnju i u evropskim zemljama, a naša prevalencija je u okviru prijavljenih opsega za evropske zemlje (2,8% – 9,2%) [5] i slična je prevalenciji prijavljenoj u Ujedinjenom Kraljevstvu (5,7 %) [5].

Najčešći modalitet nabavljanja anksiolitika među pacijentima koji su prijavili nemedicinsku upotrebu ovih lekova je bio od prijatelja i članova porodice i ku-

RESULTS

The prevalence of prescription only use of anti-anxiety medications was 13.5% (995/7,385), while the prevalence of non-medical prescription drug use was 5.04% (372/7,385).

There were significant differences between the sexes in the frequency of prescription only use and non-medical prescription drug use (*p* < 0.001). Among the participants who reported prescription only use, there were 71.7% women, while among the participants who reported non-medical use of anti-anxiety medications, 68.8% were women.

The prevalence of non-medical prescription use of anti-anxiety medications was the highest among the participants aged between 45 and 54 years. The socio-demographic, socio-economic, and lifestyle characteristics of the participants from all three groups are presented in Table 1.

A majority of the participants who reported non-medical prescription use of anti-anxiety medications reported obtaining them from a friend or family member (129: 1.7%), followed by the combination of prescription use and buying the anti-anxiety medications in a pharmacy without a prescription (88; 1.2%). The modalities of obtaining anti-anxiety medications are presented in Table 2.

Multinomial logistic regression analysis showed that there was an association between prescription only use and the female sex (OR: 2.85, 95%CI: 2.28 – 3.56); the age between 25 and 34 years (OR: 2.82, 95% CI: 1.67 – 4.77), the age between 35 and 44 years (OR: 6.46, 95% CI: 3.76 – 11.09), the age between 45 and 54 years (OR: 6.68, 95%CI: 3.38 – 11.47), and the age between 55 and 64 years (OR: 16.26, 95% CI: 9.73 – 27.16), as compared to the age between 18 and 24 years; being unemployed (OR: 0.71, 95% CI: 0.53 – 0 .96), as compared to being a student/retired; reporting low (OR: 4.29, 95% CI: 3.22 – 5.72) or average (OR: 2.73, 95% CI: 2.14 – 3.48) satisfaction with health status; reporting no binge drinking in the past 30 days (1.69, 95% CI: 1.30 – 2.53); being a smoker (OR: 1.48, 95 % CI: 1.21 – 1.81); and having moderate (OR: 2.08, 95% CI: 1.62 – 2.65) or high (OR: 3.57, 95% CI: 2.45 – 5.20) psychological distress (Table 3).

Multinomial logistic regression analysis showed an association between non-medical prescription use of anti-anxiety medications and the female sex (OR: 3.23, 95% CI: 2.33 – 4.41); the age between 35 and 44 years (OR: 1.91, 95% CI: 1.10 – 3.30), the age between 45 and 54 years (OR: 2.40, 95% CI: 1.39 – 4.13), and the age between 55 and 64 years (OR: 2.97, 95% CI: 1.73 – 5.10); reporting low (OR: 2.40 95% CI: 1.60 – 3.61) or average (OR: 1.67, 95% CI: 1.17 – 2.36) satisfaction with health

NEMEDICINSKA UPOTREBA LEKOVA KOJI SE IZDAJU NA RECEPT U SRBIJI:
REZULTATI NACIONALNOG ISTRAŽIVANJA O STILOVIMA ŽIVOTA – ZLOUPOTREBA SUPSTANCI I KOCKANJE

NON-MEDICAL PRESCRIPTION DRUG USE IN SERBIA: RESULTS FROM THE NATIONAL SURVEY
ON LIFESTYLES – SUBSTANCE ABUSE AND GAMBLING

Terzić-Šupić Z. et al.

povina lekova u apoteci uz upotrebu na recept ili bez recepta. Druge studije su takođe pokazale da većina učesnika koji su imali nemedicinsku upotrebu lekova koji se izdaju na recept te lekove dobija od porodice i prijatelja, što zahteva sprovođenje populacionih edukativnih intervencija [19,20]. Internet se nije uobičajeno koristio za nabavljanje anksiolitika u našoj studiji, a samo tri učesnika su prijavila ovaj modalitet nabavke ovih lekova. Internet kupovina anksiolitika privlači sve veću pažnju u poslednjih nekoliko godina, ali kupovina preko interneta još uvek nije razvijena u Srbiji [21].

U našoj studiji, multinomijalna logistička regresiona analiza je pokazala da su žene imale više od tri puta veću verovatnoću za *NMPDU* i skoro tri puta veću verovatnoću za upotrebu lekova isključivo na recept, u poređenju sa muškarcima. Rezultati prethodnih studija u vezi sa razlikama u pogledu pola po pitanju nemedicinske upotrebe lekova koji se izdaju na recept su nedosledni, jer neke studije nisu pokazale razliku između polova, neke su pokazale veću prevalenciju među muškarcima [22], a u nekima, kao što je slučaj sa našom studijom, prevalencija je bila veća među ženama [23]. Veća verovatnoća upotrebe lekova isključivo na recept među ženama je u skladu sa rastućom zabrinutošću među istraživačima koji proučavaju upotrebu anksiolitika. Istraživači su izrazili zabrinutost zbog povećanja broja recepata koji se ženama izdaju za anksiolitike, kao i zbog dispariteta u dijagnozama anksioznih poremećaja među polovima [24]. Prekomerno prepisivanje anksiolitika može naknadno da dovede do nemedicinske upotrebe lekova koji se izdaju na recept, jer neki pacijenti ne prestaju da uzimaju prepisane lekove nakon završetka lečenja, što je razlog za zabrinutost, jer se ženama često prepisuju anksiolitici [19]. Karakteristika žena koje pribegavaju nemedicinskoj upotrebi lekova koji se izdaju na recept jeste da je najčešći razlog za to samolečenje [25].

U našoj studiji, učesnici stariji od 35 godina imali su skoro dvostruko veću verovatnoću nemedicinske upotrebe lekova koji se izdaju na recept, u poređenju sa mlađim odraslim osobama (starosti od 18 do 24 godine), a verovatnoća nemedicinske upotrebe lekova koji se izdaju na recept se povećavala sa godinama. Takođe je postojala veća verovatnoća upotrebe lekova isključivo na recept među svim starosnim grupama, u poređenju sa odraslim osobama starosti između 18 i 24 godine. Ovaj rezultat je u suprotnosti sa rezultatima prethodnih studija, jer su oni pokazali veći rizik od nemedicinske upotrebe lekova koji se izdaju na recept kod odraslih osoba mlađih od 35 godina. Međutim, ovaj nalaz ne iznenađuje, jer je očekivano da će starijim odraslim osobama češće biti prepisivani anksiolitici, što kasnije dovodi do kontinuiranog lečenja ovim

status; being a smoker (OR: 1.62, 95% CI: 1.23 – 2.13); having moderate (OR: 2.35, 95% CI: 1.71 – 3.24) or high (OR: 4.56, 95% CI: 2.87 – 7.25) psychological distress; and having a low/moderate risk of pathological gambling (OR: 1.86, 95% CI: 1.20 – 3.14).

DISCUSSION

Our study showed that almost one in four adults in Serbia used anti-anxiety medications in the past 12 months, and one-quarter of them reported NMPDU. The lifetime prevalence of NMPDU of anti-anxiety medications in the USA varies from 2.3% to 18% [18]. NMPDU of anti-anxiety medications has received increasing attention in European countries as well, and our prevalence is within the reported range for European countries (2.8% – 9.2%) [5] and is similar to the prevalence reported in the United Kingdom (5.7%) [5].

The most common modality for obtaining anti-anxiety medications among patients with NMPDU was from friends and family members and buying medication in a pharmacy along with prescription use, or without prescription use. Other studies have also shown that a majority of NMPD users obtain medication from family and friends, which calls for the implementation of population educational interventions [19,20]. The Internet was not commonly used for obtaining anti-anxiety medications in our study, and only three participants reported this modality of acquiring these medications. Internet purchase of anti-anxiety medications has received increasing attention in the past few years, but online purchasing is still not developed in Serbia [21].

In our study, multinomial logistic regression analysis showed that women had more than a three times higher likelihood for NMPDU and almost a three times higher likelihood for prescription only use, as compared to men. The results from previous studies related to the differences regarding sex in NMPDU are inconsistent, as some have shown no difference between the sexes, some have shown a higher prevalence among men [22], and in some, as is the case with our study, the prevalence was higher among women [23] 837 individuals, aged 12 to 64 year, completed anonymously a computer-assisted self-interview. Past-year prescription drug use was divided into medical use only (MUO. The higher likelihood of prescription only use among women is in keeping with the growing concern among researchers studying anti-anxiety medication use. Researchers have expressed concerns about the increase in the number of prescriptions issued to women for anti-anxiety medications, as well as about the disparity in the diagnoses of anxiety disorders among sexes [24]. The overprescribing of anti-anxiety medications can

Terzić-Šupić Z. i sar.

NEMEDICINSKA UPOTREBA LEKOVA KOJI SE IZDAJU NA RECEPT U SRBIJI:
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ON LIFESTYLES – SUBSTANCE ABUSE AND GAMBLING

lekovima i nemedicinske upotrebe lekova koji se izdaju na recept [19]. Pored toga, Srbija je prošla kroz međunarodne sankcije, embargo i rat tokom 1990-ih, što je sve moglo da utiče na mentalno zdravlje stanovništva starijeg od 35 godina u vreme našeg istraživanja. Mnogima su anksiolitici prepisani tokom 1990-ih, te su možda nastavili da ih koriste bez recepta.

Nije bilo značajne povezanosti između statusa zaposlenja i nemedicinske upotrebe lekova koji se izdaju na recept, ali smo pronašli značajnu povezanost između statusa zaposlenja i upotrebe lekova isključivo na recept. Nezaposleni učesnici su imali manju verovatnoću da koriste lekove isključivo na recept, u našoj studiji. U prethodnim studijama se nezaposlenost pokazala kao štetan faktor za mentalno zdravlje [26], dok se pokazalo da zaposleni pojedinci imaju veću socijalnu podršku i manje su izloženi stresu [26]. Multinomijalna logistička regresiona analiza nije pokazala nikakvu značajnu povezanost između upotrebe lekova isključivo na recept ili nemedicinske upotrebe lekova koji se izdaju na recept i religioznosti. Prethodne studije su pronašle povezanost između religioznosti i manje upotrebe psihoaktivnih supstanci, odnosno lekova [27].

U našoj studiji, pušači su imali skoro dva puta veću verovatnoću da prijave nemedicinsku upotrebu lekova koji se izdaju na recept u prethodnoj godini, u poređenju sa onima koji nisu koristili anksiolitike, što je takođe prethodno prijavljeno [19]. Prethodno prijavljena povezanost sa lošim mentalnim zdravljem [19] je dokazana i u našoj studiji, pošto su učesnici iz *NMPDU* grupe imali više nego dva puta veću verovatnoću umerenog psihološkog distresa i skoro pet puta veću verovatnoću visokog psihološkog distresa. Ovi nalazi podržavaju pretpostavku da se anksiolitici često koriste za samolečenje percipiranih psihičkih problema [19].

Učesnici naše studije koji su koristili anksiolitike isključivo na recept imali su manju verovatnoću opijanja, dok veza između nemedicinske upotrebe lekova koji se izdaju na recept i konzumiranja alkohola i prekomernog opijanja nije bila značajna, što bi takođe moglo da ide u prilog pretpostavci da je *NMPDU* među opštom populacijom Srbije povezana sa samolečenjem, a ne sa težnjom da se postigne stanje euforije, odnosno da se ostvare neterapeutski efekti anksiolitika. Povezanost između kockanja i upotrebe sedativa je dokazana za adolescente [28], dok je naša studija pokazala povezanost između niskog/umerenog kockanja i nemedicinske upotrebe lekova koji se izdaju na recept. Poremećaji raspoloženja i anksiozni poremećaji povezani su sa problematičnim kockanjem i pokazalo se da predviđaju buduće problematično kockanje. Povezanost između upotrebe lekova isključivo na recept i kockanja visokog rizika može da potvrdi vezu sa postojećim psi-

subsequently lead to NMPDU, as some patients do not stop taking the medication prescribed after the end of treatment, which is a cause for concern, as women are often prescribed anti-anxiety medications [19]. The characteristic of female NMPD users is that the most common reason for NMPDU is self-medication [25].

In our study, participants older than 35 years had almost a twice higher likelihood of NMPDU, as compared to younger adults (aged 18 to 24 years), and the likelihood of NMPDU increased with age. There was also a higher likelihood of prescription only use among all age groups, as compared to the adults aged 18 to 24 years. This result is in contrast with the results from previous studies, as they showed a higher risk of NMPDU among adults younger than 35 years. However, this finding is not surprising, as it is to be expected that older adults are more likely to be prescribed anti-anxiety medications, which later leads to continuous treatment with these medications and NMPDU [19]. Additionally, Serbia went through international sanctions, embargo, and war during the 1990s, all of which may have influenced the mental health of the population that was over 35 years of age at the time of our study. Many were prescribed anti-anxiety medications during the 1990s and may have just continued using them without a prescription.

There was no significant association between employment status and NMPDU, but we found a significant association between employment status and prescription only use. Unemployed participants had a lower likelihood of prescription only use in our study. Previously, unemployment was shown as a detrimental factor for mental well-being [26] the psychological mechanisms involved are not very clear. This study examines the roles of social support and coping strategies as mediators of the association between employment status and mental health, as well as gender and age differences as moderators. Residents from the epidemiological catchment area of southwest Montreal responded to a randomized household survey for adults in 2009. A follow-up was conducted based on participants' employment status 2 and 4 years later. ANOVAs tests were computed with SPSS to evaluate group differences, and structural equation modeling was performed with AMOS to test mediation effects. At baseline, among participants between 18 and 64 years old (n = 2325, while employed individuals were reported to have more social support and less exposure to distress [26] the psychological mechanisms involved are not very clear. This study examines the roles of social support and coping strategies as mediators of the association between employment status and mental health, as well as gender and age differences as mod-

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NON-MEDICAL PRESCRIPTION DRUG USE IN SERBIA: RESULTS FROM THE NATIONAL SURVEY
ON LIFESTYLES — SUBSTANCE ABUSE AND GAMBLING

Terzić-Šupić Z. et al.

hijatrijskim komorbiditetima, predviđajući problem sa kockanjem i usmeravajući mere prevencije [29].

Jedno od ograničenja ove studije jeste da je u pitanju studija preseka koja ne omogućava uspostavljanje uzročno-posledičnih veza. Nismo imali podatke o učestalosti ili dozi korišćenih anksiolitika, bilo za propisane lekove bilo za nemedicinsku upotrebu ovih lekova, što bi omogućilo bolje razumevanje komplijanse. Podaci su dobijeni od samih učesnika i možda je postojala greška uzrokovana sećanjem ispitanika (engl. *recall bias*). Iako je studija bila anonimna, moguće je da su učesnici davali društveno prihvatljive odgovore, što bi smanjilo prevalenciju nemedicinske upotrebe lekova koji se izdaju na recept. Drugo ograničenje može biti to što nismo uključili pitanja za procenu moguće zloupotrebe sopstvenog recepta za lek, što je možda potcenilo prevalenciju nemedicinske upotrebe lekova koji se izdaju na recept u našem uzorku. Takođe, nismo uključili osobe u zatvorima, ili osobe koje su institucionalizovane na druge načine, kao što su pacijenti u bolnicama, ljudi koji žive u terapijskim zajednicama, ili u ustanovama socijalne zaštite, kao ni beskućnike i lica koja žive u „divljim" naseljima, a koja mogu nositi povećani rizik za nemedicinsku upotrebu lekova koji se izdaju na recept. Ipak, čini se da je ovo, prema našim saznanjima, prva studija o nemedicinskoj upotrebi anksiolitika na velikom, nacionalno reprezentativnom uzorku odraslih osoba u Srbiji, i prva koja ispituje faktore povezane sa tim.

ZAKLJUČAK

Naša studija je pokazala da je jedna od dvadeset odraslih osoba u Srbiji prijavila nemedicinsku upotrebu anksiolitika tokom prethodnih 12 meseci i da se ti lekovi najčešće nabavljaju preko prijatelja ili članova porodice. Prevalencija nemedicinske upotrebe anksiolitika i modaliteti nabavke ovih lekova sugerišu da postoji potreba za uključivanjem zdravstvenih radnika i medija u edukaciju pacijenata o rizicima samolečenja, razmene ili nelegalne kupovine ovih lekova. Hitno je potrebno unapređenje sistema praćenja izdavanja recepta, a posebno distribucije anksiolitika.

Izjava o nepostojanju sukoba interesa

Autori izjavljuju da ne postoji sukob interesa.

Izjava autora o originalnosti rada

Ovaj rad nije delimično ili u celini objavljen, poslat ili prihvaćen za štampu u drugom časopisu.

Izjave zahvalnosti

erators. Residents from the epidemiological catchment area of southwest Montreal responded to a randomized household survey for adults in 2009. A follow-up was conducted based on participants' employment status 2 and 4 years later. ANOVAs tests were computed with SPSS to evaluate group differences, and structural equation modeling was performed with AMOS to test mediation effects. At baseline, among participants between 18 and 64 years old (n = 2325. Multinomial logistic regression analysis did not show any significant association between prescription only use or NMPDU and religiousness. Previous studies have found an association between being religious and lower substance use [27]we question whether religious culture impacts the veracity of self-reported substance use. The primary aim of this study of low-income pregnant women in South Central Appalachia was to determine the accuracy of self-reported substance use in pregnant women as well as to determine whether there were differences in use rates and/or differences in the degree to which women would accurately report substance use depending on their religiousness. Self-reported use and toxicology screening results taken from a larger prospective, longitudinal, smoking cessation study were compared for five substances (cannabinoids [marijuana or other cannabinoids], benz/barb/sed [including benzodiazepines, barbiturates, or any sedative], opioids [including heroin, methadone or other medication-assisted treatment medications, or other opiates], crack/cocaine [crack or cocaine], and meth/amph [including methamphetamine or any other amphetamine].

In our study, smokers had an almost two times higher likelihood of reporting NMPDU in the previous year, as compared to those who did not use anti-anxiety medications, which has also been reported previously [19]. The previously reported association with poor mental health [19] was proven in our study as well, as participants from the NMPDU group had more than a two times higher likelihood of moderate psychological distress and an almost five times higher likelihood of high psychological distress. These findings support the assumption that anti-anxiety medications are often used for self-medicating of perceived mental health problems [19].

Prescription only users of anti-anxiety medications in our study had a lower likelihood of binge drinking, while the association between NMPDU and alcohol consumption and binge drinking was not significant, which might also support the assumption that NMPDU among the general population of Serbia is associated with self-medication rather than with euphoria seeking or non-therapeutic effects of anti-anxiety

Terzić-Šupić Z. i sar.

NEMEDICINSKA UPOTREBA LEKOVA KOJI SE IZDAJU NA RECEPT U SRBIJI:
REZULTATI NACIONALNOG ISTRAŽIVANJA O STILOVIMA ŽIVOTA – ZLOUPOTREBA SUPSTANCI I KOCKANJE

NON-MEDICAL PRESCRIPTION DRUG USE IN SERBIA: RESULTS FROM THE NATIONAL SURVEY
ON LIFESTYLES – SUBSTANCE ABUSE AND GAMBLING

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medications. The association between gambling and sedative use was proven for adolescents [28], while our study showed the association between low/moderate gambling and NMPDU. Mood disorders and anxiety disorders are associated with problem gambling and were shown to predict future problem gambling. The association between prescription only use and high-risk gambling can support the relationship with existing psychiatric comorbidities, predicting the gambling problem and directing prevention efforts [29].

One of the limitations of this study is its cross-sectional design as it does not allow the establishing of causal relationships. We did not have the data on the frequency or dose of anti-anxiety medications used, either for prescribed medications or for NMPDU, which would have allowed a better understanding of the dose-response relationship. The data were self-reported, and there might have been a recall bias. Although the study was anonymous, participants might have given socially acceptable answers, which would have lowered the prevalence of NMPDU. Another limitation may be that we did not include the questions to assess the possible misuse of one's own prescription, which may have underestimated the prevalence of NMPDU in our sample. Also, we did not include people in prisons, or persons institutionalized in other ways, such as patients in hospitals, people living in therapeutic communities, or in social care centers, as well as homeless persons and persons living in illegal settlements, who may be at higher risk of NMPDU. Nevertheless, this seems, to the best of our knowledge, to be the first study on NMPDU of anti-anxiety medications on a large, nationally representative sample of adults in Serbia, and the first to examine the factors associated with it.

CONCLUSION

Our study showed that one out of twenty adults in Serbia reported NMPDU of anti-anxiety medications during the previous 12 months and that these medications were most commonly obtained through friends or family members. The prevalence of NMPDU of anti-anxiety medications and the modalities of obtaining these medications suggest that there is a need for including health care professionals and media in the education of patients regarding the risks of self-medication, medication exchange or illegal purchase of these medications. Improvement of the system for monitoring the prescription and especially the distribution of anti-anxiety medications is urgently needed.

Declaration of interest

Authors declare no conflict of interest.

NEMEDICINSKA UPOTREBA LEKOVA KOJI SE IZDAJU NA RECEPT U SRBIJI:
REZULTATI NACIONALNOG ISTRAŽIVANJA O STILOVIMA ŽIVOTA − ZLOUPOTREBA SUPSTANCI I KOCKANJE

NON−MEDICAL PRESCRIPTION DRUG USE IN SERBIA: RESULTS FROM THE NATIONAL SURVEY
ON LIFESTYLES — SUBSTANCE ABUSE AND GAMBLING

Terzić-Šupić Z. et al.

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