

CHANGES IN THE USE OF ALCOHOL AND TOBACCO IN SLOVENIA DURING THE FIRST WAVE OF THE SARS-COV-2 PANDEMIC

SPREMEMBE V RABI ALKOHOLA IN TOBAKA V SLOVENIJI

MED 1. VALOM PANDEMIJE SARS-COV-2

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ABSTRACT

Keywords:

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Background: In the first months of 2020, the SARS-CoV-2 virus spread all over the world and numerous measures were adopted that had a strong impact on both personal and public life. This contribution explores changes in alcohol and tobacco use during the first months of the COVID-19 pandemic in Slovenia.

Methods: Self-reported changes in alcohol and tobacco use during the first few months of the Covid-19 pandemic were recorded in 495 Slovenian adults, as part of the European Alcohol Use and COVID-19 survey.

Results: About half of the Slovenian sample indicated that the frequency of drinking occasions did not change in the months after the pandemic's outbreak, while the remainder stated either a decrease (26.0%) or an increase (24.2%). 23.1% reported a decrease and 17.3% an increase in the quantity of alcohol consumed per occasion. Respondents who reported that their overall alcohol consumption decreased were more likely to be male than female and more likely to be younger than middle-aged. Those who reported experiencing at least a substantial level of distress due to financial loss were at a four-times increased risk of reporting an increase in their alcohol consumption compared to individuals who reported no or only some financial distress. Of the 120 people reporting the use of tobacco, almost half indicated an increase in tobacco consumption within the previous month, and about 20% reported a decrease in use. The differences in the results between Slovenia and other European countries are small and the overall pattern suggests that the situation in Slovenia was comparable to other European countries.

Conclusion: As this pandemic continues to evolve, further monitoring is needed to identify the long-term effects of alcohol and tobacco use on public health in relation to the management of COVID-19.

IZVLEČEK

Ključne besede:

pitje alkohola,
kajenje tobaka,
pandemija COVID-19,
finančna stiska

Ozadje raziskave: V prvih mesecih leta 2020 se je po svetu začela širiti pandemija COVID-19. Posledično so države sprejemale različne ukrepe za njeno zajezitev, ki so pomembno vplivali na javno in zasebno sfero. V prispevku smo raziskali spremembe v pitju alkohola in rabi tobaka v prvih mesecih pandemije COVID-19 v Sloveniji.

Metode: V vseevropsko anketno raziskavo o rabi alkohola v prvih mesecih pandemije COVID-19, ki je bila izvedena v 21 državah z namenom pridobiti podatke o morebitnih spremembah v pitju alkohola in rabi tobaka, je bilo vključenih 495 odraslih prebivalcev Slovenije.

Rezultati: Približno polovica anketirancev iz Slovenije je poročala, da se v preteklem mesecu pogostost pivskih priložnosti pri njih ni spremenila, 26,0% jih je poročalo o zmanjšanju, 24,2% pa o porastu. 23,1% anketirancev je poročalo o zmanjšanju popite količine alkohola ob posamezni pivski priložnosti, 17,3% pa o porastu. Anketiranci, ki so poročali, da se je njihova celokupna poraba alkohola zmanjšala, so bili verjetneje moškega spola in mlajši. Posamezniki, ki so poročali o precejšnjih stiskah zaradi finančnih izgub, so imeli 4-krat višje tveganje za porast pitja alkohola kot tisti, ki so poročali o blažjih stiskah ali odsotnosti teh. Od 120 anketirancev, ki so se opredelili kot kadilci, jih je skoraj polovica poročala o povišani rabi tobaka v preteklem mesecu, 20% pa jih je poročalo o nižji porabi. Razlike v rezultatih med Slovenijo in drugimi evropskimi državami so majhne, primerjava je pokazala, da je bilo stanje v Sloveniji primerljivo z drugimi evropskimi državami.

Zaključek: Za oceno dolgoročnih posledic rabe alkohola in tobaka v času epidemije SARS-CoV-2 na javno zdravje potrebujemo nadaljnje spremljanje in oceno problema v luči razvoja pandemije ter z njo povezanih stisk in ukrepov.

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1 INTRODUCTION

In the first months of 2020, SARS-CoV-2 spread all over the world (henceforth: COVID-19 pandemic). Slovenia declared an epidemic on 13 March 2020. Numerous measures were adopted and national lockdown was applied (1). These measures had a strong impact on personal and public life with potential implications for individual health (2-4). Elevated levels of psychological distress have been linked to changes in tobacco and alcohol use (5, 6). With regard to alcohol, various studies suggest that some people have tended to increase their drinking during the COVID-19 pandemic, particularly among already frequent and heavy drinkers (6-9). The researchers argue that elevated exposure to stress might have led to an increase in alcohol consumption (4, 8-11). This hypothesized distress mechanism can be explained by considering alcohol use as a maladaptive coping strategy to manage psychological distress arising from an interplay of social isolation, insecurity, and financial difficulties (11, 12). It is likely that the same mechanism influences tobacco use (6, 13, 14).

On the other hand, alcohol use may decline due to its limited availability. Evidence supporting this hypothesis can be derived from research on alcohol control policies and economic crises (11, 15). In the short run the use of alcohol may decrease; however, long-term alcohol use and its consequences may increase, due to the negative effects of alcohol use on mental health and lower access to treatment services and other sources of help during lockdown (16, 17).

Mapping the changes in substance use is important and can reveal the response of the general population in times of heightened stress, and may, therefore, be of valuable help to provide much needed information for targeted preventive actions during the new waves of possible lockdowns (6). The aim of our study was to examine possible changes in alcohol and tobacco use during the first wave of the COVID-19 pandemic in Slovenia in comparison to changes in other European countries.

2 METHODS

The European Alcohol Use and COVID-19 survey, which also included a section on tobacco use, was carried out between 24 April and 22 July 2020 (in Slovenia from 14 May to 30 June 2020). The survey was originally developed in English, and then translated into 20 languages including Slovenian and disseminated in 21 European countries, using convenience sampling. Prerequisites for participation were a minimum age of 18 years and prior consent. The survey was distributed through social media and postings on institutional websites. (4, 18). Further information on the study design can be found in the study protocol and materials that are publicly available (including the complete questionnaires) (19).

To assess changes in alcohol use, respondents were asked whether the frequency of alcohol drinking occasions, the quantity of alcohol consumed per occasion, and the frequency of heavy episodic drinking (HED) events changed during the previous month. The three variables capturing changes in alcohol use were added up and rescaled in order to obtain an aggregated consumption-change indicator (range: -1 to +1), with negative values indicating a decrease, zero no change, and positive an increase in alcohol use. Additionally, alcohol consumption during the previous 12 months was assessed using the short version of the Alcohol Use Identification Test (AUDIT-C) (20). For tobacco use, respondents were asked "Have you smoked less or more often in the past month?" Participants had the option to indicate that their use of alcohol or tobacco had substantially decreased, slightly decreased, slightly increased, substantially increased, or remained unchanged. Financial distress was evaluated using the item "In the past month, have you experienced any negative consequences concerning your occupational or financial situation in relation to the spread of SARS-CoV-2?" Changes in day-to-day life were captured using a similar question ("In the past month, have you experience any restrictions of your everyday life as a result of measures implemented to contain the spread of SARS-CoV-2?") Distress experiences could be answered on a 4-point Likert scale ('not at all' to 'a very high degree').

In order to adjust the sample to the population distribution according to gender, age group, and education, a post-stratification weighting procedure was applied (for details, see reference) (21). For the descriptive statistics, unweighted and weighted frequencies of the variables of interest were calculated for both Slovenia and the remaining European countries (Albania, Czech, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Poland, Portugal, Norway, Russia, Slovakia, Spain, Sweden, Ukraine, United Kingdom). Additionally, we calculated the weighted mean consumption-change scores for both samples (Slovenia vs. remaining European countries), stratified for key variables (gender: women, men; age: 18-34, 35-54, 55+ years; education: lower than high school, at least high school; size of place of residence: urban, rural area; income group: <1,999 EUR, 2,000 - 3,999 EUR, ≥4,000 EUR per month; change in income: decrease, no change, increase, I do not know; changes in day-to-day life: no or to some degree, to a substantial degree; distress due to financial loss: no or to some degree, to a substantial degree; drinking pattern: low risk, high risk). High-risk drinking was determined by an AUDIT-C sum score ≥8. Additionally, we ran two separate multinomial regressions among alcohol and tobacco users to investigate systematic variations in overall changes in alcohol and tobacco use (dependent variables with three levels: decrease, no change, increase). Independent variables were gender, age group, changes in day-to-day life, and distress due

to financial loss. Sample weights were considered and the multinomial regression model was adjusted for the AUDIT-C (21). Statistical analysis was conducted in Stata 15.1 (22).

3 RESULTS

In total, 40,064 people from 21 European countries took part in the survey (completion rate: 75.2%), 563 from Slovenia. Among those who completed the survey, we excluded respondents with missing information on key variables (Slovenia: 12.4%, Europe: 11.7%). The final analytical sample included 495 respondents from Slovenia and 34,957 from other European countries (Table 1).

About half of the sample indicated that the frequency of drinking occasions had not changed in recent months, while the remainder reported either a decrease (26.0%, 95% confidence interval (CI): 19.2, 34.2) or an increase (24.2%, 95% CI: 17.2, 33.0) in their drinking frequency (Figure 1). The proportion of people that reported no change in the quantity of alcohol consumed per occasion and the frequency of HED events was about 60%, with more people reporting that the quantity as well as the frequency of HED events decreased (quantity: 23.1%, 95% CI: 16.6, 31.1; frequency of HED: 29.7%, 95% CI: 22.1, 38.5) compared to those reporting an increase (quantity: 17.3%, 95% CI: 11.1, 25.8; frequency of HED: 10.3%, 95% CI: 5.7, 17.9). Of 120 tobacco users, 49.2% indicated an increase in tobacco use in the past month (total sample:

Table 1. Descriptive statistics of respondents from Slovenia and the remaining European countries.

	Mean response		European countries	
	N	weighted % (95% CI)	N	weighted % (95% CI)
Sex				
Female	363	47.2 (39.1, 55.4)	24,368	50.5 (48.6, 52.3)
Male	130	52.0 (43.7, 60.1)	10,488	49.0 (47.2, 50.8)
Other	2	0.9 (0.1, 5.5)	101	0.5 (0.3, 0.9)
Age group				
18-34	125	23.6 (17.8, 30.4)	11,818	30.6 (28.9, 32.3)
35-54	267	42.3 (34.5, 50.5)	16,938	43.9 (42.1, 45.8)
55+	103	34.1 (26.0, 43.4)	6,201	25.5 (24.0, 27.1)
Education				
Lower than high school	83	70.5 (64.9, 75.6)	10,586	55.0 (53.2, 56.8)
At least high school	412	29.5 (24.4, 35.1)	24,371	45.0 (43.2, 46.8)
Size of place of residence				
Rural areas	188	43.7 (35.5, 52.3)	6,209	12.6 (11.4, 13.9)
Urban areas	307	56.3 (47.7, 64.5)	28,748	87.4 (86.1, 88.6)
Personal income				
Low	182	45.2 (37.0, 53.6)	7,573	52.3 (50.5, 54.1)
Middle	252	46.4 (38.2, 54.7)	11,898	34.1 (32.5, 35.8)
High	61	8.5 (5.3, 13.2)	15,486	13.6 (12.6, 14.6)
Change in income				
I do not know	8	3.8 (1.3, 10.7)	327	1.4 (1.0, 1.8)
Increase	61	12.5 (8.3, 18.3)	2,697	8.8 (7.9, 9.9)
No change	230	43.2 (35.2, 51.6)	23,136	53.7 (51.9, 55.6)
Decrease	196	40.5 (32.5, 48.9)	8,797	36.1 (34.3, 37.9)
Change in day-to-day life				
No or only to some degree	164	43.9 (35.7, 52.4)	8,292	28.6 (26.8, 30.4)
At least to a substantial degree	331	56.1 (47.6, 64.3)	26,665	71.4 (69.6, 73.2)
Distress due to financial loss				
No or only to some degree	397	77.1 (68.9, 83.6)	27,435	74.4 (72.8, 76.0)
At least to a substantial degree	98	22.9 (16.4, 31.1)	7,522	25.6 (24.0, 27.2)
Drinking status (past-year)				
Abstainer	54	15.2 (9.5, 23.6)	3,550	16.5 (15.1, 18.0)
Drinker	441	84.8 (76.4, 90.5)	31,407	83.5 (82.0, 84.9)
AUDIT-C sum score*				
Low risk drinker	415	89.0 (80.9, 93.9)	27,811	81.8 (80.1, 83.3)
High risk drinker	26	11.0 (6.1, 19.1)	3,596	18.2 (16.7, 19.9)

*only among alcohol users, Slovenia: N=441, Europe: N=31,407; high-risk drinker: AUDIT-C sum score \geq 8.

15.3%, 95% CI: 9.8, 23.0), 18.3% reported a decrease (total sample: 5.2%, 95% CI: 2.7, 10.0), and 32.5% no change (total sample: 10.5%, 95% CI: 6.1, 17.6), comparable to the remaining European countries (Figure 1).

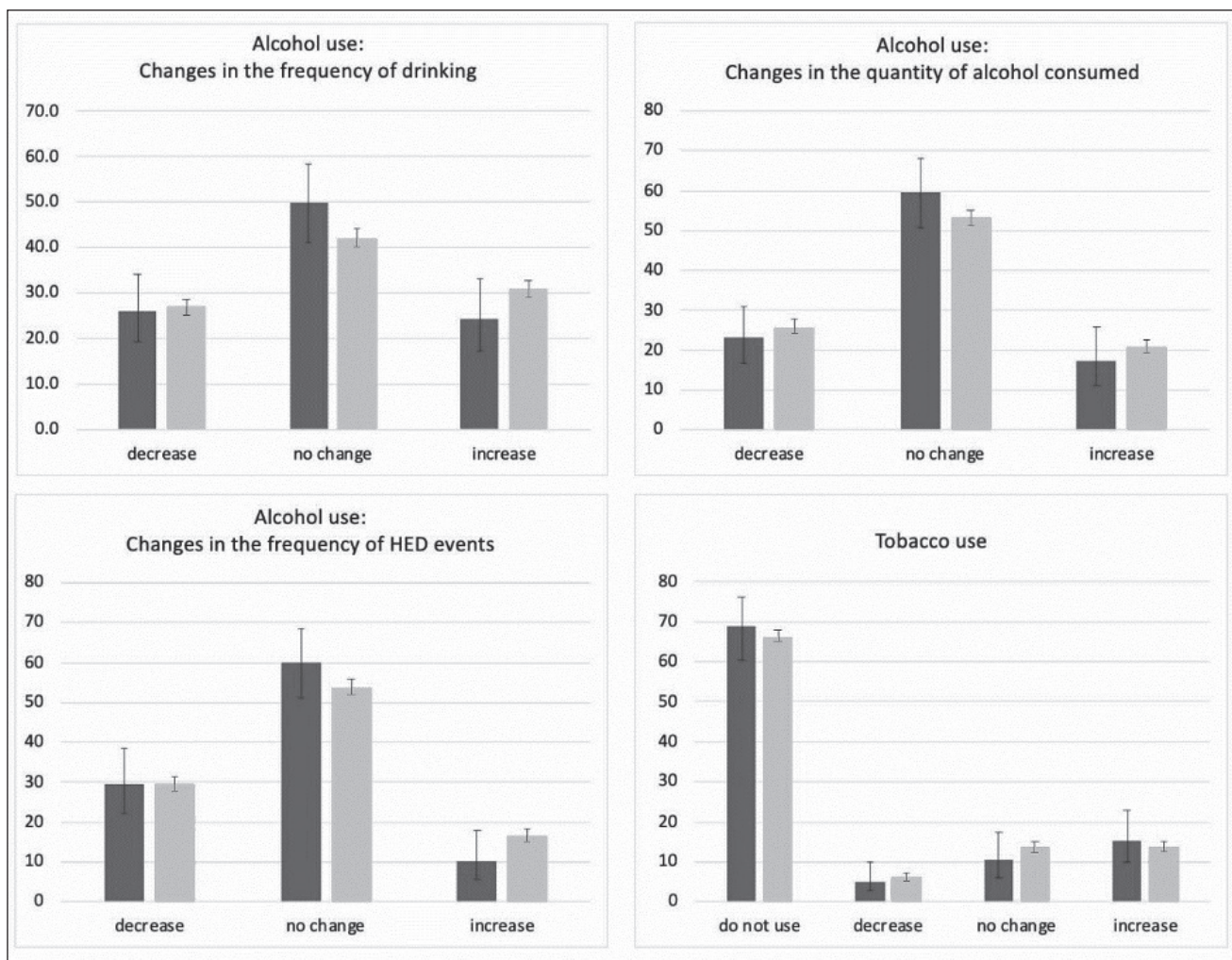


Figure 1. Changes in alcohol and tobacco use in the Slovenian sample (dark grey, N=495) and in respondents from other European countries (light grey, N=34,957). Presented are proportions in % with 95% confidence interval.

Results of the multinomial regression analysis showed that Slovenian respondents who reported that their overall alcohol consumption had decreased (compared to no change) were more likely to be male than female and younger than middle-aged (Table 2). With regard to increases in consumption (compared to no change), those who reported experiencing at least a substantial level of distress due to financial loss were at a four-times higher risk of reporting an increase in their alcohol consumption compared to those who reported no or only some financial distress. With regard to changes in tobacco use (Table 3), no gender differences were identified, while there are indeed differences by age and experienced financial distress.

Table 2. Multinomial regression analysis of changes in overall alcohol consumption in Slovenia.

	Decrease vs. No change			Increase vs. No change		
	RRR	<i>p</i>	95% CI	RRR	<i>p</i>	95% CI
Gender (ref: men)	0.25	0.003	[0.10, 0.62]	0.85	0.743	[0.31, 2.31]
Age group (ref.: 18-34 years)						
35-54 years	0.22	0.002	[0.09, 0.57]	1.16	0.801	[0.37, 3.57]
55+years	0.60	0.346	[0.20, 1.75]	1.34	0.678	[0.33, 5.44]
Change in day-to-day life (ref.: no or to some degree)	1.28	0.575	[0.54, 3.07]	1.88	0.262	[0.62, 5.68]
Distress due to financial loss (ref.: no or to some degree)	1.46	0.439	[0.56, 3.82]	4.16	0.011	[1.39, 12.43]

N=439. Adjusted for AUDIT-C sum score. RRR=Relative Risk Ratio, CI - confidence interval.

Table 3. Multinomial regression analysis of changes in tobacco use (outcome) in Slovenia.

	Decrease vs. No change			Increase vs. No change		
	RRR	<i>p</i>	95% CI	RRR	<i>p</i>	95% CI
Gender (ref: men)	2.55	0.299	[0.44, 14.93]	1.79	0.418	[0.44; 7.31]
Age group (ref.: 18-34 years)						
35-54 years	0.17	0.069	[0.03, 1.15]	0.19	0.055	[0.04; 1.03]
55+years	0.05	0.004	[0.01, 0.39]	0.11	0.019	[0.02; 0.70]
Change in day-to-day life (ref.: no or to some degree)	0.42	0.332	[0.07, 2.42]	0.46	0.306	[0.11; 2.02]
Distress due to financial loss (ref.: no or to some degree)	12.18	0.061	[0.57, 3.91]	25.33	0.001	[3.55; 180.70]

N=119. RRR=Relative Risk Ratio, CI - confidence interval.

4 DISCUSSION

Our study revealed that in Slovenia during the first lockdown at least half of alcohol drinkers did not change the frequency of their drinking occasions, the quantity of alcohol consumed on drinking occasions, and the frequency of HED events, but among the remainder approximately an equal proportion of drinkers decreased or increased the frequency of their drinking occasions and the quantity of alcohol consumed per occasion; however, more drinkers decreased than increased their frequency of HED events. The data from other European countries included in this study also showed more decrease than increase in the quantity of alcohol consumed and the frequency of HED events and more increase than decrease in the frequency of drinking occasions in the same period. The differences are nonetheless small and the overall pattern suggests that the situation in Slovenia was comparable to other European countries. However, the prevalence of high-risk drinkers (11%) was somewhat lower in Slovenian sample than the average for the other European countries (18.3%). The Slovenian results are consistent with the findings of another online study performed in Slovenia (and eight other European countries) during the first wave of the COVID-19 pandemic, one that also showed

less alcohol consumption among participants: 36% of respondents decreased and less than 10% of respondents increased their drinking (23). The panel survey during the second wave of COVID-19 pandemic in Slovenia showed that in the four waves of the study between 11.0% and 13.5%, participants increased the quantity of their alcohol consumption in the last two (24), which is less than in our study. The results of foreign studies on alcohol consumption during the COVID-19 pandemic are not unequivocal. While some show a greater decrease than increase in alcohol consumption in the first wave of the pandemic (9, 25, 26), and indicate that the closure of licensed premises and social distancing measures appear to have reduced alcohol consumption (27), others show greater increase than decrease in alcohol consumption (6, 28). The reasons behind this may also lie in the fact that COVID-19 pandemic is a health-related crisis that may trigger self-protective health behaviours, resulting inter alia in lesser alcohol consumption (29).

We have found that the decreases in overall drinking during recent months were more pronounced among younger adults and among those indicating no or only some financial distress. Similarly, researchers from the Australian study found that the closure of licensed

premises and social distancing measures in response to the COVID-19 outbreak appear to have reduced harmful alcohol consumption in younger drinkers (27, 29). Regarding financial distress, Wardell and co-workers described that among the factors in coping motive pathways to alcohol use income loss was associated with increased alcohol use among Canadian adults (30). Results also showed that Slovenian respondents who reported that their overall alcohol consumption decreased compared to no change were more likely to be male than female. Rodriguez and co-authors describe that some researchers suggest that women are more vulnerable to experiencing psychological distress from the pandemic, suggesting that women may be more motivated than men to drink to cope with pandemic-related distress (31).

Increases in consumption were reported by those reporting high-risk drinking within the past year. Chodkiewicz et al. also describe that those drinking more during the COVID-19 pandemic were also found to have been drinking more intensively before the pandemic started. Additionally, individuals who reported experiencing at least a substantial level of distress due to financial loss were at a four-times increased risk of reporting an increase in their alcohol consumption compared to individuals who reported no or only some financial distress. This is consistent with the results of the online survey among Canadian adult drinkers assessing a variety of factors, and alcohol-related outcomes in the first month of the initiation of the COVID-19 outbreak (30).

In line with the majority of studies on the COVID-19 pandemic's influence on smoking habits (5, 6, 14, 23, 25) and data from other European countries in this study, also in Slovenia a higher percentage of tobacco users increased than decreased their use in the past month. Comparisons between surveys are difficult to make due to methodological differences between them, but the percentage of smokers increasing their tobacco consumption in our study is one of the highest reported in the available literature covering the first wave of COVID-19 pandemic. A study performed in Slovenia (panel survey) during the second wave of the COVID-19 pandemic shows considerably lower percentages of smokers increasing their tobacco consumption, namely between 13% and 17% (24). Evidently the COVID-19 pandemic changes smoking habits and smokers respond differently to its challenges of (increased severity of COVID-19 illness, increased risk of death, stress and mental health problems, pandemic measures, changes in financial status, accessibility of smoking cessation programmes, etc.) (5, 6).

4.1 Research limitations

The study has several limitations. This was a web-based survey performed on a convenience sample. The number of participants in Slovenia was rather low. There were more women than men and higher educated among the participants. Most of the respondents in Slovenia were past-year drinkers and only 17% were abstainers, which is less than in the remaining European countries included in this study. Also, in line with other population studies in Slovenia, the percentage of abstainers in our study was lower by about 3% (32, 33). The prevalence of smoking observed in our study (23.8%) was higher than in a large, nationally representative study, also conducted in 2020 (19.9%). Other limitations of the study include self-reporting and subjective assessment of changes in consumption. The study assessed changes in behaviour over a month-long period, wherefore it is possible that changes may not be long-lasting or permanent.

5 CONCLUSIONS

The COVID-19 pandemic has had an enormous impact on societies worldwide, and affecting alcohol and tobacco use and consequently substance-related harms and other policies (34). Our study revealed that most people decreased their drinking. However, professionals and policy makers must be aware that these decreases can be short-term, and, as some authors suggest, may be followed by an increase in drinking in the future. These concerns are related to the impact of excessive alcohol consumption for a person with COVID-19 and/or with alcohol use disorder, as well as with a potential increase in the prevalence of harmful drinking, alcohol use disorder, withdrawal symptoms, intimate partner violence, harm to children, suicide, mental health problems, and non-communicable diseases. Our study also records that half of smokers increased their tobacco consumption during the first wave of the COVID-19 pandemic, which is worrying, but we need to gather more data to assess the impact of COVID-19 pandemic on tobacco-related harm. Public health authorities should promote the adoption of healthy lifestyles and enforce effective alcohol and tobacco measures in order to reduce long-term negative effects of the lockdown (25, 34).

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CONFLICTS OF INTEREST

The authors declare no conflicts of interest.

FUNDING

This study was carried out without external funding.

ETHICAL APPROVAL

As the survey was fully anonymous and the personal data were protected in accordance with the EU Regulation 2016/679 of the European Parliament and Council, ethical approval by a research ethics committee was not needed, as confirmed by the Data Protection Officer of the Technische Universität Dresden, Germany (letter available upon request).

REFERENCES

- Kregar Velikonja N, Erjavec K, Verdenik I, Hussein M, Globevnik Velikonja V. Association between preventive behaviour and anxiety at the start of the COVID-19 pandemic in Slovenia. *Zdr Varst.* 2021;60(1):17-24. doi: 10.2478/sjph-2021-0004.
- The Lancet Gastroenterology & Hepatology. Drinking alone: COVID-19, lockdown, and alcohol-related harm. *Lancet Gastroenterol Hepatol.* 2020;5:625. doi: 10.1016/S2468-1253(20)30159-X.
- Rajkumar RP. COVID-19 and mental health: a review of the existing literature. *Asian J Psychiatry.* 2020;52:102066. doi: 10.1016/j.ajp.2020.102066.
- Kilian C, Rehm J, Allebeck P, Braddick F, Gual A, Barták M, Bloomfield K, et al. Alcohol consumption during the COVID-19 pandemic in Europe: a large-scale cross-sectional study in 21 countries. *Addiction.* doi: 10.1111/add.15530.
- Rolland B, Haesebaert F, Zante E, Benyamina A, Haesebaert J, Franck N. Global changes and factors of increase in caloric/salty food intake, screen use, and substance use during the early COVID-19 containment phase in the general population in France: survey study. *JMIR Public Health Surveill.* 2020;6:e19630. doi: 10.2196/19630.
- Vanderbruggen N, Matthys F, Van Laere S, et al. Self-reported alcohol, tobacco, and cannabis use during COVID-19 lockdown measures: results from a web-based survey. *Eur Addict Res.* 2020;26:309-15. doi: 10.1159/000510822.
- Alpers SE, Skogen JC, Mæland S, Pallesen S, Kjetland Rabben Å, Lunde L-H, et al. Alcohol consumption during a pandemic lockdown period and change in alcohol consumption related to worries and pandemic measures. *Int J Environ Res Public Health.* 2021;18:1220. doi: 10.3390/ijerph18031220.
- Callinan S, Mojica-Perez Y, Wright CJC, Livingston M, Kuntsche S, Laslett A-M, et al. Purchasing, consumption, demographic and socioeconomic variables associated with shifts in alcohol consumption during the COVID-19 pandemic. *Drug Alcohol Rev.* 2021;40:183-91. doi: 10.1111/dar.13200.
- Chodkiewicz J, Talarowska M, Miniszewska J, Nawrocka N, Bilinski P. Alcohol consumption reported during the COVID-19 pandemic: the initial stage. *Int J Environ Res Public Health.* 2020;17:4677. doi: 10.3390/ijerph17134677.
- Glowacz F, Schmits E. Psychological distress during the COVID-19 lockdown: the young adults most at risk. *Psychiatry Res.* 2020;293:113486. doi: 10.1016/j.psychres.2020.113486.
- de Goeij MCM, Suhrcke M, Toffolutti V, van de Mheen D, Schoenmakers TM, Kunst AE. How economic crises affect alcohol consumption and alcohol-related health problems: a realist systematic review. *Soc Sci Med.* 2015;131:131-46. doi: 10.1016/j.socscimed.2015.02.025.
- Clay JM, Parker MO. Alcohol use and misuse during the COVID-19 pandemic: a potential public health crisis? *Lancet Public Health.* 2020;5:e259. doi: 10.1016/S2468-2667(20)30088-8.
- François A, Berlin I, Nguyen-Thanh V, Guignard R, Pasquereau A, Quelet S, et al. Tobacco and COVID-19: a crisis within a crisis? *Can J Public Health.* 2020;111:995-9. doi: 10.17269/s41997-020-00427-x.
- Gendall P, Hoek J, Stanley J, Jenkins M, Every-Palmer S. Changes in tobacco use during the 2020 COVID-19 lockdown in New Zealand. *Nicotine Tob Res.* 2021;23:866-71. doi: 10.1093/ntr/ntaa257.
- Chisholm D, Moro D, Bertram M, Pretorius C, Gmel G, Shield K, et al. Are the best buys for alcohol control still valid? An update on the comparative cost-effectiveness of alcohol control strategies at the global level. *J Stud Alcohol Drugs.* 2018;79:514-22.
- Rehm J, Kilian C, Ferreira-Borges C, Jernigan D, Monteiro M, Parry CDH, et al. Alcohol use in times of the COVID 19: implications for monitoring and policy. *Drug Alcohol Rev.* 2020;39:301-4. doi: 10.1111/dar.13074.
- Panagiotidis P, Rantis K, Holeva V, Parlapani E, Diakogiannis I. Changes in alcohol use habits in the general population, during the COVID-19 lockdown in Greece. *Alcohol Alcohol.* 2020;55:702-4. doi: 10.1093/alcal/agaa092.
- Kilian C. Dissemination strategies 1.2. figshare. Dataset. Accessed March 3rd 2021 at: <https://doi.org/10.6084/m9.figshare.12738728.v3>.
- Kilian C, Manthey J, Braddick F, Matrai S, Gual A, Rehm J, et al. Changes in alcohol consumption since the outbreak of the SARS-CoV-2 pandemic in Europe: a study protocol. Accessed March 3rd 2021 at: <https://www.deep-seas.eu/standard-eu-alcohol-survey/>.
- Bush K, Kivlahan DR, McDonnell MB, Fihn SD, Bradley KA. The AUDIT alcohol consumption questions (AUDIT-C) an effective brief screening test for problem drinking. *Arch Intern Med.* 1998;158:1789. doi: 10.1001/archinte.158.16.1789.
- Kilian C. Survey weights. figshare. Dataset. Accessed March 3rd 2021 at: <https://doi.org/10.6084/m9.figshare.12739469.v1>.
- StataCorp. Stata statistical software: release 15. College Station, TX: StataCorp LLC, 2017.
- Pišot S, Milovanović I, Šimunić B, et al. Maintaining everyday life praxis in the time of COVID-19 pandemic measures (ELP-COVID-19 survey). *Eur J Public Health.* 2020;30:1181-6. doi: 10.1093/eurpub/ckaa157.
- Hočevar Grom A, Belščak Čolaković A, Rehberger M, Lavtar D, Gabrijelčič Blenkuš M, Jeriček Klanšček H. Pandemija COVID-19 v Sloveniji: izsledki panelne spletne raziskave o vplivu pandemije na življenje (SI-PANDA). Ljubljana: Nacionalni inštitut za javno zdravje, 2021.
- Dogaš Z, Lušič Kalcina L, Pavlinac Dodig I, Demirović S, Madirazza K, Valič M, et al. The effect of COVID-19 lockdown on lifestyle and mood in Croatian general population: a cross-sectional study. *Croat Med J.* 2020;61:309-18. doi: 10.3325/cmj.2020.61.309.
- Manthey J, Kilian C, Carr S, Barták M, Bloomfield K, Braddick F, et al. Use of alcohol, tobacco, cannabis, and other substances during the first wave of the SARS-CoV-2 pandemic in Europe: a survey on 36,000 European substance users. *Subst Abuse Treat Prev Policy.* 2021;16:36. doi: 10.1186/s13011-021-00373-y.
- Callinan S, Smit K, Mojica-Perez Y, D'Aquino S, Moore D, Kuntsche E. Shifts in alcohol consumption during the COVID-19 pandemic: early indications from Australia. *Addiction.* 2021;116:1381-8. doi: 10.1111/add.15275.
- Canadian Center on Substance Use and Addiction. Covid-19 and increased alcohol consumptions: NANOS poll summary report. CCSA. Canadian Center on Substance Use and Addiction. Accessed February 25th 2021 at: <https://www.ccsa.ca/sites/default/files/2020-04/CCSA-NANOS-Alcohol-Consumption-During-COVID-19-Report-2020-en.pdf>.

29. Panagiotidis P, Rantis K, Holeva V, Parlapani E, Diakogiannis I. Changes in alcohol use habits in the general population, during the COVID-19 lockdown in Greece. *Alcohol Alcohol.* 2020;55:702-4. doi: 10.1093/alcalc/agua092.
30. Wardell JD, Kempe T, Rapinda KK, Single A, Bilevicius E, Frohlich JR, et al. Drinking to cope during COVID-19 pandemic: the role of external and internal factors in coping motive pathways to alcohol use, solitary drinking, and alcohol problems. *Alcohol Clin Exp Res* 2020;44:2073-83. doi: 10.1111/acer.14425.
31. Rodriguez LM, Litt DM, Stewart SH. Drinking to cope with the pandemic: the unique associations of COVID-19-related perceived threat and psychological distress to drinking behaviors in American men and women. *Addict Behav.* 2020;110:106532. doi: 10.1016/j.addbeh.2020.106532.
32. Hovnik Keršmanc M, Roškar M, Lavtar D, Rehberger M, Korošec A. Pitje alkoholnih pijač med prebivalci Slovenije - izsledki nacionalne raziskave o tobaku, alkoholu in drugih drogah - ATADD 2018. Ljubljana: Nacionalni inštitut za javno zdravje, 2020.
33. Raziskava CINDI 2020 - z zdravjem povezan vedenjski slog. Ljubljana: Nacionalni inštitut za javno zdravje (in press).
34. Andreasson S, Chikritzhs T, Dangardt F, Holder HD, Naimi TS, et al. *Alcohol and Society 2012: alcohol and the coronavirus pandemic: individual, societal and policy perspectives.* Stockholm: Swedish Society of Nursing, SFAM, SAFF, CERA, The Swedish Society of Addiction Medicine, SIGHT, Movendi International & IOGT-NTO, 2021.