Short communication

Alcohol consumption changes during the first COVID-19 lockdown: an online population survey in a convenience sample of French-speaking Belgian residents.

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ABSTRACT

An online survey among French-speaking Belgians (N=7711) investigated self-reported changes in alcohol consumption during the first COVID-19-related lockdown (March 17th – May 4th 2020). Population-weighted estimates indicated that 31.37% of the population increased consumption during lockdown, 30.32% decreased consumption and 38.31% reported unchanged consumption. The magnitude of change was higher for "decreasers" than "increasers", resulting in a slight reduction in overall consumption. A multiple regression analysis revealed that age, occupational status, number of cohabitants, perceived alcohol accessibility, drinking motivations and previous consumption predicted consumption changes. The lockdown was thus associated with consumption modifications among French-speaking Belgians, without a prevailing direction of change.

1. Introduction

The COVID-19 pandemic and related lockdown measures generated mental health issues (Pierce et al., 2020), and may have intensified alcohol use. Excessive alcohol consumption may increase the probability of COVID-19 infection (Testino, 2020), psychological distress (Anker and Kushner, 2019), and injury-related hospitalizations (Nutt et al., 2010). Some experts predicted sharp increases in alcohol intake in the general population, to cope with the stress and social isolation resulting from the crisis (Clay and Parker, 2020). Others anticipated decreased alcohol use, due to diminished financial resources and alcohol accessibility (Rehm et al., 2020). Empirical reports have so far been contradictory, either indicating a majority of increases (Koopmann et al., 2020; Rolland et al., 2020; Tran et al., 2020) or decreases (Manthey et al., 2020; Panagiotidis et al., 2020). Studies conducted in Belgium also generated mixed results (Schmits and Glowacz, 2021; Vanderbruggen et al. 2020), suggesting that discrepancies may not solely reflect cross-country variations in lockdown stringency. Moreover, most studies either relied on small non-representative samples, or only offered qualitative assessments of alcohol consumption, without estimating the magnitude of change. We therefore conducted an online survey among French-speaking Belgians, including (1) a large sample and the use of survey weights to increase representativeness; (2) quantitative self-report assessments of consumption before/during lockdown. We also explored predictors of consumption changes, focusing on contextual factors (e.g., housing conditions, alcohol accessibility) influencing well-being during stay-at-home mandates (Husky et al., 2020; Rehm et al., 2020) and drinking motives (Cooper, 1994), due to their impact on alcohol use following crises (Beseler et al., 2011).

2. Method

2.1. Recruitment

The 20-minute online survey, disseminated through social/national media and institutional websites, targeted adult French-speaking Belgian residents and was advertised as a survey exploring the impact of the lockdown on alcohol consumption. We collected data between April 1st (two weeks after lockdown onset) and May 3rd 2020 (lockdown ending). Participants provided informed consent, remained anonymous,

and were not compensated. The study complied with the Helsinki Declaration.

2.2. Sample

Of the 10899 responses, 3188 were excluded (29.25%) because they were incomplete (i.e., the last survey question was unanswered; 21.79%), aberrant[1] (1.35%), duplicates (0.06%), or because participants were under 18 (0.17%) or lived abroad (5.87%). The final analyses included 7711 participants.

2.3. Outcome

Through a procedure adapted from the Timeline Follow Back (Sobell and Sobell, 1992), participants indicated their alcohol consumption (number of units; 1 unit = 10g of ethanol) for each day of a typical week during (1) the period preceding the lockdown, and (2) the lockdown period. This method accounts for a large proportion of alcohol sales, supporting its appropriateness for use in surveys (Ekholm et al., 2008). Our outcome variable was the total number of units consumed per week before/during lockdown.

2.4. Predictors

We investigated *sociodemographic variables* [gender, age, education (tertiary education degree/not), occupation (student/professionally active[2]/professionally inactive)], *contextual variables* during lockdown [number of cohabitants, residence location (city/countryside), outside access (yes/no), alcohol accessibility (from -2 to 2)], *and drinking motivations* [adapted from the Drinking Motives Questionnaire-Revised (DMQ-R, Cooper, 1994) assessing social order, conformity, enhancement and coping drinking motives since lockdown onset, score range: 5-25 for each dimension].

2.5. Analysis plan

We first computed the percentages (95%CI) of individuals reporting increased/decreased/unchanged consumption, based on difference scores [total number of units consumed per week since lockdown onset (Alcohol Since Lockdown, ASL) – total number of units consumed in a typical week before lockdown (Alcohol Before Lockdown, ABL)]. Positive/negative values indicated increased/decreased consumption. Mean values (SD; 95%CI) of the ASL, ABL and difference scores were computed for the whole sample, and among individuals who decreased/increased/did not change their consumption. This first step was performed on weighted[3] data to obtain a representative sample of French-speaking Belgian adults regarding age, gender and education, and to correct for students' overrepresentation (Supplementary Materials 1).

We then entered ABL, sociodemographic, contextual and motivational variables in a multiple linear regression model predicting difference scores. Only respondents with an ASL>0, who responded to perceived alcohol availability and drinking motives questions, were included (N=5633). Characteristics of the ASL>0 and ASL=0 samples

are presented in Supplementary Materials 2, along with a regression model (Supplementary Materials 3) on the whole sample. The results from this second step therefore do not generalize to those who did not drink during the lockdown. We performed this second step on unweighted data (Gelman, 2007; Winship and Radbill, 1994). Based on Cook's distance (Supplementary Materials 4), one outlier was removed. All analyses were performed on R (3.6.1.; R Core Team, 2019). See Supplementary Materials 5 for weighted/unweighted sample characteristics.

3. Results

3.1. Alcohol consumption changes (Supplementary Materials 6)

The percentage of individuals reporting increased consumption during lockdown was 31.44% [95%CI=29.61;33.26], while 30.35% [95%CI=28.61;32.09] reported decreases and 38.21% [95%CI=36.17;40.26] reported no change. In the whole sample, the mean ABL value was 9.41 units per week (SD=14.03; 95%CI=8.80;10.02), the mean ASL value was 8.58 (SD=13.78; 95%CI=7.98;9.17) and the mean difference score (difference between alcohol units consumed before and since lockdown onset) was -0.83 (SD=9.82; 95%CI=-1.22;-0.45). Among individuals reporting increased consumption, the mean ABL value was 8.94 (SD=9.91; 95%CI=8.24;9.65), the mean ASL value was 15.10 (SD=14.85; 95%CI=14.03;16.17) and the mean difference score was 6.15 (SD=7.39; 95%CI=5.61;6.70). Among individuals reporting decreased consumption, the mean ABL value was 14.08 (SD=15.33; 95%CI=12.94;15.21), the mean ASL value was 4.95 (SD=7.51; 95%CI=4.40;5.51) and the mean difference score was -9.13 (SD=11.87; 95%CI=-9.96;-8.29). Among individuals reporting unchanged consumption, mean ABL/ASL values were 6.09 (SD=14.81; 95%CI=4.97;7.21).

3.2. Predictors of consumption changes (Table 1)

Given the presence of heteroscedasticity (Supplementary Materials

Table 1
Multiple linear regression model of statistical predictors of changes in alcohol consumption during lockdown among those who drank during lockdown (N=5626[2]).

Effect	Estimate	SE[1]	95% CI		p
			LL	UL	
Intercept	-5.98	0.83	-7.60	-4.36	**<.001**
Sociodemographic variables					
Men vs. Women	0.68	0.22	0.25	1.10	**.002**
Age	0.12	0.01	0.10	0.13	**<.001**
Tertiary education vs. no	-0.29	0.30	-0.88	0.30	.330
Professionally active vs. inactive	0.22	0.30	-0.75	0.31	.421
Students vs. others	-3.98	0.29	-4.55	-3.40	**<.001**
Contextual variables					
Number of cohabitants	0.25	0.06	0.11	0.35	**<.001**
Alcohol accessibility	0.85	0.26	0.34	1.36	**.001**
City vs. countryside	-0.15	0.20	-0.55	0.25	.471
Outside access vs. no access	0.53	0.40	-0.25	1.31	.180
Drinking motivations during lockdown					
Coping motives	0.68	0.05	0.58	0.78	**<.001**
Enhancement motives	0.28	0.05	0.19	0.37	**<.001**
Social motives	-0.05	0.04	-0.13	0.02	.148
Conformity motives	-0.29	0.11	-0.51	-0.08	**.007**
Alcohol consumption before lockdown					
Typical nr of units/week prior lockdown	-0.45	0.03	-0.56	-0.42	**<.001**

LL = Lower limit
UL = Upper limit
Note = The reference condition (i.e., coded 0) for categorical variables is always presented second.
[1] Heteroskedasticity-consistent standard error estimates.
[2] 6 observations deleted due to missing values (+1 outlier)

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[1] Extreme alcohol consumption reports (e.g., >1000 units/week) that likely reflected an error or a deliberate attempt to bias the study were considered aberrant.

[2] This category encompassed those actively working (in presence or in tele-working settings) during the crisis and excluded those not actively working (i.e., people who were already unemployed before lockdown, people who were fired or in temporary work stoppage because of the pandemic, retired people), classified as professionally inactive during lockdown.

[3] Population data for age, gender and education were obtained from: https://statbel.fgov.be, https://www.iweps.be and data regarding the percentage of students were obtained from https://www.ares-ac.be.

7), we used heteroscedasticity-consistent standard error estimators (Hayes and Cai, 2007). ABL was negatively associated with difference scores. Age and male (vs. female) gender were positively associated with difference scores, while being a student (vs. not) was associated with decreased difference scores. Having a higher number of cohabitants and perceiving alcohol as more accessible than before lockdown was related to higher difference scores. Coping and enhancement drinking motives were positively, and conformity motives were negatively, associated with difference scores.

4. Discussion

We assessed alcohol consumption changes during the first COVID-19 lockdown. Consumption modifications were widespread (over 60% of participants reported changes) but without the predicted (Clay and Parker, 2020) generalized increase, since (1) there was a slight reduction in overall consumption; (2) similar percentages of participants reported increased/decreased/unchanged consumption. However, importantly, 31.44% of participants reported increased alcohol use, placing them at higher risk of developing harmful consumption patterns and related health problems. Our results strengthen previous findings indicating small overall consumption decreases (Callinan et al., 2020) and comparable proportions of increases/decreases (Chodkiewicz et al., 2020; Schmits and Glowacz, 2021). Given the influence of descriptive norms on drinking behaviours (Neighbors et al., 2007), these findings call for appropriate nuance in media communications (which have disseminated the proposal of a generalized consumption increase following lockdown onset) during crises (Van Bavel et al., 2020).

Regarding predictors of change, ABL was negatively related to difference scores, potentially reflecting the restriction of heavy drinking contexts like parties (Stanesby et al., 2019), explaining why students and younger adults reduced their consumption. Men also decreased less or increased more than women. These higher decreases in youth and women align with previous reports (Callinan et al., 2020; Chodkiewicz et al., 2020). Among contextual variables, a higher number of cohabitants was associated with higher difference scores. Living with more persons (e.g., children) during crises might constitute a source of stress that some cope with through alcohol (Wardell et al., 2020). Perceived alcohol accessibility also predicted change: individuals perceiving alcohol as less accessible than before decreased consumption, and conversely. Nudging actions (Thaler and Sunstein, 2009) reducing alcohol accessibility may thus limit excessive use. Finally, individuals with high conformity motives decreased consumption, probably because of reduced social pressure. Conversely, individuals drinking to cope with negative emotions or to experience positive ones increased consumption, confirming the role of these motives in increased consumption following stressful events (Beseler et al., 2011), and during the COVID-19 (Wardell et al., 2020). This also underscores the need to communicate on the ineffectiveness of alcohol as a coping strategy and to propose alternative activities (e.g., meditation).

Limitations must be acknowledged: (1) the use of self-reports might lead to recall and/or desirability biases (Boca and Darkes, 2003; Northcote and Livingston, 2011), particularly for the retrospective baseline measure; (2) survey weights may have exaggerated the influence of underrepresented categories (e.g., low-educated elderly people); (3) several unassessed variables might have generated response clustering (cohabitation/relations between participants) or influenced representativeness (geographical location, ethnicity, internet access); (4) our results might not generalize beyond the French-speaking part of Belgium, notably due to variable lockdown conditions; (5) The adaptation of the DMQ-R time-period may have altered its psychometric properties; (6) the exclusion of incomplete responses may have introduced biases.

Despite these limitations, our results suggest that most French-speaking Belgians changed their alcohol consumption during lockdown, without a predominant direction of change. Our quantitative estimates of change magnitude offer a precise assessment of the mental health correlates of the pandemic. Finally, these changes were predicted by previous consumption level, age, gender, occupational status, number of cohabitants, alcohol accessibility, and drinking motives, bearing implications for policy and interventions.

Declaration of Competing Interest

The authors declare no competing interests.

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.psychres.2021.113938.

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