Changes in alcohol consumption in adults during COVID-19 pandemic: A systematic review

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Abstract (English)

Background: COVID-19 is a highly contagious and dangerous disease caused by the Sars-CoV-2 virus. Due to the rapid worldwide spread of the virus, a pandemic was declared, resulting in numerous safety measures ranging from wearing face masks to strict hand hygiene to lockdowns. The pandemic and its accompanying safety measures could lead to an increase in negative psychological responses and mental health problems. Because psychological distress and problematic alcohol consumption often occur together, an increase in alcohol consumption due to the psychological distress experienced is a real possibility.

Objectives: To critically synthesize the scientific evidence about the impact of the COVID-19 pandemic on alcohol consumption in adults.

Methods: We performed a systematic review and searched MEDLINE, Web of Science Core Collection and EMBASE for studies published until November 2021, that investigated the change in alcohol consumption in adults associated with the COVID-19 pandemic. In addition, we screened reference lists of the included studies to identify studies that were missed by our search. Two reviewers independently screened studies for inclusion, extracted data, and assessed study quality using the "Instrument Q" quality assessment tool. Only quantitative studies were included. Data was extracted and synthesized in Excel.

Results: Twenty studies were found, representing 55,196 participants. Six studies investigated the difference in AUDIT-C score; three indicated a statistically significant decrease and one indicated a statistically significant increase. The largest decrease was from 1.89 to 1.54. Five studies investigated the difference in drinking days per week, one found a statistically significant decrease from 1.9 to 1.8 and one found a statistically significant increase from 1.28 to 1.45. Twelve studies investigated the difference in alcohol units per day: three found a statistically significant decrease and three a statistically significant increase. The largest decrease was from 0.17 to 0.12 and the largest increase was from 0.43 to 0.61. Six studies investigated the difference in heavy episodic drinking, four studies found a statistically significant decrease, the largest decrease was from 0.34 to 0.20.

Conclusion: The results of this review suggest a slight decrease in AUDIT-C score and heavy episodic drinking episodes during the COVID-19 pandemic. However, the results on drinking days per week and alcohol units per day are widespread and inconsistent. Our findings highlight the need for more high-quality studies, especially in low- and middle-income countries. In addition, there is a need for comprehensive population-level data on alcohol consumption in different subpopulations. Prospective studies are needed to assess the long-term effects of the COVID-19 pandemic on alcohol consumption.

Abstract (Nederlands)

Achtergrond: COVID-19 is een zeer besmettelijke en gevaarlijke ziekte die veroorzaakt wordt door het Sars-CoV-2-virus. Als gevolg van de snelle wereldwijde verspreiding van het virus werd een pandemie uitgeroepen, wat leidde tot talrijke veiligheidsmaatregelen, gaande van het dragen van gezichtsmaskers tot strikte handhygiëne en lockdowns. De pandemie en de bijbehorende veiligheidsmaatregelen zouden kunnen leiden tot een toename van negatieve psychologische reacties en geestelijke gezondheidsproblemen. Omdat psychologisch leed en problematisch alcoholgebruik vaak samen voorkomen, is een toename van het alcoholgebruik als gevolg van het ervaren psychisch leed een reële mogelijkheid.

Doel: Het kritisch synthetiseren van de wetenschappelijke evidentie over de impact van de COVID-19 pandemie op alcoholgebruik bij volwassenen.

Methoden: We voerden een systematische review uit en doorzochten MEDLINE, Web of Science Core Collection en EMBASE voor studies gepubliceerd tot november 2021, die de verandering in alcoholconsumptie bij volwassenen geassocieerd met de COVID-19 pandemie onderzochten. Daarnaast hebben we referentielijsten van de geïncludeerde studies gescreend om studies te identificeren die door onze zoekopdracht gemist werden. Twee reviewers screenden onafhankelijk van elkaar studies voor inclusie, extraheerden gegevens en beoordeelden de studiekwaliteit met behulp van het kwaliteitsbeoordelingsinstrument "Instrument Q". Alleen kwantitatieve studies werden geïncludeerd. Gegevens werden geëxtraheerd en samengevat in Excel.

Resultaten: Er werden twintig studies gevonden, die 55.196 deelnemers vertegenwoordigden. Zes studies onderzochten het verschil in AUDIT-C score, drie gaven een statistisch significante daling aan en één een statistisch significante stijging. De grootste daling was van 1.89 naar 1.54. Vijf studies onderzochten het verschil in het aantal drinkdagen per week, één vond een statistisch significante afname van 1.9 naar 1.8 en één vond een statistisch significante toename van 1.28 naar 1.45. Twaalf studies onderzochten het verschil in alcoholeenheden per dag: drie vonden een statistisch significante daling en drie een statistisch significante stijging. De grootste afname was van 0.17 tot 0.12 en de grootste toename was van 0.43 tot 0.61. Zes studies onderzochten het verschil in zwaar episodisch drinken, vier studies vonden een statistisch significante afname, de grootste afname was van 0.34 tot 0.20.

Conclusie: De resultaten van deze review suggereren een lichte daling van de AUDIT-C score en zwaar episodisch drinken tijdens de COVID-19 pandemie. De resultaten inzake drinkdagen per week en alcoholeenheden per dag zijn echter uiteenlopend en inconsistent. Onze bevindingen wijzen op de nood aan meer studies van hoge kwaliteit, vooral in lage- en middeninkomenslanden. Bovendien is er behoefte aan uitgebreide gegevens op bevolkingsniveau over alcoholgebruik in verschillende subpopulaties. Prospectieve studies zijn nodig om de langetermijneffecten van de COVID-19-pandemie op het alcoholgebruik te beoordelen.

Introduction

In December 2019, a new type of zoonotic virus was discovered in Wuhan, China, causing several clusters of pneumonia of unknown origin[1]. The virus, known as severe acute respiratory syndrome coronavirus 2 (Sars-CoV-2) causes an infectious disease, named COVID-19. It consists of flu-like symptoms such as: fever, cough, shortness of breath, fatigue and muscle pain. Although Sars-CoV-2 has a low mortality of around 3%, it is a highly contagious pathogen, spread by respiratory secretions mostly through aerosols but also by contact transmission[2,3]. Because of the rapid worldwide spread of the virus, the WHO declared COVID-19 a pandemic on March 11th, 2020[4]. A year later, in April 2021 Sars-CoV-2 caused almost 3 million deaths worldwide[5].

Numerous safety measures were taken to reduce the transmission of the virus: wearing face masks, strict hand hygiene, keeping distance from other people and eventually lockdowns[6]. These safety measures were important to reduce the physical harm and death caused by Sars-CoV-2[6]. Regulations like mandatory teleworking, online school lessons, multiple industries (restaurants, bars) closing, has affected the social life of each individual[7,8]. The global COVID-19 pandemic thus had a substantial impact on the lives of people around the world.

The consequences of the pandemic and its accompanying safety measures on the mental health of individuals are multivarious and can include adverse psychological responses such as anxiety, depression, post-traumatic stress disorder, self-harm and suicide[9,10]. In addition, the uncertainty of duration of the measures taken to control the pandemic resulted in an even greater mental burden for many, resulting in even more mental problems (such as: depression, anxiety, loneliness and stress)[7,11-15].

Prior research established that psychological distress and problematic alcohol consumption often co-occur and that social isolation and stress play a major role in the change in drinking habits[16,17]. It is known that an increase in stress and anxiety will increase the motivation to use substances as a way of coping, especially during a disaster[18].

Current knowledge suggests that there are two possible outcomes during the pandemic: an increase in alcohol use due to the psychological distress experienced, or a decrease in alcohol use due to limited availability, financial constraints and reduced opportunities to consume alcohol because alcohol consumption is a common social activity[19,20].

It is of utmost importance to know if there was a change in alcohol consumption because alcohol is a psychoactive substance with negative effects on different parts of the human body. A higher intake of alcohol is associated with pathology of the digestive, cardiovascular and central nerve system[21-23]. In addition, alcohol is also carcinogenic, with an increased risk of developing multiple cancers[24]. Besides these physical effects, alcohol is associated with a high mental and social burden, resulting in an increase in violence, crime, poverty and loneliness[25]. Overall, three million deaths each year are caused by alcohol consumption. This is responsible for 5.1% of the global burden of disease[23]. Therefore, we can state that alcohol consumption is a global problem, leading to physical, mental and social problems. For example, in the United States of America, 95,158 deaths during 2011 to 2015 were attributed to excessive alcohol consumption. This is an equivalent of 261 deaths each day and an average of 29 years lost per death[26].

At present, there has been no full review or synthesis of the evidence on this subject. In line with this, we aim to systematically review the existing evidence to document, quantify and interpret the change in alcohol consumption caused by the COVID-19 pandemic. The results provided by this systematic review will provide evidence in order to inform and support decision-making from the healthcare providers and governments.

Objectives

The purpose of this systematic review is to critically synthesize the scientific evidence about the impact of the COVID-19 pandemic on alcohol consumption in adults.

Methods

Databases & search strategy

We searched the following three electronic bibliographic databases: MEDLINE (via PubMed), Web of Science Core Collection (via Web of Science) and EMBASE. For details regarding the searched editions on Web of Science Core collection, see appendix 1. The systematic search was performed in November 2021.

Before conducting the systematic search we determined specific subject headings (MeSH terms in MEDLINE and Emtree terms in EMBASE) and their synonyms (keywords). These terms were combined using 'AND' and 'OR' to create the final search strings (see appendix 2). Subsequently, the search strategy used in MEDLINE was adjusted to the other electronic databases. In addition reference sections of included studies were screened for additional eligible studies.

Inclusion/exclusion criteria

Observational studies that examined possible change in alcohol consumption as a result of the COVID-19 pandemic were included in this study. Only quantitative studies were included because the purpose of this review is to quantify and interpret the change in alcohol consumption caused by the COVID-19 pandemic. Studies reporting alcohol consumption during the COVID-19 pandemic without a pre-pandemic comparison were excluded. Studies that examined pandemics other than COVID-19 were also excluded. There were no restrictions regarding gender or ethnicity of the target population. All inclusion and exclusion criteria are summarized in Appendix 3.

Title & abstract screening

Before the papers were screened, deduplication in Rayyan and Endnote took place. Afterwards titles and abstracts were screened by both authors (MS, BK). When there was a discrepancy, both authors would gather and discuss the study in question. If both authors could not reach an agreement a third author, the principal investigator, would be called upon.

Full-text review

All the papers which met the title/abstract screening were subsequently read by both authors. If there was a discrepancy between both authors on the decision to in- or exclude, the same protocol that was used in title and abstract screening was applied.

Data extraction

Study data were extracted and tabulated in Excel. The following data was extracted from each study:

- Title
- Journal
- Author
- Year of publication
- Possible conflict of interest
- Study design
- Country
- Sample size
- Age
- Inclusion and exclusion criteria
- Race/Ethnicity
- Working circumstances
- Recruitment method and recruiting time
- Definition before and during COVID-19 pandemic
- Follow-up time
- Prospective or retrospective design
- Dropout
- Alcohol consumption before the pandemic, including alcohol measure, p-value and 95% CI
- Alcohol consumption during the pandemic, including alcohol measure, p-value and 95% CI

Statistical analysis

We described the characteristics of the included studies using descriptive statistics, including study design, population characteristics, intervention and comparison details, and outcome measures.

First, all studies were grouped according to their outcome measure, resulting in four distinct groups: AUDIT(-C), alcohol units per day/week/month, drinking days per week/month, and heavy episodic drinking (HED). Given the substantial clinical heterogeneity (details of intervention, outcome measures), an accompanying meta-analysis could not be performed. Therefore, the "Synthesis without meta-analysis" (SWiM) guidelines were used for further synthesis[27]. Outcomes were listed for each outcome measure. When available, means or medians were reported with associated confidence intervals or standard deviations and corresponding p-values. A p-value ≤ 0.05 was considered statistically significant.

For the first outcome measure, the total AUDIT score and the abbreviated AUDIT-C score were listed separately[28]. For the AUDIT-C score, the individual scores for each question were noted. If scores of men and women were reported separately, we calculated the global AUDIT(-C) scores for the total population. If the three questions were documented separately, the total AUDIT-C score was calculated by making the sum of all three subscores.

Next, for the outcome measure alcohol units per day/week/month, a recalculation was performed for the same outcome measure. The number of units per month were divided by 30 and the number of units per week were divided by 7. By converting these outcome measures to the same outcome measure of units per day, we were able to compare the results

of these studies. What each study defined as an alcohol unit, is listed in the general table. For the days per week/month outcome measure, we performed a similar recalculation. Days per month were divided by 30 and multiplied by 7.

For the last outcome measure, HED, all scores were collected and the scores from question 3 of the AUDIT-C score were added. As noted above, the definition of HED in each study is provided in the general table.

Percent changes were calculated for each outcome measure when possible.

All statistical analyses were discussed and approved by a biostatistician of the KU Leuven.

Methodological appraisal and quality assessment

The methodological quality of all articles was assessed using "Instrument Q" a quality assessment tool of the National Institutes of Health (NIH) for before-after (pre-post) studies without a control group, a 12-item questionnaire[29,30]. For each study, these 12 items were reviewed and scored separately by both investigators (SM, BK). Each item on the quality assessment instrument could be rated as present (Yes), absent (No) or Not applicable (N/A)." As in the study selection procedure, a discussion took place between the two authors in the event of disagreement. Based on these items, each study was categorized into one of three groups: poor, fair, or good quality. 1-3 points is defined as poor quality, 4-7 as fair quality, and > 7 as good quality.

Patient and public involvement

No patients or public were involved for writing this systematic review.

Ethics and dissemination

This protocol was provided to the Ethical Committee of the KU Leuven.

Experts or stakeholders

No expert of key stakeholders for additional grey literature research were contacted.

Results

Search results

The search strategy yielded a total of 6829 studies, distributed among the three databases. After deduplication, 3661 studies remained. After screening based on title and abstract, 82 studies remained. After full-text examination, an additional 62 studies were excluded, leaving a total of 20 included studies. The main reason for exclusion after full-text review was an incorrect population, for example studies where the age range of the study population was very small or where only individuals with certain occupations were included so that they were not representative of the general population (e.g., students, 50+ only, healthcare workers). Other studies were excluded because they reported an incorrect outcome, for example

studies that examined the number of alcohol intoxications or the rate of alcohol use disorders in the population. For more details, see the PRISMA flowchart in Figure 1.

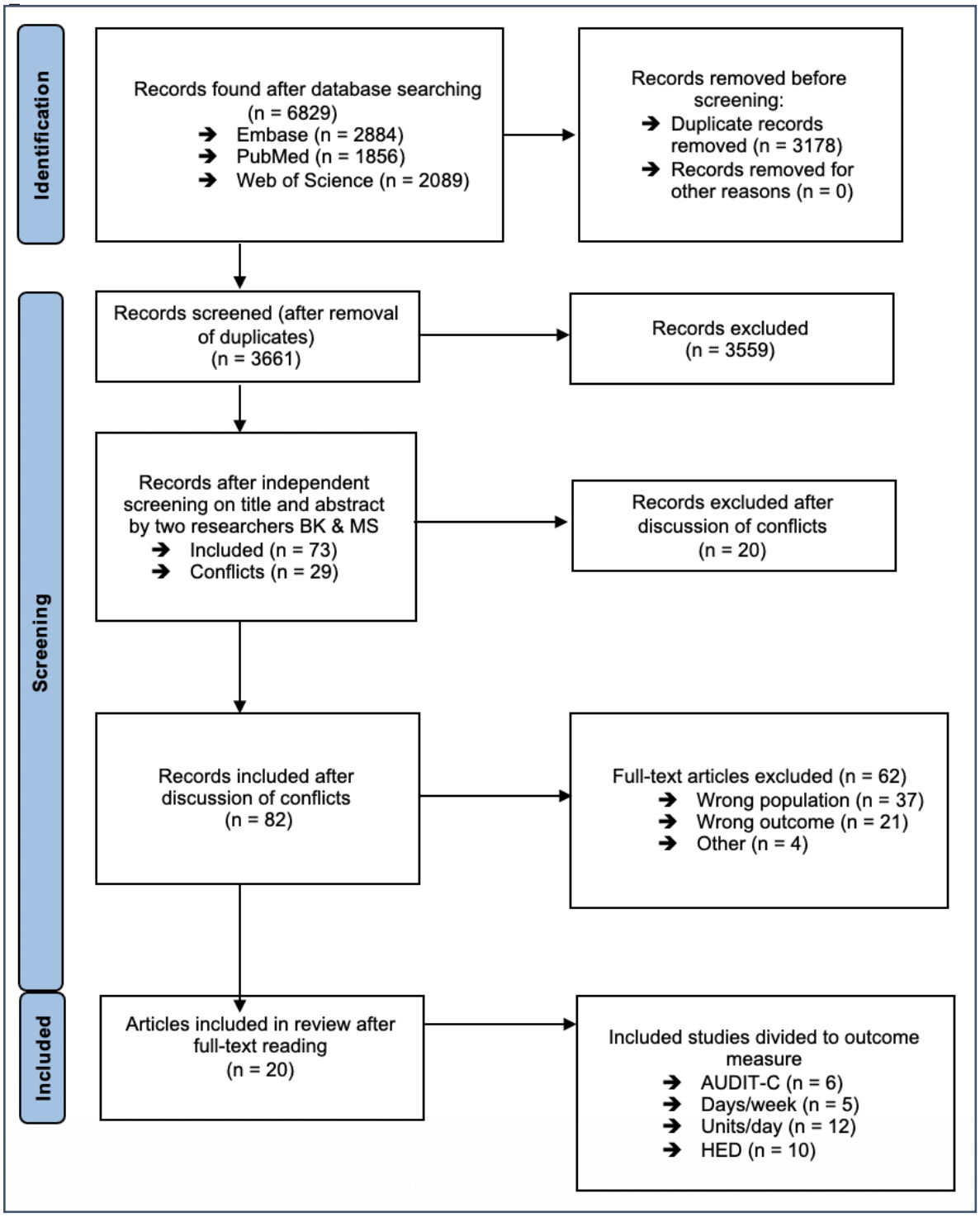


Figure 1: PRISMA flow diagram

Quality of included studies

Nineteen studies were of fair quality and one study was of poor quality. The most common methodological problems were an unrepresentative sample, an insufficiently large sample size and lack of multiple outcome measures. An overview of the quality assessment with the scoring on each item is provided in Table 1.

Table 1: Quality assessment using the "Instrument Q" quality assessment tool

Author, year	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	Overall
Callinan S. et al. (10-2020) [31]	Yes	Yes	No	Yes	No	Yes	Yes	No	N.A.	Yes	No	N.A.	**Fair**
Vanderbruggen N. et al. (09-2020) [32]	Yes	Yes	No	Yes	No	Yes	Yes	No	N.A.	Yes	No	N.A.	**Fair**
Callinan S. et al. (10-2020) [33]	Yes	Yes	No	Yes	No	Yes	Yes	No	N.A.	Yes	No	N.A.	**Fair**
Merlo Agnese et al. (09-2021) [34]	Yes	Yes	Yes	Yes	No	Yes	Yes	No	N.A.	Yes	No	N.A.	**Fair**
Claire L. Niedzwiedz et al. (09-2020) [35]	Yes	Yes	Yes	Yes	No	Yes	Yes	No	N.A.	Yes	No	N.A.	**Fair**
Bollen Z. et al. (09-2021) [36]	Yes	Yes	No	Yes	No	Yes	Yes	No	N.A.	No	Yes	N.A.	**Fair**
Kolokotroni O. et al. (04-2021) [37]	Yes	Yes	No	Yes	No	Yes	Yes	No	N.A.	Yes	No	N.A.	**Fair**
Souza T.C.M et al. (06-2021) [38]	Yes	Yes	No	Yes	No	Yes	Yes	No	N.A.	Yes	No	N.A.	**Fair**
Palmer et al. (09-2021) [39]	Yes	Yes	No	Yes	No	No	Yes	No	N.A.	Yes	No	N.A.	**Fair**
Branquinho C. et al. (08-2021) [40]	Yes	No	No	Yes	No	No	No	No	N.A.	Yes	No	N.A.	**Poor**
Dogas Z. et al. (08-2020) [41]	Yes	Yes	No	Yes	No	No	Yes	No	N.A.	Yes	No	N.A.	**Fair**
Chen L. et al. (09-2021) [42]	Yes	Yes	Yes	Yes	No	No	Yes	No	N.A.	Yes	No	N.A.	**Fair**
Boschuetz N. et al. (09-2020) [43]	Yes	Yes	No	Yes	No	Yes	Yes	No	N.A.	Yes	No	N.A.	**Fair**
Villanueva-Blasco V.J. et al. (07-2021) [44]	Yes	Yes	No	Yes	No	Yes	Yes	No	N.A.	No	No	N.A.	**Fair**
Pollard M.S. et al. (09-2020) [45]	Yes	Yes	No	Yes	No	Yes	Yes	No.	No	Yes	No	N.A.	**Fair**
Carbia C. et al. (09-2021) [46]	Yes	Yes	No	Yes	No	Yes	Yes	No	N.A.	No	No	N.A.	**Fair**
Sallie S.N. et al. (11-2020) [47]	Yes	Yes	No	Yes	No	Yes	Yes	No	N.A.	Yes	No	N.A.	**Fair**
Garcia-Cerde R. et al. (05-2021) [48]	Yes	Yes	No	Yes	No	Yes	Yes	No.	N.A.	Yes	No	N.A.	**Fair**
Barbosa C. et al. (07-2021) [49]	Yes	Yes	No	Yes	No	No	Yes	No	N.A.	Yes	No	N.A.	**Fair**
Wang Y.F. et al. (2020) [50]	Yes	Yes	Yes	Yes	No	Yes	Yes	No	N.A.	Yes	No	N.A.	**Fair**

Questions of The National Institutes of Health (NIH) quality assessment tool for before-after (Pre-Post) study with no control group

1. Was the study question or objective clearly stated?
2. Were eligibility/selection criteria for the study population prespecified and clearly described?
3. Were the participants in the study representative of those who would be eligible for the test/service/intervention in the general or clinical population of interest?
4. Were all eligible participants that met the prespecified entry criteria enrolled?
5. Was the sample size sufficiently large to provide confidence in the findings?
6. Was the test/service/intervention clearly described and delivered consistently across the study population?
7. Were the outcome measures prespecified, clearly defined, valid, reliable, and assessed consistently across all study participants?
8. Were the people assessing the outcomes blinded to the participants' exposures/interventions?
9. Was the loss to follow-up after baseline 20% or less? Were those lost to follow-up accounted for in the analysis?
10. Did the statistical methods examine changes in outcome measures from before to after the intervention? Were statistical tests done that provided p values for the pre-to-post changes?
11. Were outcome measures of interest taken multiple times before the intervention and multiple times after the intervention (i.e., did they use an interrupted time-series design)?
12. If the intervention was conducted at a group level (e.g., a whole hospital, a community, etc.) did the statistical analysis take into account the use of individual-level data to determine effects at the group level?

N.A. = Not applicable

Study characteristics

A summary of the study characteristics of the 20 included studies can be found in Table 2. The full table can be found in Appendix 4.

All studies were published between August, 2020 and September, 2021. All studies had samples that varied in size from 336 to 12,328. The studies represent a total of 55,196 participants with a mean sample size of 2760 participants. 18/20 studies used age 18+ as inclusion criteria. One study used age 16+ as the cutoff and one used age 21+ as the cutoff. 17/20 studies had a retrospective cross-sectional study design, while 3/20 studies had a prospective study design. Online surveys distributed via email or social media (Facebook or Instagram advertisements) were the most common interviewing method used. One study used an online interview.

The studies were from a variety of countries and represented all continents except Africa; Europe (n=9), North-America (n=4), South-America (n=2), Australia (n=2) and Asia (n=1). Two studies were conducted in different continents. The most represented country was the United States (n=4).

Findings

Six studies used the AUDIT(-C) score to assess alcohol consumption[31,37,39,43,44,46], five used drinking days/ week[34,38,45,49,50], twelve used alcohol units/day/week/month[32,33,34,36,40,41,42,44,45,47,49,50] and ten used heavy episodic drinking[31,35,37,39,43,44,45,46,49,50] as a measure of alcohol consumption. Some studies used more than one outcome measure.

Table 2: Summary of characteristics of all included studies

Author	Study design	Country	Sample size (n=)	Recruitment method	Pre-COVID-19	During COVID-19	Recruiting time
Callinan S. et al.[31]	Retrospective, cross-sectional study	Australia	1684	Facebook/instagram advertisements	Past year before COVID-19 pandemic	During COVID-19 pandemic and restrictions	April 16, 2020 - May 11, 2020
Vanderbruggen N. et al. [32]	Retrospective, web-based online survey	Belgium	3632	Communication services of the University Hospital of Brussels (UZ Brussel) and the university (Vrije Universiteit Brussel) and through online social media (Facebook and Twitter)	Not specified	Not specified	April 9, 2020, -April 29, 2020
Callinan S. et al. [33]	Retrospective, cross-sectional study	Australia	2307	Paid advertisements on Facebook and Instagram	Alcohol consumption in 2019	Alcohol consumption during the 30 days prior to the survey (strong COVID-19 related restrictions)	April 29, 2020 - May 16, 2020.
Merlo Agnese et al. [34]	Retrospective, online survey	The Netherlands	761	Facebook advertisements	Before national lockdown (January 15, 2020 – March 14, 2020)	Lockdown period (March 15, 2020 – May 11, 2020).	June 24, 2020 – July 26, 2020
Claire L. Niedzwiedz et al. [35]	Prospective, repeated cross-sectional and longitudinal analysis of the UK Household Longitudinal Study	UK	10,977	Participants re-interviewed annually by online, face-to-face or telephone survey	Pre-pandemic data from wave 7 (2015–2017) wave 8 (2016–2018) and wave 9 (2017–2019)	An additional wave of data between 24th and 30th April 2020	Extra data collection between April 24, 2020 – April 30, 2020.
Bollen Z. et al. [36]	Prospective, longitudinal design. 1 retrospective and 3 prospective measurements	Belgium	1693	Through social media (Facebook and Twitter), University website, and national/regional press	March, 2019 - March, 2020	T1: 2–6 weeks after the onset of the strict lockdown (requirement to stay home; closure of bars and, restaurants. T2: 3 weeks after their first participation T3: Between June 29 and July 13. 3–5 weeks after lockdown offset.	T1: April 1, 2020 - May 3, 2020 T2: 3 weeks later T3: June 29, 2020 - July 13, 2020
Kolokotroni O. et al. [37]	Retrospective, cross-sectional study	Cyprus	745	Through social media and institutional and community social network mailing lists	February, 2020, the month preceding the emergence of coronavirus in Cyprus	Strict lockdown between March 31, 2020 and May 3, 2020: airports were closed, a night curfew was implemented and an “once a day” allowance for essential movements. Gatherings were prohibited and	April 10, 2020 - May 12, 2020

						intercity movements were only allowed for essential work.	
Souza T.C.M et al. [38]	Retrospective, observational study	Brazil	1368	Created on the Google Forms search management application Publicised on the university's websites and social media	Before January 2020	5 months after the implementtation of quarantine. Lockdown measures: (1) suspension of nonessential activities (2) suspension of schools and universities' activities (3) an incentive to adhere to social and physical distance measures	August, 2020 - September, 2020
Palmer et al. [39]	Retrospective, cross-sectional study	Mainly UK/USA, 10% other countries	336	Through social media (Instagram, Facebook and Twitter)	Not specified	After the implementation of COVID-19 restrictions	June 4, 2020 - August 5, 2020
Branquinho C. et al. [40]	Retrospective, cross-sectional study	Portugal, including islands (Azores and Madeira)	2621	Questionnaire developed in the Survey Legend platform	Not specified	The first wave of the COVID-19 pandemic in Portugal	April 2020 -August 2020
Dogas Z. et al. [41]	Retrospective, cross-sectional study	Croatia	3027	Through social media platforms and email messages to author's contacts	Not specified	During 10 days of COVID-19 lockdown	April 25, 2020 - May 5, 2020
Chen L. et al. [42]	Retrospective, cross-sectional study	USA	2709	Using the data from the HEAP study. The HEAP survey was carried out by the NORC. The sample is randomly drawn from NORC's AmeriSpeak Panel and Dynata Panel	Not specified	Not specified	October, 2020 – November, 2020
Boschuetz N. et al. [43]	Retrospective, online survey	USA	408	Through private groups on Facebook.	March 15, 2020 (prior to social distencing)	At moment of the survey (start dates of stay-at-home orders ranged from March 19 to March 25, 2020)	April 5, 2020 – April 12, 2020
Villanueva-Blasco V.J. et al. [44]	Retrospective, online survey	Spain	3779	Through social media and advertisements via e-mail and smartphone messaging applications	Not specified	After the first 30 days of confinement	April 14, 2020 – May 29, 2020
Pollard M.S. et al. [45]	Prospective survey study	USA	1540	Data collection using the RAND Corporation American Life Panel (ALP), a nationally representative, probability-sampled panel of 6000 participants age 18y or more	April 29, 2019 -June 9, 2019	Several months after wide-spread implementation of COVID-19 associated social distancing	Wave 1: April 29 -June 9, 2019 Wave 2: May 28 -June 16, 2020

Carbia C. et al. [46]	Retrospective, cross-sectional study	Ireland	713	Through social media (Twitter, Facebook), but also via email to staff and students at UCC	The year before COVID-19 restrictions started (March 2020)	Last two weeks of the second lockdown in Ireland with the highest level of restrictions (level 5: stay-at-home orders, pubs and restaurants closed, non-essential moves ban)	October 19, 2020 – December 3, 2020
Sallie S.N. et al. [47]	Retrospective, cross-sectional study	83 different countries: majority from UK and USA, followed by Canada and Germany	1346	Advertised by University of Cambridge news page and disseminated by news agencies throughout the UK and by various University of Cambridge colleges. Furthermore throughout personal and public social media sites (Facebook, Twitter)	Typical week in November (pre-quarantine)	Within the last week (during quarantine)	May 12, 2020 –May 28, 2020
Garcia-Cerde R. et al. [48]	Retrospective, cross-sectional study	Latin American and the Caribbean (33 countries)	12,328	Through PAHO's communication platforms (including Facebook, Twitter, the Pan American Network for Alcohol and Public Health), other networks (including the Healthy Caribbean Coalition, the Healthy Coalition of Latin America), as well as through PAHO staff and direct contacts	Drinking behaviors in 2019	Drinking behaviors during the COVID-19 pandemic period	May 22, 2020 - June 30, 2020
Barbosa C. et al. [49]	Retrospective, cross-sectional study	USA	993	Online survey using the Ipsos KnowledgePanel	February 2020 (before stay-at-home-order)	April 2020 (after stay-at-home order)	May 8, 2020 – May 15, 2020
Wang Y.F. et al. [50]	Retrospective, cross-sectional study	China	2229	Through websites and social media	Not specified	Not specified	May 7, 2020 - August 3, 2020

1) AUDIT score

Six studies examined changes in AUDIT-C scores before and during the COVID-19 pandemic (Table 4a). Only two of them also calculated full AUDIT scores (Table 4b).

One study reported a statistically significant increase in AUDIT-C score from 3.32 to 3.60, an increase of 8.43%[43]. Three studies indicated a statistically significant decrease in the AUDIT-C score[31,37,39]. The largest decrease was from 1.89 to 1.54, representing a 18.52% decrease[37]. The last two studies also showed a decrease in AUDIT-C score, but no p-values were reported[44,46].

The full AUDIT scores decreased from 8.61 to 7.33[31] and from 8.60 to 6.70[39], representing a percent change of -14.87% and -22.09%, respectively.

Two studies examined gender-related differences, with inconsistent results[43,44].

Further details are provided in Appendix 5.

Table 4a: AUDIT-C score before and during COVID-19 pandemic

Author	Sample size	Country	AUDIT-C before COVID-19 (mean)	AUDIT-C during COVID-19 (mean)	Difference (%)	P-value*
Callinan S. et al.[31]	1684	Australia	5.62	5.32	**- 5.34%**	Sign.
Kolokotroni O. et al. [37]	745	Cyprus	1.89	1.54	**- 18.52%**	Sign.
Palmer et al. [39]	336	UK/USA	5.2	4.5	**- 13.46%**	Sign.
Boschuetz N. et al. [43]	408	USA	3.32	3.60	**+ 8.43%**	Sign.
Villanueva-Blasco V.J. et al. [44]	3779	Spain	3.16	2.36	- 25.32%	Unknown
Carbia C. et al. [46]	713	Ireland	5.05	3.37	- 33.27%	Unknown

AUDIT-C = Alcohol Use Disorders Identification Test (scale of 0-12)

* Sign.: P-value ≤0.05, Unsign.: P-value >0.05, Unknown: not calculated/reported

Table 4b: full AUDIT score before and during COVID-19 pandemic

Author	Sample size	Country	AUDIT-C before COVID-19 (mean)	AUDIT-C during COVID-19 (mean)	Difference (%)	P-value*
Callinan S. et al.[31]	1684	Australia	8.61	7.33	**- 14.87%**	Sign.
Palmer et al. [39]	336	UK/USA	8.60	6.70	**- 22.09%**	Sign.

AUDIT = Alcohol Use Disorders Identification Test

* Significant: P-value ≤0.05, Unsignificant: P-value >0.05, Unknown: not calculated/reported

2) Drinking days per week

Five studies examined the number of drinking days per week before and during the COVID-19 pandemic (Table 5). One study showed a statistically significant decrease from 1.9 to 1.8 drinking days per week, representing a 5.26% decrease[50]. One study reported a statistically significant increase from 1.28 to 1.45 drinking days per week, corresponding to an increase of 13.28%[45].

One study found no change before and during the pandemic in the entire sample[38]. However, a shift in drinking behavior was noted in the subgroups; with an increase in abstainers and heavy drinkers (4 or more per week) and a decrease in moderate drinkers (1-3x/week)[38].

The last two studies were statistically unsignificant or the p-value was not provided[34,49].

Three studies examined gender-related differences, with inconsistent results [34,45,50].

For more details, see Appendix 6.

Table 5: Drinking days per week before and during COVID-19 pandemic

Author	Sample size	Country	Days/week before COVID-19 (Mean)	Days/week during COVID-19 (Mean)	Difference (%)	P-value*
Merlo Agnese et al.[34]	761	The Netherlands	2.4 days	2.5 days	+ 4.17%	Unsign.
Souza T.C.M et al.[38]	1368	Brazil	0.5 days (median)	0.5 days (median)	+- 0.00%	Sign.
Pollard M.S. et al.[45]	1540	USA	1.28 days	1.45 days	**+ 13.28%**	Sign.
Barbosa C. et al.[49]	993	USA	1.83 days	2.19 days	+ 19.67%	Unknown
Wang Y.F. et al.[50]	2229	China	1.9 days	1.8 days	**- 5.26%**	Sign.

* Sign.: P-value ≤0.05, Unsign.: P-value >0.05, Unknown: not calculated/reported

3) *Units per day*

Twelve studies examined the difference in alcohol units before and during the COVID-19 pandemic but only eleven studies calculated an absolute difference in alcohol units per day, week or month (Table 6). Three studies found a statistically significant increase[32,42,49] and three studies found a statistically significant decrease[44,47,50]. The largest increase was from 0.43 to 0.61 units/day, corresponding to a 41.86% increase[42]. The largest decrease was from 0.17 to 0.12 units/day, corresponding to a 29,41% decrease[44].

Four studies were statistically unsignificant or the p-value was not provided[33,34,36,45]. One of these four studies had a longitudinal study design and found a decrease in the number of alcohol units during the COVID-19 lockdown period, but a stabilization after the lockdown period compared to before the lockdown[36].

The last of these eleven studies made two subdivisions: units beer/day and units wine/day[40]. A statistically significant increase was reported from 0.311 to 0.507 units beer/day, corresponding a 63.02% increase. However, no difference was seen in units wine/day before and during COVID-19 pandemic.

In the remaining study, outcome measures were divided into subdivisions[41]. An increase was reported in the group of abstainers and the heavy drinkers (≥ 4 drinks per week).

Four studies examined gender-related differences, with inconsistent results[33,44,45,50].

For more details, see Appendix 7.

Table 6: Alcohol units per day before and during COVID-19 pandemic

Author	Sample size	Country	Units/day before COVID-19 (Mean)	Units/day during COVID-19 (Mean)	Difference (%)	P-value*
Vanderbruggen N. et al. [32]	3632	Belgium	1.0	1.4	+ 40%	Sign.
Callinan S. et al. [33]	2307	Australia	3.53	3.52	- 0.28%	Unknown.
Merlo Agnese et al. [34]	761	The Netherlands	0.86	0.84	- 2.33%	Unsign.
Bollen Z. et al. [36]	1693	Belgium	1.20	0.99	- 17.50%	Unknown.
Branquinho C. et al. [40]	2621	Portugal	Beer: 0.311 Wine: 0.225	Beer: 0.507 Wine: 0.224	+ 63.02% - 0.44%	Sign. Unsign.
Chen L. et al. [42]	2709	USA	Median: 0.43	Median: 0.61	+ 41.86%	Sign.
Villanueva-Blasco V.J. et al.[44]	3779	Spain	0.17	0.12	-29.41	Sign.
Pollard M.S. et al. [45]	1540	USA	0.62	0.62	+- 0.00%	Unsign.
Sallie S.N. et al. [47]	1346	UK/USA	1.19	1.15	- 3.36%	Sign.
Barbosa C. et al. [49]	993	USA	0.74	0.95	+ 28.38%	Sign.
Wang Y.F. et al. [50]	2229	China	0.50	0.49	- 2.00%	Sign.

* Sign.: P-value ≤0.05, Unsign.: P-value >0.05, Unknown: not calculated/reported

4) *Heavy episodic drinking*

Ten studies examined the difference in HED before and during the COVID-19 pandemic. Six studies reported question 3 of the AUDIT-C individually (Table 7)[31,37,39,43,44,46]. Four studies documented a statistically significant decrease[31,37,39,43]. The largest decrease was from 0.34 to 0.20, corresponding to a 41.18% decrease[44]. The last two studies also showed a decrease but no p-values were reported[44,46]

Next, one study found an increase in HED (mean/30 days) but was statistically insignificant (Table 7)[45].

Two other studies examined binge drinking episodes. One study reported a significant increase in binge drinking from 23.39% to 28.39% (Table 7)[49]. The other study also reported an increase but no p-value was provided35.

One last study compared seven subdivisions of HED before and during COVID-19 pandemic48 but did not calculate a total difference and is therefore not shown in Table 7. The results were inconclusive as no p-value was provided.

For more details, see Appendix 8.

Table 7: Heavy episodic drinking before and during COVID-19 pandemic

Title	Sample size	Country	HED before COVID-19 pandemic	HED during COVID-19 pandemic	Difference (%)	P-value*
Callinan S. et al. [31]	1684	Australia	AUDIT-C Q3*: 1.59	AUDIT-C Q3*: 1.27	- 20.13%	Sign.
Kolokotroni O. et al. [37]	745	Cyprus	AUDIT-C Q3*: 0.34	AUDIT-C Q3*: 0.20	- 41.18%	Sign.
Palmer et al. [39]	336	UK/USA	AUDIT-C Q3*: 1.5	AUDIT-C Q3*: 1.1	- 26.67%	Sign.
Boschuetz N. et al. [43]	408	USA	AUDIT-C Q3*: 0.63	AUDIT-C Q3*: 0.55	- 12.70%	Sign.
Villanueva-Blasco V.J. et al. [44]	3779	Spain	AUDIT-C Q3*: 0.63	AUDIT-C Q3*: 0.27	- 57.14%	Unknown
Carbia C. et al. [46]	713	Ireland	AUDIT-C Q3*: 1.42	AUDIT-C Q3*: 0.66	- 53.52%	Unknown
Pollard M.S. et al. [45]	1540	USA	Mean/30 days: 0.69	Mean/30 days: 0.82	+ 18.84%	Unsign.

Claire L. Niedzwiedz et al. [35]	10,977	UK	Binge drinking: 10.8%	Binge drinking: 16.2%	+ 50.00%	Unknown
Barbosa C. et al. [49]	993	USA	Binge drinking: 23.39%	Binge drinking: 28.39%	**+ 21.38%**	Sign.

* AUDIT-C question 3: How often do you drink 6 or more drinks in one occasion?
Never = score 0, Monthly or < monthly = score 1, 2-4x/month = score 2, 2-3x/week = score 3, 4 or more/week = score 4
* Sign.: P-value ≤0.05, Unsign.: P-value >0.05, Unknown: not calculated/reported

Discussion

In the early days of the COVID-19 pandemic there was concern that the use of alcohol and other substances would increase along with associated mental health problems [9,10,18].

This systematic review synthesizes the evidence from twenty observational studies of changes in alcohol consumption during the COVID-19 pandemic. Most studies had a fair quality, the most common methodological problems were an unrepresentative sample, small sample size and lack of multiple outcome measures. Overall, the results suggest a slight decrease in alcohol consumption during the COVID-19 pandemic, but results are widespread and inconsistent. The AUDIT-C score decreased in most studies, mainly due to a decrease in the number of drinks consumed and the number of HED episodes. However, the change in drinking days per week/month and alcohol units per day were inconsistent.

We found five other systematic reviews that also examined changes in alcohol consumption during the COVID-19 pandemic. Two systematic reviews reported a decrease in alcohol consumption during the COVID-19 pandemic[51,52]. More specifically, they concluded that the total alcohol consumption, frequency of alcohol consumption and heavy episodic drinking episodes decreased during the COVID-19 pandemic. This is largely consistent with the results of our systematic review.

Another systematic review reported an increase in alcohol consumption during the COVID-19 pandemic. However, they included studies with low methodological quality and studies conducted in specific subpopulations. Therefore, we concluded that the certainty of these results is rather low [53].

Two other systematic reviews reported mixed results[54,55]. The first systematic review found that the change in alcohol consumption varied considerably by country[54]. This difference may be related to differences in attitudes towards alcohol and to the fact that countries differed in whether alcohol was considered essential during the pandemic (e.g., United States, United Kingdom) or not essential or prohibited (e.g., India, South Africa)[54]. Our results are consistent with this systematic review. First, the only study that observed an increase in drinking days per week was conducted in the United States, whereas the only study that found a decrease was conducted in China. In addition, increases in AUDIT-C score, alcohol units per day and binge drinking episodes were mostly found in the United States.

The second systematic review that found mixed results suggested that the impact of the COVID-19 pandemic on alcohol consumption was minimal or at least variable and depending on the subpopulation and pre-pandemic drinking patterns[55]. They suggested that individuals

who were already drinking in a risky manner before the pandemic were more likely to increase their substance use during the pandemic.

A large cross-sectional European study, published in 2022, found an overall decrease in alcohol consumption in the general population during the pandemic, but this was mainly due to a decrease in consumption among low-risk individuals[56]. The study also suggests that the majority of alcohol consumers who were already hazardous consumers before the pandemic increased their alcohol consumption during the pandemic, both in terms of quantity and frequency[56]. This underscores the need to separately assess the impact of the COVID-19 pandemic on alcohol consumption in different subpopulations at high risk for increasing their alcohol consumption.

One of the studies included in our review is particularly interesting because it has a prospective study design, which is of higher methodological quality. They repeated the survey several times during and after the COVID-19 pandemic[36]. They concluded that alcohol consumption initially decreased during the pandemic, but that this decrease disappeared when the COVID-19 pandemic and its associated measures, had passed. A suggestion can be made that the decrease in alcohol consumption is temporary and may disappear over time but further research is needed to assess the long-term effects of the COVID-19 pandemic on alcohol consumption.

The studies included in our review were conducted predominantly in high-income countries. The highlighted gap in research for low-income countries, particularly in Africa, is of great concern, as these countries were especially affected by the COVID-19 pandemic[51]. Because the magnitude of the association between the COVID-19 pandemic and alcohol consumption may vary from country to country, we should be cautious when attempting to extrapolate the results of this review to low-income countries.

Our results, along with other existing literature, can be considered evidence in support of the two hypotheses mentioned earlier. A constant or slightly increased frequency of alcohol consumption could be caused by the psychological distress and increased loneliness resulting from the COVID-19 pandemic[7,11-15]. This may be problematic for the future as we know that daily alcohol consumption is a risk factor for the development of alcohol use disorder[57]. On the other hand, our results suggest a decrease in total alcohol consumption and HED episodes, which may be partly due to the limited availability of alcohol (closed stores, bars, restaurants...), financial constraints (temporary unemployment), and reduced opportunities to consume alcohol during the lockdown resulting from the COVID-19 pandemic.

Strengths and limitations

This study is one of the first comprehensive systematic reviews that attempts to summarize the results of quantitative observational studies of changes in alcohol consumption during the COVID-19 pandemic.

The key strengths of our study are the breadth of our search strategy, which enabled the identification and subsequent inclusion of relevant studies from around the world. We also used a structured approach to data collection and used a recognized risk of bias assessment

tool (the Instrument Q) to assess the quality of the studies we found[30]. This allowed us to better interpret the results.
In addition, some results were converted to the same outcome measure, for example, alcohol units per week to units per day, which allowed us to compare more studies with each other. Finally, and most importantly, we used the SwiM reporting guideline to synthesize and analyze the results[27]. This allowed us to transparently report how the studies were grouped, what standardized measures were used, what synthesis method was used, how the data were presented, how the synthesis results were summarized, and what the limitations of the synthesis were.

However, the interpretations presented in this review should be understood in the context of a number of limitations. First, most of the studies were surveys using convenience samples. Previous research has questioned the representativeness of surveys for the entire population of a country, particularly with respect to alcohol consumption, which is substantially underestimated at the population level[58,59]. Second, this systematic review addresses changes in alcohol consumption in the general population, but as mentioned earlier, trends at the general population level may not be applicable to subpopulations at higher risk of increasing their alcohol consumption (e.g., healthcare workers, drug users, people with mental health problems). Third, we were unable to review material published in languages other than English, French, and Dutch, so relevant research published in other languages may not have been included. Fourth, the review was primarily based on studies that relied on retrospective data collection; more longitudinal data are needed. Fifth, interpretation of the results is hampered by the substantial heterogeneity of the included studies. There was a considerable range of methodological differences (e.g. sample size, recruitment method, outcome measures), which made meta-analysis of the results impossible. In addition, most studies did not include confidence intervals or standard deviations. Finally, statistical significance is not synonymous with practical relevance. Practical relevance refers to the size of the difference (effect size); results are practically relevant if the difference is large enough to be meaningful in real life. What is meaningful is subjective and depends on the context.

Conclusion

The results of this review suggest a slight decrease in AUDIT-C score and HED episodes during the COVID-19 pandemic. However, the results on drinking days per week and alcohol units per day are widespread and inconsistent. Moreover, the quality of the included studies was only fair. Therefore, this makes formulating a conclusion on the change of total alcohol consumption in the general population during the covid-19 pandemic very difficult.

Our findings highlight the need for more high-quality studies, especially in low- and middle-income countries, to rapidly expand the evidence base in this area. In addition, there is a need for comprehensive population-level data on alcohol consumption in different subpopulations. Prospective studies are needed to assess the long-term effects of the COVID-19 pandemic on alcohol consumption. This will help guide and support policy measures in different (sub)populations and different countries.

Declaration

Declaration of conflicting interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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Appendices

Appendix 1: Used edition of the Web of Science Core collection

Search string designed for Web of Science Core collection:

Science Citation Index Expanded (SCI-EXPANDED)--1955-present

Social Sciences Citation Index (SSCI)--1956-present

Arts & Humanities Citation Index (AHCI)--1975-present

Conference Proceedings Citation Index – Science (CPCI-S)--1990-present

Conference Proceedings Citation Index – Social Science & Humanities (CPCI-SSH)--1990-present

Emerging Sources Citation Index (ESCI)--2005-present

Appendix 2: Search strings with corresponding databases

Search strings with corresponding databases	
MEDLINE (via Pubmed)	Concept 1: Covid-19 pandemic ("COVID-19"[MeSH] OR nCoV[tiab] OR 2019nCoV[tiab] OR COVID[tiab] OR COVID19[tiab] OR SARS2[tiab] OR "cov 2"[tiab] OR cov2[tiab] OR coronavirus*[tiab] OR "corona virus*"[tiab] OR "severe acute respiratory syndrome 2"[tiab] OR "Wuhan virus"[tiab] OR nCoV[ad] OR 2019nCoV[ad] OR COVID[ad] OR COVID19[ad] OR "SARS-Cov-2"[MeSH] OR SARS2[ad] OR "severe acute respiratory syndrome 2"[ad] OR "cov 2"[ad] OR cov2[ad] OR coronavirus*[ad] OR "corona virus*"[ad] OR ((wuhan[tiab] OR novel[tiab] OR new[tiab] OR 19[tiab] OR 2019[tiab] OR epidem*[tiab] OR pandem*[tiab] OR outbreak[tiab] OR wuhan[ad] OR novel[ad] OR new[ad] OR 19[ad] OR 2019[ad] OR epidemy[ad] OR epidemic*[ad] OR pandem*[ad] OR outbreak[ad]) AND ("Coronavirus"[Mesh:NoExp] OR "Betacoronavirus"[Mesh:NoExp] OR "Coronavirus Infections"[Mesh:NoExp] OR "pneumonia virus*"[tiab] OR cov[tiab] OR hcov[tiab]))) AND 2019/12[PDAT]:2030[PDAT] Concept 2: alcohol consumption ("Ethanol"[Mesh] OR "Ethanol*"[tiab] OR "Alcohol Drinking"[Mesh] OR "Alcohol*"[tiab] OR "Ethyl*"[tiab] OR "Alcoholic Beverages"[Mesh] OR "Beer"[tiab] OR "Wine"[tiab] OR “liquor” [tiab])
EMBASE	Concept 1: Covid-19 pandemic ('coronavirus disease 2019'/exp OR nCoV:ti,ab,kw,ad,ff OR 2019nCoV:ti,ab,kw,ad,ff OR COVID:ti,ab,kw,ad,ff OR COVID19:ti,ab,kw,ad,ff OR 'Severe acute respiratory syndrome coronavirus 2'/exp OR 'severe acute respiratory syndrome 2':ti,ab,kw,ff OR 'sars cov 2':ti,ab,kw,ad,ff OR SARS2:ti,ab,kw,ad,ff OR 'cov 2':ti,ab,kw,ad,ff OR cov2:ti,ab,kw,ad,ff OR coronavirus*:ti,ab,kw,ad,ff OR ‘corona virus*’:ti,ab,kw,ad,ff OR ‘wuhan virus’:ti,ab,kw OR ((wuhan:ti,ab,kw,ad,ff OR novel:ti,ab,kw,ad,ff OR 19:ti,ab,kw,ad,ff OR 2019:ti,ab,kw,ad,ff OR epidem*:ti,ab,kw OR epidemy:ti,ab,kw,ff OR epidemic*:ti,ab,kw,ad,ff OR pandem*:ti,ab,kw,ad,ff OR outbreak:ti,ab,kw,ad,ff OR new:ti,ab,kw,ad,ff) AND ('pneumonia virus*':ti,ab,kw OR cov:ti,ab,kw OR hcov:ti,ab,kw))) AND [2019-2021]/py Concept 2: Alcohol consumption 'alcohol consumption'/exp OR 'alcohol'/exp OR 'alcohol*':ti,ab,kw OR ‘Ethanol*’:ti,ab,kw OR ‘Ethyl*’:ti,ab,kw OR ‘alcoholic beverage’/exp OR ‘Beer’:ti,ab,kw OR ‘Wine’:ti,ab,kw OR ‘liquor’:ti,ab,kw

WEB OF SCIENCE CORE COLLECTION (via Web of Science)	Concept 1: COVID-19 pandemic (TS=(“nCoV” OR “2019nCoV” OR “COVID” OR “COVID19” OR “SARS2” OR “cov 2” OR “cov2” OR “coronavirus*” OR “corona virus*” OR "severe acute respiratory syndrome 2" OR “wuhan virus” OR ((“wuhan” OR “novel” OR “19” OR “2019” OR “epidem*” OR “pandem*” OR “outbreak” OR “new”) AND (“pneumonia virus*” OR “cov” OR “hcov”))) OR AD=("nCoV" OR "2019nCoV" OR "COVID" OR "COVID19" OR "SARS2" OR "cov 2" OR "cov2" OR "coronavirus*" OR "corona virus*" OR "severe acute respiratory syndrome 2") OR (AD=("wuhan" OR "novel" OR "new" OR "19" OR "2019" OR "epidemy" OR "epidemic*" OR "pandem*" OR "outbreak") AND TS=("pneumonia virus*" OR "cov" OR "hcov"))) AND PY=(2019-2022) Concept 2: Alcohol consumption TS=("Ethanol*" OR "Alcohol*" OR "Ethyl*" OR "Beer" OR "Wine" OR “liquor”)

Appendix 3: In- and exclusion criteria

PICO	Inclusion criteria	Exclusion criteria
Population	Adults Any sex Any ethnicity	Minors
Intervention	COVID-19 pandemic	Pandemics other than COVID-19
Comparison	Time before the COVID-19 pandemic	Not applicable
Outcome	Quantitative change in alcohol consumption	Studies that report only alcohol consumption during the COVID-19 pandemic.
Study Design	All quantitative observational studies.	Experimental studies

Appendix 4: Overview of characteristics of all included studies

Title	Journal	Author	Year of publication	Possible conflict of interest	Study design	Country	Sample size	Age	Inclusion criteria	Exclusion criteria	Race/Ethnicity
Shifts in alcohol consumption during the COVID-19 pandemic: early indications from Australia[31]	Wiley Public Health Emergency Collection	Callinan, S.	10-2020	No conflict of interest	Cross-sectional study	Australia	1684	18–65y	1. Adults aged 18–65 2. Australian 3. Drink at least monthly	/	Not specified
Self-Reported Alcohol, Tobacco, and Cannabis Use during COVID-19 Lockdown Measures: Results from a Web-Based Survey[32]	European Addiction Research	Vanderbruggen, N.	09-2020	No conflict of interest	Web-based Online survey	Belgium	3632	18+y	Adult Belgian residents, irrespective of age, living area, or current substance use	/	Not specified
Purchasing, consumption, demographic and socioeconomic variables associated with shifts in alcohol consumption during the COVID-19 pandemic[33]	Drug and Alcohol Review	Callinan, S.	10-2020	No conflict of interest	Cross-sectional study	Australia	2307	18+y	1. 18+y 2. Australian residents 3. Consuming alcohol at least monthly 4. Understanding English	/	Not specified
Mood and Changes in Alcohol Consumption in Young Adults during COVID-19 Lockdown: A Model Explaining Associations with Perceived Immune Fitness and Experiencing COVID-19 Symptoms[34]	International Journal of Environmental Research and Public Health	Merlo, Agnese	09-2021	No conflict of interest	Online survey	The Netherlands	761	18+y	Dutch adults aged 18 years and older	/	Not specified
Mental health and health behaviours before and during the initial phase of the COVID-19 lockdown: longitudinal analyses of the UK Household Longitudinal Study[35]	BMJ: Journal of Epidemiology & community online	Claire L Niedzwiedz	09-2020	No conflict of interest	Repeated cross-sectional and longitudinal analysis of the UK Household Longitudinal Study,	UK	10,977	18+y	18+y	/	White 90.8% Asian 5.1% Black 1.9% Mixed 1.6% Other 0.6%
Longitudinal Assessment of Alcohol Consumption throughout the First COVID-19 Lockdown: Contribution of Age and Pre-Pandemic Drinking Patterns[36]	European Addiction Research	Bollen Z.	09-2021	No conflict of interest	Longetudinal design	Belgium	1693	18+y	French-speaking Belgian adults	Living outside Belgium	Not specified
Lifestyle habits of adults during the COVID-19 pandemic lockdown in Cyprus: evidence from a cross-sectional study[37]	BMC Public Health	Kolokotroni O.	04-2021	No conflict of interest	Cross-sectional study	Cyprus	745	18+y	adults ≥18 years who were living in Cyprus during the period of the Spring 2020 lockdown	/	Not specified
Lifestyle and eating habits before and during COVID-19 quarantine in Brazil[38]	Public Heath Nutrition	Souza TCM	06-2021	No conflict of interest	Observational study	Brazil	1368	18+y	Brazilian volunteers, 18 years old or older, who agreed to participate and answered an online questionnaire	Pregnant women	Not specified
Impact of COVID-19 restrictions on alcohol consumption behaviours[39]	BJPsych Open	Palmer	09-2021	No conflict of interest	Cross-sectional study	Mainly UK/USA, 10% other	336	16+y	1. Internet access 2. Speaking English 3. Provid informed consent	/	White 90.5% Other 9.5%
Health risk behaviors before and during COVID-19 and gender differences[40]	Journal of Community Psychology	Branquinho C.	08-2021	No conflict of interest	Cross-sectional study	Portugal, including islands (Azores and Madeira)	2621	18+y	> 18y	/	Not specified

The effect of COVID-19 lockdown on lifestyle and mood in Croatian general population: a cross-sectional study[41]	Croatian Medical Journal	Dogas Z.	08-2020	No conflict of interest	Cross-sectional study	Croatia	3027	18+y	> 18y	< 18y	Not specified
Changes of Exercise, Screen Time, Fast Food Consumption, Alcohol, and Cigarette Smoking during the COVID-19 Pandemic among Adults in the United States[42]	Nutritiens	Chen L.	09-2021	No conflict of interest	Cross-sectional study	USA	2709	18+y	USA adults > 18y	/	White 61.3% Black 11.9% Asian 6.4% Hispanic 16.7% American Indian and other 3.6%
Changes in Alcohol Use Patterns in the United States During COVID-19 Pandemic[43]	Wisconsin Medical Journal	Boschuetz N.	09-2020	No conflict of interest	Online survey	USA	408	18+y	1. 18+y 2. Access to social media	/	White 91.67% Black 0.25% Asian 5.15% Hispanic 0.73% Other 2.20%
Changes in Alcohol Consumption Pattern Based on Gender during COVID-19 Confinement in Spain[44]	International Journal of Environmental Research and Public Health	Villanueva-Blasco V.J.	07-2021	No conflict of interest	Online survey	Spain	3779	18-64y	1. Internet access 2. Age range 18-64y 3. Explicit agreement to participate 4. Properly filling out the survey	< 18 y, > 64 y	Not specified
Changes in Adult Alcohol Use and Consequences During the COVID-19 Pandemic in the US[45]	JAMA Network Open	Pollard M.S.	09-2020	No conflict of interest	Survey study	USA	1540	18+y	1. 18y or older 2. speaking English or Spanish	/	White 71.4% Black 9.8% Hispanic 13.9% Other 4.9%
Associations between Mental Health, Alcohol Consumption and Drinking Motives during COVID-19 Second Lockdown in Ireland[46]	Alcohol and alcoholism	Carbia C.	09-2021	No conflict of interest	Cross-sectional study	Ireland	713	18-60y	1. 18-60y 2. lived in Ireland at least the past year 3. Have consumed alcohol at least once in their lifetime	Alcohol abstainers and < 18y or > 60y old	Not specified
Assessing international alcohol consumption patterns during isolation from the COVID-19 pandemic using an online survey: highlighting negative emotionality mechanisms[47]	BMJ Open	Sallie S.N.	11-2020	No conflict of interest	Cross-sectional study	83 different countries: majority from UK and USA, followed by Canada and Germany	1346	18+y	18+y, understanding English	/	Not specified
Alcohol use during the COVID-19 pandemic in Latin America and the Caribbean[48]	Pan American Journal of Public Health	Garcia-Cerde R.	05-2021	No conflict of interest	Cross-sectional study	Latin American and the Caribbean (33 countries)	12,328	18+y	18+y, resident of one of the Latin American of Caribbean countries of territories	Traveled out of their country since 15 March 2020	White 41.73% Black 4.2% Indigenous 1.46% Mixed/Others 52.62%
Alcohol Consumption in Response to the Covid-19 Pandemic in the United States. Results from a Nationally Representative Survey[49]	Journal of Addiction Medicine	Barbosa C.	07-2021	No conflict of interest	Cross-sectional study	USA	993	21+y	1. 21 years or older 2. At least 1 drinking day in February	< 21y, no drinking days in February	White 65.66% Non-hispanic 9.01% Black 6.77% Other 18.55%

Alcohol Consumption in China Before and During COVID-19: Preliminary Results From an Online Retrospective Survey[50]	Frontiers in psychiatry	Wang, Y. F.	2020	No conflict of interest	Cross-sectional study	China	2229	18+y	1. 18 years of age or older 2. Alcohol drinker 3. Being able to access online services 4. Being able to read and write in Chinese 5. Expressing an interest in participant this study 6. Willing to provide informed consent to participate in the study	1. Under 18 years of age 2. Unable to access online services 3. Unable to read and write in Chinese	Not specified

Appendix 4: Overview of characteristics of all included studies (continued)

Title	Working circumstances	Recruitment method	Pre COVID-19 definition	During COVID-19 definition	Follow-up time	Prospective/ Retrospective	Recruiting time	Dropout
Shifts in alcohol consumption during the COVID-19 pandemic: early indications from Australia[31]	Not specified	Facebook/instagram advertisements	Past year before COVID-19 pandemic	During COVID-19 pandemic and restrictions	/	Retrospective	April 16, 2020 and May 11, 2020	251 respondents were removed for not completing the survey.
Self-Reported Alcohol, Tobacco, and Cannabis Use during COVID-19 Lockdown Measures: Results from a Web-Based Survey[32]	Profession: - In healthcare 36.8% - Not in healthcare 63.2% Educational background: - Primary education 0.8% - Vocational education 2% - Secondary 15.5% - Higher education 76.0% - Doctorate 5.2% - Missing 0.5%	The survey was distributed by the communication services of the University Hospital of Brussels (UZ Brussel) and the university (Vrije Universiteit Brussel) and was circulated through online social media (Facebook and Twitter).	Not specified (period before COVID-19 lockdown)	Survey was sent out over a brief period of time (20 days; between April 9, 2020, and April 29, 2020)	/	Retrospective	April 9, 2020, and April 29, 2020	4098 respondents participated, with 3,632 (89%) completing the survey Dropout = 466
Purchasing, consumption, demographic and socioeconomic variables associated with shifts in alcohol consumption during the COVID-19 pandemic[33]	Not specified	Paid advertisements on Facebook and Instagram	Their consumption in 2019.	Their usual consumption during the 30 days prior to being surveyed, covering the initial period of strong COVID-19 related restrictions	/	Retrospective	Recruitment ran from 29 April to 16 May 2020.	3288 respondents - 54 did not answer enough questions -71 reported no alcohol consumption in one of the two time points - 24 participants were removed because they completed the survey after 16 May, when federal restrictions initially began to ease
Mood and Changes in Alcohol Consumption in Young Adults during COVID-19 Lockdown: A Model Explaining Associations with Perceived Immune Fitness and Experiencing COVID-19 Symptoms[34]	Not specified	Facebook advertisements	Period before the national lockdown (15th of January–14th of March 2020)	Lockdown period (15th of March–11th of May 2020).	/	Retrospective	June 24, 2020 and July 26, 2020	/

Mental health and health behaviours before and during the initial phase of the COVID-19 lockdown: longitudinal analyses of the UK Household Longitudinal Study[35]	Not specified	Participants re-interviewed annually by online, face-to-face or telephone survey	Pre-pandemic data were used from wave 7 (2015–2017), wave 8 (2016–2018) and wave 9 (2017–2019)	Not specified	/	Prospective	Extra data collection: April 24, 2020 and April 30, 2020	/
Longitudinal Assessment of Alcohol Consumption throughout the First COVID-19 Lockdown: Contribution of Age and Pre-Pandemic Drinking Patterns[36]	Not specified	Survey distributed through social media (Facebook and Twitter), University website, and national/regional press	March 2019 - March 2020	T1: 2–6 weeks after the onset of the strict lockdown (requirement to stay home; closure of bars, restaurants, and nonessential shops; prohibition of nonessential travels), which was identical across all Belgian regions T2: 3 weeks after their first participation for the second stage T3: 3–5 weeks after lockdown offset (i.e., re-opening of bars and restaurants; close contact allowed with 10 persons per week; recreational activities and travels allowed)	/	1 Retrospective measurement and afterwards 3 prospective measurements	T1: April 1, 2020 and May 3, 2020 T2: 3 weeks later T3: June 29, 2020 and July 13, 2020	314 participants (15.5%) of the sample who completed all the stages were excluded because their responses were incomplete (N = 178, 8.9%), aberrant (N = 17, 0.8%), or because participants were living outside Belgium (and were thus confronted to different lockdown conditions, N = 119, 5.9%)
Lifestyle habits of adults during the COVID-19 pandemic lockdown in Cyprus: evidence from a cross-sectional study[37]	Student 20.8% Unemployed for the whole year 3.0% Unemployed for part of the year2.7% Employed 66.3% Retired 7.2% Working from home 63.8% Working at office 9.4% Working both places 18.5%	Cross-sectional web-based questionnaire survey, anonymous, through social media and institutional and community social network mailing lists	February 2020, the month preceding the emergence of coronavirus in Cyprus	The country went into a strict lockdown between 31st March and May 3rd when airports were closed, a night curfew was implemented and an "once a day" allowance of going out of the house was given for essential movements. Gatherings were prohibited and intercity movements were only allowed for essential work. Between May 3rd and May 21st, daily allowance to go out of the house increased to maximum of 3 times per day. After May 21st, there was a gradual lifting of restriction measures.	/	Retrospective	10th April and 12th May 2020	/
Lifestyle and eating habits before and during COVID-19 quarantine in Brazil[38]	Unemployed 7,3% Retired 3,3% Work/study remotely full time 40,6% Work/study remotely part-time 30,1% Work/study unchanged, not remotely 11,0% Other 7,7%	The online, anonymous questionnaire was created on the Google Forms® search management application, publicised on the university's websites and social media.	Before January 2020	Approximately 5 months after the implementation of quarantine. Lockdown measures implemented during that period included (1) suspension of nonessential activities (closing of restaurants, bars, shopping malls and gyms); (2) suspension of schools and universities' activities and implementation of emergency remote education and (3) an incentive to adhere to social and physical distance measures	/	Retrospective	August, 2020 and September, 2020	4 excluded due to accessed but not answered, 3 excluded due to pregnancy and 121 excluded due to repeated responses
Impact of COVID-19 restrictions on alcohol consumption behaviours[39]	Not specified	Recruiting through social media (Instagram, Facebook and Twitter). The survey was launched and run from the hangover.cognitron.co. uk website.	Not specified	After the implementation of COVID-19 restrictions. The participant determined which COVID-19 restrictions they were referring to rather than specify a particular date or action because of the multiplicity of different approaches experienced by individuals in various countries.	/	Retrospective	June 4, 2020 and August 5, 2020	10 excluded due to abstaining of alcohol
Health risk behaviors before and during COVID-19 and gender differences[40]	Not specified	Online questionnaire developed in the Survey Legend platform and directed to people over 18 years old.	Not specified	The first wave of the COVID-19 pandemic in Portugal (April/August 2020)	/	Retrospective	April-August, 2020	/

The effect of COVID-19 lockdown on lifestyle and mood in Croatian general population: a cross-sectional study[41]	Employed 73.09% Unemployed, 17.71% Retired 5.03% Maternity leave 4.17% No change in work rhytme 12.06% Work from home 40.78% Rotating shift work 15.28% Part time work 5.13% Other 26.75%	Online, self-report questionnaire was distributed through social media platforms and email messages to author's contacts (snowball sampling technique). All contacts were asked to forward the link to the survey to their contacts.	Not specified	During 10 days of COVID-19 lockdown	/	Retrospective	April 25, 2020 and May 5, 2020	/
Changes of Exercise, Screen Time, Fast Food Consumption, Alcohol, and Cigarette Smoking during the COVID-19 Pandemic among Adults in the United States[42]	Not specified	This analysis was conducted using the data from the HEAP study. The HEAP survey was carried out by the NORC. The sample is randomly drawn from NORC's AmeriSpeak Panel and Dynata Panel. These are probability-based-mixed-mode panel designed to be representative of the USA nin-institutionalized population.	Not specified	Not specified	/	Retrospective	October to November, 2020	/
Changes in Alcohol Use Patterns in the United States During COVID-19 Pandemic[43]	Homeworkers 61.44% No homeworkers 38.56%	Anonymous online survey via private groups on Facebook.	March 15, 2020 (prior to social distencing)	At moment of the survey (start dates of stay-at-home orders ranged from March 19 to March 25, 2020, depending on location in the United States.)	/	Retrospective	April 5, 2020 and April 12, 2020	9 were excluded due to incomplete data
Changes in Alcohol Consumption Pattern Based on Gender during COVID-19 Confinement in Spain[44]	Full time 47.4% Part-time 8.4% Self-employed 7.7% Job covered by a Temporary Employment Regulation Plan 7% Homemakers 1% Students 14.7% Pensioners/retirees 1.3% Unemployed 8.9% Blank 0.9%	Online survey posted on social media and advertisements via e-mail and smartphone messaging applications.	Not specified	After the first 30 days of confinement	/	Retrospective	April 14, 2020 and May 29, 2020	434 (10.3%) were removed because of missing values, incoherent response patterns or being outside the established age range (18-64y)
Changes in Adult Alcohol Use and Consequences During the COVID-19 Pandemic in the US[45]	Not specified	Data collection using the RAND Corporation American Life Panel (ALP), a nationally representative, probability-sampled panel of 6000 participants age 18y or more.	April 29-June 9, 2019	May 28 to June 16, 2020, several months after widespread implementation of COVID-19 associated social distancing	From April 29, 2019 till June 16,2020	Prospective	Wave 1: April 29-June 9, 2019 Wave 2: May 28 to June 16, 2020	The completion rate for the wave 2 survey was 58.9% of all wave 1 invitations.
Associations between Mental Health, Alcohol Consumption and Drinking Motives during COVID-19 Second Lockdown in Ireland[46]	Working home 41% Working office 24.3% Unemployed 4.1% Student 30.7%	Anonymous online survey on social media (Twitter, Facebook), but also via email to staff and students at UCC.	The year before COVID-19 restrictions started (March 2020)	Last two weeks of the second lockdown in Ireland: This was a period of 6 weeks with the highest level of restrictions (level 5: stay-at-home orders, pubs and restaurants closed, non-essential moves ban)	/	Retrospective	October 19, 2020 until December 3, 2020	60 were lifetime alcohol abstainers, 6 excluded due to incomplete data and 5 due to anomalous data.

Assessing international alcohol consumption patterns during isolation from the COVID-19 pandemic using an online survey: highlighting negative emotionality mechanisms[47]	Not specified	International survey, entitled Habit Tracker, was advertised by University of Cambridge new page, other new agencies throughout the UK ((eg, The Telegraph, BBC Cambridgeshire and News Wise) as well as throughout various University of Cambridge colleges. Furthermore, also on personal and social media sites (Facebook, Twitter)	Typical week in November (ie, pre-quarantine)	Within the last week (ie, during quarantine)	/	Retrospective	May 12, 2020 – May 28, 2020	Large degree of dropout (1515) due to incomplete data
Alcohol use during the COVID-19 pandemic in Latin America and the Caribbean[48]	Not specified	Web-based survey through PAHO's communication platforms —including Facebook, Twitter, the Pan American Network for Alcohol and Public Health (PANNAPH)—, other networks —including the Healthy Caribbean Coalition, the Healthy Coalition of Latin America—, as well as through PAHO staff and direct contacts	Drinking behaviors in 2019	Drinking behaviors during the COVID-19 pandemic period.	/	Retrospective	May 22 and June 30, 2020	/
Alcohol Consumption in Response to the Covid-19 Pandemic in the United States. Results from a Nationally Representative Survey[49]	Employed in February 96.67% Employed in April 93.41%	Online survey using the Ipsos KnowledgePanel: A random sample of 1691 panel members was identified using a weighted selection methodology.	February 2020 (before stay-at-home-order)	April 2020 (after stay-at-home order)	/	Retrospective	May 8 and 15, 2020	1 excluded (60 drinks/day in February and April)
Alcohol Consumption in China Before and During COVID-19: Preliminary Results From an Online Retrospective Survey[50]	Employed 96.7%	Anonymous online survey (websites, social media…)	Not specified	Not specified	/	Retrospective	May 7, 2020 - August 3, 2020	/

Appendix 5: AUDIT-C and total AUDIT scores before and during COVID-19 pandemic

Author	AUDIT-C before COVID-19 (95%CI or SD)	AUDIT-C during COVID-19 (95%CI or SD)	P-value	Difference (%)
Callinan S. et al.[31]	Total 5.62 (5.49, 5.75) Q1 3.02 (2.98, 3.06) Q2 1.01 (0.96, 1.07) Q3 1.59 (1.53,1.65)	Total 5.32 (5.18, 5.46) Q1 3.08 (3.03, 3.13) Q2 0.97 (0.91, 1.02) Q3 1.27 (1.20, 1.34)	< 0.001 < 0.01 < 0.05 < 0.001	- 5.34% + 1.99% - 3.96% - 20.13%
Kolokotroni O. et al. [37]	Median 2 Total 1.89 Q1 1.46 Q2 0.10 Q3 0.34	Median 1 Total 1.54 Q1 1.25 Q2 0.09 Q3 0.20	< 0.01	- 50.00% - 18.52% - 14.38% - 10.00% - 41.18%
Palmer et al. [39]	Total 5.2 Q1 2.8 (+-0.8) Q2 0.9 (+-1.0) Q3 1.5 (+-1.1)	Total 4.5 Q1 2.7 (+-1.12) Q2 0.7 (+-0.9) Q3 1.1 (+-1.2)	 0.053 < 0.0001 < 0.0001	- 13.46% - 3.57% - 22.22% - 26.67%
Boschuetz N. et al. [43]	Median 3 Median men 4 Median women 3 Total 3.32 Q1 2.40 Q2 0.28 Q3 0.63	Median 4 Median men 4 Median women 4 Total 3.60 Q1 2.70 Q2 0.35 Q3 0.55	< 0.0001 0.7 < 0.0001	+ 33.33% +- 0 % + 33.33% + 8.43% + 12.50% + 25.00% - 12.70%
Villanueva-Blasco V.J. et al. [44]	Total 3.16 Q1 2.26 Q2 0.26 Q3 0.63 Total women 2.86 Q1 women 2.10 (+-0.908) Q2 women 0.23 (+-0.536) Q3 women 0.53 (+-0.830) Total men 3.41 Q1 men 2.40 (+-0.999) Q2 men 0.29 (+-0.626) Q3 men 0.72 (+-0.923)	Total 2.36 Q1 1.98 Q2 0.12 Q3 0.27 Total women 2.13 Q1 women 1.82 (+-1.323) Q2 women 0.09 (+-0.347) Q3 women 0.22 (+-0.665) Total men 2.57 Q1 men 2.11 (+-1.369) Q2 men 0.15 (+-0.446) Q3 men 0.31 (+-0.744)	Not known	- 25.32% - 12.32% - 53.85% - 57.14% - 25.52% - 13.33% - 60.87% - 58.49% - 24.63% - 12.08% - 48.28% - 56.94%
Carbia C. et al. [46]	Total 5.05 (+-2.50) Q1 2.19 (+-0.88) Q2 1.43 (+-1.29) Q3 1.42 (+-1.02)	Total 3.37 (+-2.76) Q1 1.95 (+-1.21) Q2 0.76 (+-1.06) Q3 0.66 (+-1.05)	Not known	- 33.27% - 10.96% - 46.85% - 53.52%

AUDIT = Alcohol Use Disorders Identification Test
Total = total AUDIT-C score (scale of 0-12)
Q1 = Question 1: How often did you have a drink containing alcohol in the past year? (scale of 0-4)
Q2 = Question 2: How many drinks did you have on a typical day when you were drinking in the past year? (scale of 0-4)
Q3 = Question 3: How often did you have six or more drinks on one occasion in the past year? (scale of 0-4)
Black = data directly obtained from the studies
Red = recalculations from existing data from the studies

Title	AUDIT before COVID-19 (95%CI or SD)	AUDIT during COVID-19 (95%CI or SD)	P-value	Difference (%)
Callinan S. et al. [31]	8.61 (7.90, 8.42)	7.33 (7.05, 7.62)	< 0.001	- 14.87%
Palmer et al. [39]	8.60 (+-5.3)	6.7 (+-5.6)	< 0.0001	- 22.09%

AUDIT = Alcohol Use Disorders Identification Test
Black = data directly obtained from the studies
Red = recalculations from existing data from the studies

Appendix 6: Drinking days per week/month before and during COVID-19 pandemic

Author	Days/week before COVID-19 Mean (+-SD)		Days/week during COVID-19 Mean (+-SD)	P-value	Difference (%)
Merlo Agnese et al.[34]	Overall	2.4 days (+-2.1)	2.5 days (+-2.2)	0.179	+ 4.17%
	Men	3.1 days (+-2.3)	3.0 days (+-2.4)	/	- 3.23%
	Women	2.0 days (+-1.8)	2.1 days (+-2.0)	/	+ 5.00%
Souza T.C.M et al.[38]	Median	0.5	0.5	Wilcoxon 0.022	+- 0.00%
	Frequency:			/	
	Non-drinkers	26.3% (n=348)	29.8% (n=395)		
	Rarely	27.6% (n=366)	29.2% (n=386)		
	1x/week	23.1% (n=305)	16.9% (n=224)		
	2-3x/week	20.9% (n=277)	18.4% (n=243)		
	4-6x/week	1.6% (n=22)	4.9% (n=65)		
	Every day	0.5% (n=5)	0.8% (n=10)		
Pollard M.S. et al.[45]	Overall	1.28 days	1.45 days	< 0.05	+ 13.28%
	Men	1.51 days	1.67 days	Not sign.	+ 10.60%
	Women	1.07 days	1.25 days	< 0.05	+ 16.82%
Barbosa C. et al.[49]	Overall	1.83 days	2.19 days	/	+ 19.67%
Wang Y.F. et al.[50]	Overall	1.9 days (+-1.82)	1.8 days (+-1.90)	0.03	- 5.26%
	Men	2.1 days (+-1.83)	2.1 days (+-1.92)	0.104	+- 0.00%
	Women	1.0 days (+-1.49)	0.9 days (+-1.55)	0.104	- 10.00%

Black = data directly obtained from the studies
Red = recalculations from existing data from the studies
/ = Not available in study

Author	Days/month before COVID-19 Mean (+-SD or 95%CI)		Days/month during COVID-19 Mean (+-SD or 95%CI)	P-value	Difference (%)
Pollard M.S. et al.[45]	Overall	5.48 days (4.88, 6.08)	6.22 days	< 0.05	+ 13.50%
	Men	6.45 days (5.37, 7.52)	7.14 days	Not sign.	+ 10.70%
	Women	4.58 days (4.01, 5.15)	5.36 days	< 0.05	+ 17.03%
Barbosa C. et al.[49]		7.83 days (+- 7.96)	9.37 days (+-8.95)	/	+ 19.67%

Black = data directly obtained from the studies
Red = recalculations from existing data from the studies
/ = Not available in study
Not sign. = not significant

Appendix 7: Alcohol units per day/week/month before and during COVID-19 pandemic

Author	Units/day before COVID-19 Mean (95%CI or SD)	Units/day during COVID-19 Mean (95%CI or SD)	P-value	Difference (%)
Vanderbruggen N. et al.[32] 1 Unit = 10 gram of pure alcohol	1.0 (+-1.4)	1.4 (+-2.1)	< 0.001	+ 40%
Callinan S. et al. [33] 1 Unit = 10 grams of ethanol	Overall: 3.53 (3.36,3.71) Men: 4.63 (4.32,4.95) Women: 2.66 (2.48,2.84)	Overall: 3.52 (3.34,3.69) Men: 4.48 (4.17,4.79) Women: 2.73 (2.56,2.91)	/	- 0.28% - 3.24% + 2.63%
Merlo Agnese et al.[34] 1 Unit = 10 grams of ethanol	0.86	0.84	0.310	- 2.33%
Bollen Z. et al.[36] 1 Unit = 10 grams of ethanol	T0 1.20	T1 0.99 T2 0.99 T3 1.20	/	- 17.50% - 17.50% +- 0.00%
Branquinho C. et al.[40] 1 Unit = 1 glass of beer/wine	Beer: 0.311 (+-0.967) Wine: 0.225 (+-0.919)	Beer: 0.507 (+-1.129) Wine: 0.224 (+-0.839)	< 0.001 Not sign.	+ 63.02% - 0.44%
Chen L. et al.[42] 1 Unit = 12 ounce beer, 5 ounce wine or one shot of liquor	Median 0.43	Median 0.61	< 0.001	+ 41.86%
Villanueva-Blasco V.J. et al.[44] Spanish Standard drink (SDU) 1 SDU = 1 fermented beverage (beer, wine) 2 SDU = 1 distilled beverage (spirit, liquor)	0.17 Overall: 1-2 SDU/day: 87.49% 3-4 SDU/day: 9.52% 5-6 SDU/day: 2.09% 7-9 SDU/day: 0.60% 10 or more SDU/day: 0.30%	0.12 Overall: 1-2 SDU/day: 91.17% 3-4 SDU/day: 6.61% 5-6 SDU/day: 1.49% 7-9 SDU/day: 0.38% 10 or more SDU/day: 0.34%	<0.001	- 29,41%
Pollard M.S. et al.[45] 1 Unit = not specified	Overall: 0.62 Men: 0.74 Women: 0.50	Overall: 0.62 Men: 0.77 Women: 0.48	Not sign.	+- 0.00% + 4.05% - 4.00%
Sallie S.N. et al.[47] 1 Unit = not specified	Overall: 1.19	Overall: 1.15	0.02	- 3.36%
Barbosa C. et al.[49] 1 Unit = not specified	0.74 (+- 1.19)	0.95 (+- 1.41)	< 0.001	+ 28.38%
Wang Y.F. et al.[50] 1 Unit = 14.0 gram of pure alcohol	Overall: 0.50 Men: 0.60 Women: 0.19	Overall: 0.49 Men: 0.57 Women: 0.17	0.035 0.070 0.190	- 2.00% - 5.00% - 10.53%

Black = Data directly obtained from the studies
Red = Recalculations from existing data from the studies
/ = Not available in study
Not sign. = Not significant
For each study the definition of 1 alcohol unit was listed if applicable.
T0 = time before COVID-19 pandemic
T1 = 2–6 weeks after the onset of the strict lockdown (requirement to stay home; closure of bars and, restaurants.)
T2: 3 weeks after T1
T3: 3–5 weeks after lockdown offset.

Author	Units/week before COVID-19 Mean (95%CI or SD)	Units/week during COVID-19 Mean (95%CI or SD)	P-value	Difference (%)
Merlo Agnese et al.[34] 1 Unit = 10 grams of ethanol	Overall: 6.0 (+-8.5) Men: 9.2 (+-11.4) Women: 3.9 (+-4.8)	Overall: 5.9 (+-9.2) Men: 9.0 (+-12.7) Women: 3.8 (+-4.9)	0.310	- 1.67% - 2.17% - 2.56%
Bollen Z. et al.[36] 1 Unit = 10 grams of ethanol	T0: 8.42 (+-10.50)	T1 6.90 (+-10.08) T2 6.91 (+-10.20) T3 8.37 (+-10.90)	/	- 18.05% - 17.93% - 0.59%
Dogas Z. et al.[41] 1 Unit = not specified	Overall: Never: 19.1% Once monthly: 31.9% Up to 3 drinks/week: 32.3% Up to 7 drinks/week: 12.9% Up to 15 drinks/week: 2.7% >15 drinks/week: 1.1% Men: Never: 8.4% Once monthly: 18.4%	Overall: Never: 32.1% Once monthly: 22.3% Up to 3 drinks/week: 27.2% Up to 7 drinks/week: 13.3% Up to 15 drinks/week: 3.4% >15 drinks/week: 1.7% Men: Never: 20.5% Once monthly: 13.0%	< 0.001 < 0.001	

	Up to 3 drinks/week: 37.2% Up to 7 drinks/week: 24.4% Up to 15 drinks/week: 8.1% >15 drinks/week: 3.5% Women: Never: 21.5% Once monthly: 36.5% Up to 3 drinks/week: 31.0% Up to 7 drinks/week: 9.3% Up to 15 drinks/week: 1.3% >15 drinks/week: 0.4%	Up to 3 drinks/week: 29.8% Up to 7 drinks/week: 24.2% Up to 15 drinks/week: 6.8% >15 drinks/week: 5.6% Women: Never: 35.2% Once monthly: 25.5% Up to 3 drinks/week: 26.2% Up to 7 drinks/week: 10.1% Up to 15 drinks/week: 2.3% >15 drinks/week: 0.8%	< 0.001	
Chen L. et al. [42] 1 Unit = 12 ounce beer, 5 ounce wine or one shot of liquor	Median (IQR) 3.01 (5.13) 0 drinks/week: 50.6% 1-4 drinks/week: 28.5% 5 or more drinks/week: 20.9%	Median (IQR) 4.24 (6.92) 0 drinks/week: 49.8% 1-4 drinks/week: 24.6% 5 or more drinks/week: 25.9%	< 0.001	+ 40.86%
Sallie S.N. et al. [47] 1 Unit = not specified	Overall: 8.32 (+-11.92) 95% CI 7.47, 9.02	Overall: 8.03 (+-14.22) 95% CI 7.11, 8.49	0.02	- 3.49%
Wang Y.F. et al. [50] 1 Unit = 14.0 gram of pure alcohol	Overall: 3.5 (+-6.29) Men: 4.2 (+-6.83) Women: 1.3 (+-2.59)	Overall: 3.4 (+-6.18) Men: 4.0 (+-6.71) Women 1.2 (+-2.65)	0.035 0.070 0.190	- 2.86% - 4.76% - 7.69%

Black = Data directly obtained from the studies
Red = Recalculations from existing data from the studies
/ = Not available in study
For each study the definition of 1 alcohol unit was listed if applicable.
T0 = time before COVID-19 pandemic
T1 = 2–6 weeks after the onset of the strict lockdown (requirement to stay home; closure of bars and, restaurants.)
T2: 3 weeks after T1
T3: 3–5 weeks after lockdown offset.
IQR: Interquartile range

Author	Units/month before COVID-19 Mean (95%CI)	Units/month during COVID-19 Mean (95%CI)	P-value	Difference (%)
Pollard M.S. et al. [45] 1 Unit = not specified	Overall: 18.47 (14.01, 22.84) Men: 22.08 (15.04, 29.12) Women: 15.13 (9.82, 20.45)	Overall: 18.53 Men: 23.08 Women: 14.32	Not sign.	+ 0.32% + 4.53% - 5.35%

Black = Data directly obtained from the studies
Red = Recalculations from existing data from the studies
Not sign. = Not significant
For each study the definition of 1 alcohol unit was listed if applicable.

Appendix 8: Heavy episodic drinking before and during COVID-19 pandemic

Title	HED before COVID-19	HED during COVID-19	P-value	Difference (%)
Callinan S. et al. [31] HED = 6 or more drinks in a single occasion according to AUDIT-C question 3*	AUDIT-C Q3 (95% CI) 1.59 (1.53,1.65)	AUDIT-C Q3 (95% CI) 1.27 (1.20, 1.34)	< 0.001	- 20.13%
Claire L. Niedzwiedz et al. [35] Binge drinking = 6+ drinks in 1 occasion on weekly basis HED = 5+ drinks on a typical day when drinking	Percentage (95% CI) Binge drinking: 10.8% (10.3, 11.3) Heavy drinking: 13.6% (13.0, 14.3)	Percentage (95% CI) Binge drinking: 16.2% (15.0, 17.4) Heavy drinking: 5.6% (4.8, 6.4)	/	
Kolokotroni O. et al. [37] HED = 6 or more drinks in a single occasion according to AUDIT-C question 3*	AUDIT-C Q3 0.34	AUDIT-C Q3 0.20	< 0.01	- 41.18%
Palmer et al. [39] HED = 6 or more drinks in a single occasion according to AUDIT-C question 3*	AUDIT-C Q3 (+-SD) 1.5 (+-1.1)	AUDIT-C Q3 (+-SD) 1.1 (+-1.2)	< 0.0001	- 26.67%
Boschuetz N. et al. [43] HED = 6 or more drinks in a single occasion according to AUDIT-C question 3*	AUDIT-C Q3 0.63	AUDIT-C Q3 0.55	< 0.0001	- 12.70%
Villanueva-Blasco V.J. et al. [44] HED = 6 or more drinks in a single occasion according to AUDIT-C question 3*	AUDIT-C Q3 0.63	AUDIT-C Q3 0.27	/	- 57.14%
Pollard M.S. et al. [45] HED = 5 or more drinks (men) or 4 or more drinks (women) within a couple of hours	Mean/30 days (95% CI) Overall: 0.69 (0.46, 0.92) Men: 0.95 (0.55, 1.36) Women: 0.44 (0.22, 0.66)	Mean/30 days (95% CI) Overall: 0.82 Men: 1.02 Women: 0.62	> 0.05 > 0.05 < 0.05	+ 18.84% + 7.37% + 40.91%
Carbia C. et al. [46] HED = 6 or more drinks in a single occasion according to AUDIT-C question 3*	AUDIT-C Q3 (+-SD) 1.42 (+-1.02)	AUDIT-C Q3 (+-SD) 0.66 (+-1.05)	/	- 53.52%
Garcia-Cerde R. et al. [48] HED = 5 or more drinks on one occasion at least monthly 1 drink = 14 grams of pure alcohol	Overall: Never: 50.19% 1x/month: 26.97% 2x/month: 9.78% 3x/month: 3.07% 4x/month: 4.66% 5-12x/month: 4.55% >12x/month: 0.76% Men: Never: 37.27% 1x/month: 30.59% 2x/month: 12.24% 3x/month: 4.07% 4x/month: 6.93% 5-12x/month: 7.49% >12x/month: 1.40% Women: Never: 56.52% 1x/month: 25.88% 2x/month: 8.40% 3x/month: 2.47% 4x/month: 3.53% 5-12x/month: 2.99% >12x/month: 0.20%	Overall: Never: 68.02% 1x/month: 14.26% 2x/month: 5.31% 3x/month: 1.91% 4x/month: 4.50% 5-12x/month: 4.90% >12x/month: 1.11% Men: Never: 57.23% 1x/month: 17.63% 2x/month: 7.52% 3x/month: 2.41% 4x/month: 5.98% 5-12x/month: 7.24% >12x/month: 1.99% Women: Never: 73.45% 1x/month: 12.57% 2x/month: 4.17% 3x/month: 1.69% 4x/month: 3.72% 5-12x/month: 3.81% >12x/month: 0.60%	/	
Barbosa C. et al. [49] Exceeding drinking limits = 5 or more drinks/day (men) or 4 or more drinks/ day (women), or 15 or more drinks/week (men) or 8 or more drinks/week (women) Binge drinking: 5 or more drinks (men) or 4 or more drinks (women) in 2-hour period.	Exceeding drinking limits: 30.11% Binge drinking: 23.39%	Exceeding drinking limits: 36.11% Binge drinking: 28.39%	< 0.001 = 0.001	

* AUDIT-C question 3: How often do you drink 6 or more drinks in one occasion?
Never = score 0
Monthly or < monthly = score 1
2-4x/month = score 2
2-3x/week = score 3
4 or more/week = score 4
HED = Heavy Episodic Drinking
Black = Data directly obtained from the studies
Red = Recalculations from existing data from the studies
/ = Not available in study
For each study the definition of HED was listed if applicable.

Zelfreflectie op ManaMa-thesis: “Changes in alcohol consumption in adults during COVID-19 pandemic: A systematic review”

Auteur: Sam Miguet

1. Interpretatie & visie op toekomst

Ik heb deze thesis geschreven samen met Karim Baraké. Het doel van onze thesis is de impact bestuderen van de COVID-19 pandemie op het acoholgebruik bij volwassenenen. Gezien psychologisch leed en alcoholconsumptie vaak met elkaar verweven zijn en de COVID-19 pandemie tot heel wat psychologisch leed gezorgd heeft, leek dit ons een heel relevant thema om te onderzoeken. We onderzochten op systematische wijze door verschillende databanken en hielden 20 artikels over in onze review. We hebben deze artikels onderverdeeld volgens hun uitkomstmaten: AUDIT(-C) score, aantal alcoholische eenheden per dag/week/maand, aantal dagen per week/maand en zwaar episodisch drinken. De resultaten van onze review suggereren een lichte daling van de AUDIT score en zwaar episodisch drinken tijdens de COVID-19 pandemie. De resultaten in verband met het aantal drinkdagen per week en het aantal alcoholische eenheden per dag waren inconsistent. De belangrijkste boodschap, die ik voor mezelf onthoud, is dat de resultaten van de verschillende studies echter zeer uiteenlopend zijn. Hierdoor is het heel moeilijk harde conclusies te trekken uit deze resultaten. Onze review toont daarbij een eerste richting aan, maar ik zie vooral een nood aan meer kwalitatieve studies. Zo komen lageinkomstlanden weinig tot niet aan bod in onze geïncludeerde studies, terwijl net zij zeer zwaar getroffen werden door de COVID-19 pandemie. Verder zijn er nog maar weinig studies, die langetermijnseffecten van de COVID-19 pandemie bestuderen. Tot slot moet er meer onderzoek gebeuren omtrent de verandering in alcoholgebruik tijdens pandemies bij kwestbare subpopulaties (mensen met een alcoholverslaving, depressie, studenten...). Ik hoop dat onze review een eerste zaadje geplant heeft om verder onderzoek op te starten. Zo kunnen we risicogroepen/ risicolanden ontdekken en in kaart brengen om populatiegerichte interventies te organiseren tijdens een mogelijks nieuwe pandemie. Het belangrijkste doel op lange termijn is hierdoor schade te kunnen voorkomen tijdens nieuwe pandemiën.

2. Groepsproces & persoonlijk aandeel

Ik had voor mezelf snel beslist dat ik graag een masterthesis met twee wou schrijven. Dit brengt enkele grote voordelen met zich mee: je kan het werk optimaal verdelen en ieder kan zijn sterke punten maximaal benutten en je kan mekaar daarin aanvullen, je hebt een dubbele controle voor vele stappen, je kan mekaar stimuleren en aanmoedigen. Daarnaast brengt een groepswerk ook altijd wat administratieve moeilijkheden met zich mee, zeker als je in een andere huisartsenpraktijk werkt met een ander druk werkschema. Dit vergt een goede en duidelijke communicatie tussen beide groepsleden. Daarom heb ik ook heel snel gekozen om mijn masterthesis samen met Karim Baraké te schrijven. Naast onze opleiding geneeskunde zijn we ook goede vrienden, wat een goede samenwerking omtrent het schrijven van een masterthesis vergemakkelijkt. Het kiezen van het onderwerp was niet zo moeilijk, gezien dit onderwerp in onze beide interessegebieden lag. Tijdens het volledige proces van de masterthesis hebben we de opdrachten op voorhand duidelijk verdeeld. Op afgesproken momenten koppelden we onze progressie terug naar elkaar en vulden we elkaar aan zo nodig. In het begin hebben we

voornamelijk afzonderlijk, geblindeerd moeten werken voor het selecteren van de artikels. Voor onduidelijkheden te bespreken, spraken we regelmatig samen af. Eens na het selecteren van alle artikels, zijn we de taken iets meer beginnen opdelen. Ik was zelf iets beter in het analytische gedeelte zoals het analyseren van de resultaten, samenvatten in tabellen in Excel, grafieken maken etc... Karim was daarentegen iets beter in het interpreteren en vlot neerschrijven van de resultaten alsook het opbouwen en structureren van de thesis. We probeerden ook steeds samen de kwaliteit te beoordelen en aan te passen zo nodig. Als ik nu terugkijk op de samenwerking met Karim vanaf de start van de thesis tot het uiteindelijke resultaat, ben ik zeer tevreden van onze samenwerking. Alles verliep vlot en we waren goed ingespeeld op elkaar.
We werden tijdens ons hele proces ook bijgestaan door de goede supervisie van initieel Prof. Cathy Matheï (†) en later overgenomen door Prof. Bert Aertgeerts en Dr. Trudy Bekkering. We probeerden deze overlegmomenten met onze promotor steeds goed voor te bereiden, waardoor dit vlot verliep en het duidelijk was wat er van ons verwacht werd. Daarvoor wil ik hun nog eens extra oprecht voor bedanken!

3. Conclusie

Na 3 jaar hard werken aan de thesis ben ik persoonlijk wel zeer blij met het behaalde resultaat. In het begin had ik persoonlijk wel mijn twijfels of we een kwalitatief product konden afleveren op deze korte tijdspanne naast ons klinisch werk als huisarts. Ik ben zeer tevreden over de samenwerking met Karim aan onze thesis alsook de feedback en begeleiding van Bert Aertgeerts en Trudy Bekkering! In deze intense periode heb ik ook veel bijgeleerd. Dit gaat veel verder dan enkel de inhoud van de thesis. Ik heb geleerd steeds met een kritische blik de huidige evidentie te beoordelen. Ik heb geleerd op een correcte manier een thesis op te bouwen, evidentie samen te bundelen en te beoordelen, conclusies te trekken. Daarnaast was dit een uitstekende manier om te leren samenwerken met collega's over eenzelfde thema. Kortom, het was een verrijking om meerdere vlakken.

Zelfreflectie op ManaMa-thesis: “Changes in alcohol consumption in adults during COVID-19 pandemic: A systematic review”

Auteur: Karim Baraké

1. Interpretatie & visie op toekomst

De resultaten van onze masterthesis wijzen op een lichte daling van de AUDIT-C score en van het aantal zware drinkpartijen (HED) tijdens de COVID-19 pandemie. De resultaten met betrekking tot de drinkdagen per week en de alcoholeenheden per dag zijn echter uiteenlopend en inconsistent. Het is daarom zeer moeilijk om een conclusie te formuleren over de verandering in het totale alcoholgebruik in de algemene bevolking tijdens de COVID-19 pandemie.

Onze bevindingen maken duidelijk dat er behoefte is aan meer studies van hoge kwaliteit, vooral in landen met een laag en gemiddeld inkomen, om het bewijsmateriaal op dit gebied snel uit te breiden. Bovendien is er behoefte aan gedetailleerde gegevens over alcoholgebruik op bevolkingsniveau in verschillende subgroepen.

Heden is het onduidelijk of de COVID-19 pandemie blijvende veranderingen in alcoholgebruik heeft teweeggebracht. Er zijn prospectieve studies nodig om de langetermijneffecten van de COVID-19-pandemie op het alcoholgebruik te beoordelen. Dit zal helpen bij het aansturen en ondersteunen van beleidsmaatregelen in verschillende (sub)populaties en in verschillende landen.

2. Groepsproces & persoonlijk aandeel

Ik heb ervoor gekozen mijn thesis samen met een medestudent te schrijven omdat ik van mening ben dat samenwerken het proces efficiënter en aangenamer maakt. Het schrijven van een thesis kan immers een lange en isolerende rit zijn, en het hebben van een collega kan zorgen voor extra steun en motivatie. Toch is werken aan een thesis met een medestudent soms ook uitdagend. Het vereist effectieve communicatie, samenwerking en compromissen. Gelukkig kennen Sam en ik elkaar al sinds het begin van onze opleiding geneeskunde en komen we zéér goed overeen. Het was dan ook een logische keuze om deze thesis samen te schrijven. De samenwerkingen met Sam verliep – zoals verwacht – héél vlot.

De eerste stap in het schrijven van de thesis was de keuze van een onderwerp. Sam en ik hebben dezelfde interesses en van zodra ons gekozen onderwerp werd toegewezen, hadden we snel dezelfde mening wat betreft de onderzoeksvraag, de methodologie en de reikwijdte. We kozen voor een onderwerp dat relevant, interessant en onderzoekswaardig was. Het was tevens een onderwerp dat nog niet uitgebreid is onderzocht; zo hoopten we met nieuwe bewijskracht bij te dragen aan het vakgebied.

Tijdens het onderzoeksproces moesten we nieuwe vaardigheden leren, zoals gegevensanalyse, literatuuronderzoek en academisch schrijven. We moesten ons ook aanpassen aan elkaars schema's, deadlines en voorkeuren. We verdeelden de taken op basis van onze sterke punten en interesses, maar we controleerden ook elkaars werk om consistentie en kwaliteit te waarborgen. Gelukkig vullen Sam en ik elkaar goed aan. Sam is héél analytisch en zéér goed met tabellen en grafieken. Hij deed bijgevolg het grootste deel van de gegevensanalyse (extraheren van data uit de geïncludeerde studies, recalculeringen en gegevensverwerking).

Ikzelf ben beter in schrijven en hecht veel belang aan detail. Bijgevolg hield ik mij iets meer bezig met het academisch schrijven van de thesis (begrijpbaar uitschrijven van de resultaten en discussie).

We spraken vaak fysiek af omdat dit het overleg gemakkelijker maakte.

Uiteraard werden wij ook uitstekend begeleid in deze thesis waardoor alles steeds vlot verliep. Ik zou daarom onze promotor Prof. Dr. Aertgeerts Bert en co-promotor Dr. Bekkering Trudy heel erg willen bedanken voor hun betrokkenheid en begeleiding gedurende het hele proces. Zij waren altijd beschikbaar voor feedback en advies wanneer wij dat nodig hadden en wisten ons met passie in de juiste richting te sturen.

3. Conclusie

Het schrijven van een thesis is een intense onderneming die enorme inspanningen, doorzettingsvermogen en toewijding vereist. Het proces is op sommige momenten mentaal zeer zwaar geweest voornamelijk omdat de thesis ons dwong om onbekend terrein (wetenschappelijk onderzoek) te verkennen tijdens een zware opleiding huisartsgeneeskunde.

Ik heb veel waardevolle lessen geleerd dankzij deze thesis:

- De thesis heeft mij geleerd kritisch te denken, informatie te analyseren en bevindingen op een duidelijke en coherente manier te verwoorden en presenteren.

- Het belang van samenwerking, communicatie en zelfreflectie.

- Ontwikkelen en verfijnen van onderzoeks- en schrijfvaardigheden. Zo heb ik bijvoorbeeld geleerd hoe je op een correcte manier een onderzoeksvraag formuleert, hoe de screening en inclusie van studies voor een systematic review gebeurt en hoe je op een goede manier een quality assessment toepast.

- Ik heb ook geleerd dat onderzoek niet alleen gaat over het behalen van resultaten, maar ook over het proces van onderzoek en ontdekking. In het algemeen ben ik dankbaar voor deze kans om samen te werken met een medestudent en te groeien als onderzoeker en arts.

- Tijdsmanagementvaardigheden: Ik heb geleerd om mijn tijd op een efficiënte manier te beheren om de thesis binnen de vastgestelde termijn af te ronden tijdens een drukke opleiding huisartsgeneeskunde.

Ik ben heel trots op het eindresultaat van onze thesis. We zijn erin geslaagd een coherent en origineel onderzoeksproject te ontwikkelen dat hopelijk kan bijdragen aan de kennis omtrent de invloed van de COVID-19 pandemie op het alcoholgebruik.

Systematic Review on COVID-19 pandemic and alcohol consumption

Dossiernr.:	MP018543
[[[Stage/Masterproef/Keuzevak]]]:	Masterproef I HAIO, 2020 – 2023
Faculteit/opleiding:	Faculteit Geneeskunde - Master in de huisartsgeneeskunde
Studiefase:	eerste fase
Academiejaar:	2021-2022
Korte omschrijving / abstract:	In December 2019, a new type of zoonotic virus was discovered in Wuhan, China, causing several clusters of pneumonia of unknown origin. The virus, known as severe acute respiratory syndrome coronavirus 2 (Sars-CoV-2) causes an infectious disease, named COVID-19. It consists of flu-like symptoms such as: fever, cough, shortness of breath, fatigue and muscle pain. Although Sars-CoV-2 has a low mortality of around 3%, it's a highly contagious pathogen, spread by respiratory secretions mostly through aerosols but also by contact transmission. Because of the rapid worldwide spread of the virus, the WHO declared COVID-19 a pandemic on March 11th, 2020. A year later, in April 2021 Sars-CoV-2 caused almost 3 million deaths worldwide. Numerous safety measures were taken to reduce the transmission of the virus: wearing face masks, strict hand hygiene, keeping distance from other people and eventually lockdowns. These safety measures are important to reduce the physical harm and death caused by Sars-CoV-2. Unfortunately, all these safety measures come at a cost and had an enormous impact on social well-being and mental health. Regulations like mandatory teleworking, online school lessons, multiple industries (restaurants, bars) closing, has affected social life of each individual. In addition, the uncertainty of duration of the measures taken to control the pandemic is a great mental burden for many, resulting in more mental problems (such as: depression, anxiety, loneliness and stress). It is known that these mental problems are closely related to alcohol use or abuse. That is why the COVID-19 pandemic could have an influence on alcohol consumption. In addition, the COVID-19 pandemic reduced social contacts and opportunities to consume alcohol because alcohol consumption is a common social acitivity. Therefore, this may have led to a decrease in alcohol consumption. Alcohol is a psychoactive substance with negative effects on different parts of the human body. A higher intake of alcohol is associated with pathology of the digestive, cardiovascular and central nerve system. In addition, alcohol is also carcinogenic, with an increased risk of developing multiple cancers. Besides these physical effects, alcohol is associated with a high mental and social burden, resulting in an increase in violence, crime, poverty and loneliness. Overall, three million deaths each year are caused by alcohol consumption, this is responsible for 5.1% of the global burden of disease. Therefore, we can state that alcohol consumption is a global problem, leading to physical, mental and social problems. For example, in the United States of America, 95.158 deaths during 2011 to 2015 were attributed to excessive alcohol consumption. This is an equivalent of 261 deaths each day and an average of 29 years lost per death. Based on the existing evidence and the current circumstances caused by the COVID-19 pandemic, it is important to investigate whether any changes in alcohol consumption can be seen. Research aim The purpose of this systematic review is to critically synthesize the scientific evidence about the impact of the COVID-19 pandemic on alcohol consumption in adults. The results provided by this systematic review will provide evidence in order to inform and support decision-making from the healthcare providers and governments.
Opmerkingen / praktische informatie:	Systematisch literatuuronderzoek
Gewenste taal van communicatie:	nl
[[[Stagemeester/Promotor/Docent]]]:	Prof Bert Aertgeerts (u0002409)
Copromotor:	Trudy Bekkering (f2c6d60d-2dce-4b9a-be60-1d195963ecd0)
Organisatie:	KU Leuven
Dienst:	Academisch Centrum voor Huisartsgeneeskunde
Discipline:	Masterproef
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De verstrekte informatie toont aan dat het onderzoek in het kader van de masterproef een zuivere literatuurstudie betreft en dat er op geen enkele wijze gebruik wordt gemaakt van proefdieren, proefpersonen of menselijk lichaamsmateriaal.

Dit type onderzoek vereist geen goedkeuring van een gemachtigde commissie voor medische ethiek.

Onder voorbehoud van de volledigheid en correctheid van de door u verstrekte gegevens, krijgt u hierbij het akkoord om het onderzoek in het kader van de masterproef te starten. Deze mail dient als bewijs van goedkeuring mocht u uw onderzoek wensen te publiceren.

Wij willen u erop attent maken dat u zelf verantwoordelijk blijft voor uw onderzoek. Bovendien doet elke wijziging

aan de door u verstrekte gegevens omtrent de onderzoeksopzet deze goedkeuring vervallen. U dient in dat geval een amendement te maken aan uw huidig dossier.