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Alcohol use among Australian parents during the COVID-19 pandemic – April-2020 to May 2021

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ARTICLE INFO

Keywords:
COVID-19
Coronavirus
Alcohol
Trajectory
Australia
Demographics

ABSTRACT

Aims: This study examined the trajectory of alcohol use frequency among parents from April-2020 to May-2021 during the COVID-19 pandemic in the state of Victoria, Australia (who experienced one of the longest lockdowns in the world), compared to parents from the other states of Australia (who experienced relatively fewer restrictions). We further examined the extent to which baseline demographic factors were associated with changes in alcohol use trajectories among parents.

Method: Data were from the COVID-19 Pandemic Adjustment Survey (2,261 parents of children 0–18 years). Alcohol use frequency was assessed over 13 waves. Baseline demographic predictors included parent gender, age, speaking a language other than English, number of children, partnership status, education, employment, and income.

Results: Overall, alcohol trajectories declined over time. Victorian parents, in comparison to parents from other states, reported a smaller reduction in alcohol use frequency across 2020, with a more notable decline during 2021. Female/other gender, speaking a language other than English at home, unemployment, and lower income (Victoria only) were associated with alcohol trajectories of less frequent use, and older age was associated with a trajectory of more frequent use.

Conclusions: Results suggest subtle difference in alcohol trajectories reflecting COVID-19 restrictions, when comparing Victoria and other states in Australia. Socioeconomically advantaged groups were most at risk for elevated trajectories of alcohol use frequency. Population level support may beneficial to reduce drinking behaviours.

1. Introduction

The coronavirus disease of 2019 (COVID-19) pandemic, declared by the World Health Organization on the 11th March 2020, has had significant impact on population health and wellbeing worldwide (World Health Organization, 2020). In Australia, federal and state governments introduced an increasingly strict regime of social distancing and isolation measures to slow the rate of infection (Stobart & Duckett, 2021). For many families, these restrictions were associated with a range of additional stressors, including more limited access to support services (e.g., childcare) and challenges balancing work and family (e.g., working from home orders while juggling child care and/or home schooling) (Power, 2020; Verlenden et al., 2021). Moreover, there is emerging evidence that the pandemic has had a disproportionate impact on vulnerable parents, such as those experiencing economic strain (Westrupp, Bennett, et al., 2021).

Given the range of stressors experienced by parents during the pandemic, one behaviour likely to have undergone change is the consumption of alcohol, potentially as a means of managing stress (Nicolai et al., 2012; Young et al., 1990). In Australia, alcohol use is a major...
Among adults, risky alcohol use is highly prevalent, with 25% of adults exceeding single occasion drinking (no more than 4 standard drinks), and 16.8% of adults exceeding lifetime (no more than 2 standard drinks per day, on average) risk guidelines (Australian Institute of Health and Welfare, 2020). For families, alcohol use poses unique risks. For instance, there are well-documented associations between problematic alcohol use in parents and reduced parent functioning (i.e., comorbid mental health problems), poorer couple relationship quality, family functioning, parenting, and child outcomes (Hutchinson et al., 2014). At the extreme end, alcohol misuse has also been associated with child abuse and neglect (Laslett et al., 2012). Further, evidence during the COVID-19 pandemic suggests that alcohol use may also have exacerbated the relationship between stress and punitive parenting (Wolf et al., 2021).

During the pandemic, the enforced closure of venues (e.g., pubs, bars, and restaurants) may have reduced alcohol consumption among some groups of parents (Marsden et al., 2020). However, for other parents, changes to liquor licensing restrictions (e.g., venues being able to temporarily sell alcohol for takeaway/home delivery), may have facilitated increased consumption (Colbert et al., 2020), particularly as parents are, in general, more likely to consume alcohol in the home environment (Bowden et al., 2019). Additionally, a social media climate emerged with online advertisers encouraging alcohol use as a pandemic coping strategy, normalising drinking as a tool to manage stressors such as home-schooling (Leung et al., 2020).

Population level data is suggestive of changes in patterns of alcohol consumption over the COVID-19 pandemic in Australia. For example, wastewater analyses conducted in April-2020 in South Australia found that weekend and weekday alcohol consumption decreased relative to levels identified prior to the pandemic/social restrictions in February 2020 (Bade et al., 2021). In contrast, financial analyses, from the Commonwealth Bank of Australia, indicated that expenditure on alcohol goods (e.g., from bottle shops) remained consistently elevated since March 2020 to the end of 2021, relative to pre-pandemic levels in 2019. Perhaps unsurprisingly, expenditure on alcohol services (e.g., from hotels) fluctuated over the pandemic period, with many venues closing for extended periods (Global Economic & Markets Research, 2021). Notably, the implementation of restrictions, during both March and July 2020, were associated with decreased ‘on-premises’ alcohol consumption, but no change in ‘off-premises’ consumption (Vandenberg et al., 2021). Furthermore, data on self-reported change in alcohol consumption indicates a stabilisation or decline in alcohol use during the COVID-19 pandemic suggests that alcohol use may also have exacerbated the burden of alcohol use in parents and families. COVID-19 represents a protracted stressor with potential implications for alcohol use. Research is needed to understand the frequency of alcohol use in parents and the demographic factors associated with alcohol trajectories during the COVID-19 pandemic. Moreover, it is important to account for variation in social distancing and isolation measures that may be associated with different patterns of alcohol use in parents. Australia provides useful comparison whereby the state of Victoria experienced one of the longest lockdowns in the world, while the other states of Australia experienced relative fewer restrictions. Specifically, the whole country experienced an 8-week national lockdown over April-May 2020. Following this, most states then experienced minimal restrictions, however, Victoria experienced one of the longest and strictest lockdowns in the world (at that time), extending 4 months over July–October 2020. Victorians were required to stay in their houses except for essential shopping (1 household member, once per day), limit exercise to 1 h per day within a 5 km radius of their house, wear masks (indoor and outdoor) for those aged 12 years or more, and follow a night-time curfew (8 pm to 5 am). Impacting parents specifically, early childhood education centres and schools were closed. Thus, the current study aims to: 1) estimate the trajectory of alcohol use frequency in parents in Australia from April-2020 to May 2021, and contrast alcohol use patterns in Victorian parents, to parents in other states of Australia; and 2) identify baseline demographic factors, in both non-Victorian and Victorian samples, associated with change in alcohol use patterns reflected by trajectory shape.

2. Methods

2.1. Design and recruitment

Participants in the current study are drawn from the COVID-19 Pandemic Adjustment Survey (CPAS) (Westrupp et al., 2020), a community sample of 2,365 Australian parents of a child aged 0–18 years. Recruitment occurred during the first-wave national lockdown (8-28th April 2020) via paid and unpaid social media advertisements. A broad sample of parents from different socio-demographic backgrounds was obtained by targeting recruitment via postcodes/demographic factors. Participants were eligible if they resided in Australia and were aged ≥18 years, English speaking, and a current parent of a child aged 0–18 years. Eligible participants were assessed over fourteen time-points from 8th April-2020 to 19th May 2021. CPAS was approved by the Deakin University Human Ethics Advisory Group (HEAG-H 52_2020).

Participants completed surveys every 2–4 weeks (10-minute online survey), with an expectation of intermittent participation across time-points. From time-point four (24th May-2020), participant follow-up was conducted via phone or text/SMS if participants had not completed 3 + consecutive assessments. Participants were entered into a prize draw for 1 of 10 AUS$50 online gift vouchers if they have completed at least one survey for every month of the survey. Data collection and retention approaches maximized coverage over time and was guided by the strengths of trajectory modelling approaches, which are robust to missing data and utilize all available data from each participant. Participation rates across the study relative to the two lockdown periods are shown in Figure S1.

2.2. Participants

Current analyses used data from 2,261 (of 2,365 recruited) participants (1,814 cis-gender female, 425 cis-gender male, 8 other gender, 14 not reported gender) who provided alcohol data on at least one time-point (13 waves; 1 to 12 and 14) and who provided state residency information (participation: 1 wave = 17.07 %, 2 waves = 13.31 %, 3 waves = 12.16 %, 4 waves = 9.60 %, 5 waves = 7.70 %, 6 waves = 6.99 %, 7 waves = 6.15 %, 8 waves = 5.40 %, 9 waves = 4.51 %, 10 waves = 3.63 %, 11 waves = 4.29 %, 12 waves = 4.20 %, 13 waves = 5.00 %). Parent’s oldest children (<18 years) were on average 7.72 years old (SD = 5.07) and had a relatively equal split of gender (1,085 cis-gender...
female, 1,161 cis-gender male, 12 other gender, 3 not reported gender). The full CPAS sample is broadly representative of the Australian parent population in terms of geographic location, number of children, parents born overseas, and single parent households, but underrepresents fathers, and families with a low income and low education (Westrupp, Bennett, et al., 2021). In the current sample, demographics were compared with study engagement (Table S1). We found that older and female/other gendered parents were more engaged (i.e., participated in more and later waves), whilst those who spoke a language other than English at home, had not completed high school, or had a low income were less engaged (i.e., participated in less and earlier waves) in the study over time. Further, there were no differences in baseline alcohol frequency associated with study engagement ($\beta_{\text{number of waves}} = -0.00, p = 0.962$, $\beta_{\text{last wave}} = 0.02, p = 0.434$).

2.3. Measures

2.3.1. Alcohol use

At each of the 13 waves, alcohol use frequency was assessed on a 7-point scale (‘never’, ‘monthly or less’, ‘2–3 times a month’, ‘once a week’, ‘2–3 times a week’, ‘4–6 times a week’, and ‘every day’) from the Longitudinal Study of Children (Hutchinson et al., 2013). Reflecting common practices (Dawson, 2003), responses were rescaled to indicate the mid-point in number of days drinking alcohol in a month (‘never’=0, ‘monthly or less’=1, ‘2–3 times a month’=2.5, ‘once a week’=4, ‘4–6 times a week’=20, and ‘every day’=28).

3. Baseline demographic factors

Baseline demographic factors included parent gender (cisgender male versus cisgender female/other; e.g., transgender, non-binary), parent age, number of children, oldest (under 18) child’s age, language other than English (LOTE) used predominately at home (not versus yes), partner status (partner versus no partner), education level (completed high school versus not completed high school), employment status prior to the pandemic (employed versus unemployed), and income over the past 12 months (not low income – greater than $52,000 per year before tax versus low income – less than or equal to $52,000 per year before tax, with categories reflecting wages above and below the median Australian wage; (Australian Bureau of Statistics, 2021).

3.1. Statistical analyses

Data were cleaned in Stata version 15 (StataCorp, 2017) and analysed in Mplus version 8.4 (Muthen & Muthén, 2017). Parent trajectories of alcohol use frequency over time were estimated via multilevel modelling, using full-information maximum likelihood estimation to include all available data, and robust standard errors for concerns about heteroskedasticity. Alcohol use frequency was specified as a continuous variable given the distribution of responses (see Figure S2). To reduce the risk of issues with convergence due to collinearity among growth trajectory components (linear, quadratic, cubic, etc.), time was centred at the mean of 95 days. This intercept therefore reflects levels of alcohol frequency at the 95th day of the study, as opposed to baseline.

To determine an appropriate trajectory shape, the trajectory of alcohol frequency was estimated using the full sample of participants. A series of models were estimated including latent indicators of growth, from linear (1) to sextic (6) polynomial change over time. An appropriate model for each outcome was determined based on model fit and visual inspection of potential solutions. Model fit involved comparing each model to the prior model (e.g., quadratic model versus linear model) via chi-square difference tests and change in Akaike’s Information Criteria (AIC) and Bayesian Information Criteria (BIC) scores. Given that, in practice, AIC and BIC scores often continue to decrease as the number of classes increases, the inflection point can be used for class selection as an indication of diminishing returns (Nylund-Gibson & Choi, 2018). Further, chi-square difference tests have been considered as non-parsimonious since model fit improves as model complexity increases (Alavi et al., 2020; Schermelleh-Engel et al., 2003).

To compare trajectory shape between non-Victorian and Victorian participants, grouped multilevel models were estimated and Wald chi-square tests were used to examine differences in latent growth parameters. To examine whether trajectory shape varied relative to baseline demographic characteristics, each latent growth parameter was regressed onto all demographic variables simultaneously. Models were estimated in non-Victorian and Victorian participants separately using Mplus’s Bayesian estimator capability to allow for the estimation of standardised regression coefficients.

4. Results

4.1. Descriptives

Table 1 reports the descriptive statistics for the analytic variables and differences between non-Victorian and Victorian samples. Notably, alcohol use frequency was similar across non-Victorian and Victorian samples at all time-points, except baseline (time-point 1), for which the non-Victorian sample reported a slightly higher frequency of use. The distribution of the rescaled alcohol use variables are visualised in Figure S2. Additionally, the non-Victorian sample was older (average age 39.30 vs. 37.51 years) and had older children (average age 8.37 vs. 7.08 years), comprised families with more children (average number of children 2.10 vs. 2.01), and included fewer mothers (76.4 % vs. 85.6 %), compared to the Victorian sample.

4.2. Alcohol use frequency trajectories

4.2.1. Model building

In the full sample, model fit statistics for estimated alcohol trajectory shapes, ranging from linear to sextic models, are presented in Table S2. The cubic model was selected (visualised in Figure S3) given the inflection point in BIC and AIC values. It is, however, noted that the chi-square test suggested improvement in fit as model complexity increased.

4.2.2. Non-Victorian and Victorian sample alcohol trajectory shape

Cubic trajectories of alcohol use frequency for Non-Victorian and Victorian samples are presented in Fig. 1. Evidence suggested that overall trajectory shape varied between samples (Wald $\chi^2(4) = 17.98, p = 0.001$). Differences were most notable in linear growth (intercept Wald $\chi^2(1) = 0.87, p = 0.350$, linear Wald $\chi^2(1) = 11.55, p = 0.001$, quadratic Wald $\chi^2(1) = 0.709, p = 0.400$, cubic Wald $\chi^2(1) = 0.28, p = 0.599$), where the non-Victorian sample had stronger negative linear growth, as reflected in a steeper decline in frequency during 2020. Inspection of the plot revealed that drinking frequency overall declined across the duration of the study, but there was a period towards the end of 2020 and start of 2021 where drinking frequency stabilised and was very similar between non-Victorian and Victorian samples. The most notable differences occurred towards the start of the study (i.e., April-2020) and in the final months of the study (April, May 2021), for which drinking frequency was lower in the Victorian sample compared to the non-Victorian sample. Given the possibility that reports of alcohol use frequency are dependent across time-points, due to the regular data collection periods and the timeframe of alcohol use, supplementary models excluded reports that were <28 days apart. Trajectories using the reduced dataset were similar to that using the full available data (see supplementary Figure S4).

4.3. Alcohol use trajectories and associations with baseline demographic factors

Associations between latent growth parameters and each baseline demographic factor for the non-Victorian and Victorian samples are
presented in Table 2. Given the complexity of models, we interpret the influence of demographic factors for the full trajectory. Influential demographic factors in both samples were parent gender, parent age, and speaking a language other than English. Specifically, cisgender female/other (e.g., transgender, non-binary) gender was associated with a trajectory shape of less frequent alcohol use (Intercept: $\beta_{\text{non-Vic}} = -0.12$; $\beta_{\text{Vic}} = -0.17$).

Table 1
Sample characteristics and differences for the non-Victorian and Victorian samples.

|                      | Full sample (n = 2,261) | Non-Victorian sample (n = 1,116) | Victorian sample (n = 1,145) | Non-Victorian v. Victorian p-value |
|----------------------|-------------------------|----------------------------------|-----------------------------|-----------------------------------|
| **Alcohol use frequency** |                         |                                  |                             |                                   |
| Time-point 1          | 2166                    | 1081                             | 1085                        | 0.017                             |
| Time-point 2          | 1272                    | 633                              | 639                         | 0.259                             |
| Time-point 3          | 1801                    | 507                              | 574                         | 0.984                             |
| Time-point 4          | 998                     | 348                              | 472                         | 0.411                             |
| Time-point 5          | 777                     | 390                              | 387                         | 0.368                             |
| Time-point 6          | 805                     | 378                              | 427                         | 0.972                             |
| Time-point 7          | 958                     | 432                              | 526                         | 0.569                             |
| Time-point 8          | 731                     | 317                              | 414                         | 0.147                             |
| Time-point 9          | 681                     | 302                              | 379                         | 0.548                             |
| Time-point 10         | 649                     | 286                              | 363                         | 0.204                             |
| Time-point 11         | 542                     | 246                              | 296                         | 0.855                             |
| Time-point 12         | 501                     | 213                              | 288                         | 0.199                             |
| Time-point 14         | 791                     | 370                              | 421                         | 0.523                             |
| **Baseline demographic factors** |                      |                                  |                             |                                   |
| Age                  | 2260                    | 2200                             | 2200                        | <0.001                            |
| Number of children   | 2260                    | 1115                             | 1115                        | <0.001                            |
| Oldest (u18) child’s age | 2261               | 1116                             | 1116                        | <0.001                            |
| Female/other         | 2247                    | 1110                             | 1110                        | <0.001                            |
| Language other than English | 2261                  | 1110                             | 1110                        | <0.001                            |
| No partner           | 2260                    | 1115                             | 1115                        | <0.001                            |
| Did not complete high school | 2260            | 1115                             | 1115                        | <0.001                            |
| Unemployed           | 2242                    | 1109                             | 1109                        | <0.001                            |
| Low income (<$52,000 per year) | 2233                | 1105                             | 1105                        | <0.001                            |

Fig. 1. Estimated alcohol frequency trajectory for parents in the non-Victorian and Victorian samples.
5. Discussion

The current study used data from Australia spanning over 1-year (April-2020 to May 2021) to: 1) estimate the trajectory of alcohol use frequency in parents and contrast patterns in Victorian parents (who experienced strict lockdowns) to parents in other states of Australia (who experienced relatively fewer restrictions); and 2) identify baseline demographic factors associated with changes in alcohol use trajectories. Broadly, findings from the current study indicate that from the start of data collection in April-2020, there was an overall decline in alcohol frequency across Australia, with stabilisation occurring towards the end of 2020. Victorian parents showed less of a slower rate of reduction in alcohol use frequency across 2020, but a more notable decline during 2021, in comparison to parents from other states in Australia. Further, we identified several demographic factors which were associated with changes in alcohol trajectory shape.

The finding that the trajectory of alcohol frequency declined among parents during the first year of the pandemic in Australia extends on prior studies also reporting a decrease or stabilisation in alcohol use frequency across 2020, but a more notable decline during 2021, in comparison to parents from other states in Australia. Further, we identified several demographic factors which were associated with changes in alcohol trajectory shape.
advantaged population of parents who may be more likely to consume alcohol (Collins, 2016). Interestingly, reduced alcohol frequency was reported, despite increased off-premises sales, coupled with parents being more likely to drink at home (Bowden et al., 2019; Colbert et al., 2020). Importantly, while other research on this sample suggests some increases in parent and child mental health problems during lockdown periods in Australia (Westrupp, Greenwood, et al., 2021), the results of this study suggest that this shift may not extend to increased drinking during the COVID-19 pandemic for many parents.

Our study also extends on previous COVID-19 studies by comparing trajectories of alcohol use in Victoria to other states in Australia. The Victorian sample showed an initial lower frequency of alcohol use at the first assessment, early in the pandemic relative to other states, albeit a slower rate of reduction in alcohol frequency over 2020. The initial lower rate of alcohol use in Victorian parents, when restrictions across Australia were similar in April and May-2020, is consistent with previously reported lower risky-drinking patterns observed in Victoria more generally, compared to the rest of the country (Australian Institute of Health and Welfare, 2020). Thereafter, it is possible that the slower rate of alcohol use decline in Victoria during 2020, relative to other states, may reflect sustained alcohol use in parents subject to more extensive lockdowns. The steeper decline in the trajectory of alcohol use for the non-Victorian sample may, however, represent a greater opportunity for decline given higher frequency at the start of the study. Interestingly, very similar rates of drinking frequency were observed in Victoria and other states towards the end of 2020, coinciding with the major year-end holiday period, when many restrictions were lifted nationally. Finally, in 2021, alcohol frequency declined further in Victoria, compared to non-Victoria states, coinciding with a 1-week Victorian lockdown in February. Taken together, differences in Victoria, relative to other states, may reflect subtle variations in alcohol trajectories aligned with varied COVID-19 lockdown conditions.

Given the differences in trajectory shape between non-Victorian and Victorian samples, the examination of predictors was conducted within each sample separately. Nevertheless, a set of key baseline demographic factors were associated with less frequent alcohol use trajectories during the pandemic in both non-Victorian and Victorian samples; these included female/other parent gender, younger parent age, and speaking a language other than English at home. Additionally, in the non-Victorian sample unemployment and low income were associated with a trajectory of decreased alcohol use. In the Victorian sample fewer children and greater child age were associated with a less frequent alcohol trajectory shape. The presence of somewhat different patterns of identified predictors across non-Victorian and Victorian samples may reflect the impact of extended periods of home school enforced among Victorian families. Comparisons across samples should, however, remain tentative as statistical analyses comparing the coefficients between the non-Victorian and Victorian samples were not appropriate given the inherent differences in growth trajectory parameters. Broadly, current evidence aligns with cross-sectional analyses from our group (Westrupp, Bennett, et al., 2021), and with existing studies in non-parent samples conducted during the COVID-19 pandemic, which suggest that factors such as age, speaking a language other than English, unemployment, and socioeconomic disadvantage are linked to alcohol use (Biddle et al., 2020). Findings are broadly aligned with suggestions that alcohol use is elevated in socioeconomically advantaged groups, although it is noted that socioeconomically disadvantaged groups are likely to experience greater harm (Collins, 2016). As such, population level support seeking to reduce alcohol use behaviours may be warranted.

5.1. Limitations

The study has several limitations that warrant consideration. First, the study used an online recruitment approach, which resulted in a lower representation of families with a low income, speaking a language other than English, and low education, in comparison to the Australian population (Westrupp, Bennett, et al., 2021). Additionally, the current sample had a higher proportion of mothers and parents of pre-adolescent children, which may limit the generalisability of findings to parents of older children (Westrupp, Bennett, et al., 2021). Second, the study assessed alcohol frequency but not quantity. Whilst frequency data is commonly assessed in the literature on alcohol use, it is possible that differences did not occur in frequency but in the quantity of use during the pandemic, which were not detected in this study. Finally, only baseline time-invariant predictors were examined. Investigation of time-varying factors, such as the experience of COVID-19 stressors, may provide additional insight into the influence of alcohol use trajectories.

5.2. Conclusions

Patterns of alcohol use frequency in parents during the COVID-19 pandemic from April-2020 to May 2021 showed an overall decline in this cohort of Australia parents, despite the elevated stressors reported by parents related to the pandemic. Additionally, parents living in Victoria, who experienced the strictest lockdowns, compared to parents in other states of Australia, showed a smaller reduction in alcohol use frequency across 2020, with a more notable decline in 2021. Demographic factors primarily influenced the trajectory of alcohol use frequency, such that socioeconomically advantaged parent groups were most at risk for elevated trajectories of alcohol use. Given the varied patterns of alcohol across socioeconomically diverse populations (Collins, 2016), universal efforts, such as public health messaging, may beneficial to reduce drinking behaviours and associated harms.

Funding Information

The author(s) disclosed receipt of the following financial support for the research, authorship and/or publication of this article: EMW and JAM were supported by Deakin Faculty of Health Mid-Career Fellowships. DMH was supported by the National Health and Medical Research Council of Australia [APP1197488].

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Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

Data will be made available on request.

Appendix A. Supplementary material

Supplementary data to this article can be found online at https://doi.org/10.1016/j.addbeh.2022.107561.
