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Research Paper

The ‘Abstainer Question’: Relationships between alcohol use and suicidal ideation in Australian online help-seekers

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ABSTRACT

Background: When compared to social drinkers, high levels of suicidal ideation have been observed in both heavy alcohol consumers and abstainers. Heavy alcohol use or abstinence may indicate different risk pathways to the development of suicidal ideation (SI).

Methods: Visitors to a mental health website ($N = 1,561$) completed a survey, and latent profile analysis (LPA) was used to explore differences in risk factor patterns. Risk factors explored included psychological distress, help-seeking intent, financial wellbeing, thwarted belongingness and perceived burdensomeness.

Results: Most participants (75.1%) reported SI in the past four weeks. A three-class LPA model emerged as the optimal fit: (1) low SI/lower alcohol; (2) high SI/lower alcohol; (3) high SI/high alcohol. Members of the high SI/lower alcohol profile displayed significantly higher psychological distress, thwarted belongingness, and perceived burdensomeness; lower financial wellbeing and help-seeking intentions than both other profiles. Members of the high SI/high alcohol profile were more likely to be male and already receiving help for their psychological distress. Members of the high SI/lower alcohol profile were more likely to be younger and report lower help-seeking intent.

Limitations: Our study design was cross-sectional, utilising a largely young, female, English-speaking, help-seeking sample that had chosen to visit a mental health website.

Conclusions: While the links between heavy alcohol use and suicide risk are well documented, these findings suggest that practitioners should also be alert for abstinence patterns, as they may be indicators of underlying psychosocial concerns that a client could be reluctant to disclose.

1. Introduction

Heavy alcohol consumption is a significant risk factor for suicide (Darvishi et al., 2015; Nock et al., 2010; Pompili et al., 2010). Amongst people who have attempted suicide, alcohol use has been shown to intensify suicidal ideation within a matter of hours and facilitate the transition from ideation to action (Conner and Bagge, 2019). High consumers of alcohol also have elevated rates of psychological distress (Lucas et al., 2010), a state of emotional anguish that includes

cognitive-behavioural symptoms of anxiety and depression (Arvidsdotter et al., 2015). In some, this may lead to increased alcohol consumption as a method of coping, which in turn increases suicide risk (Núñez et al., 2022), especially in the presence of beliefs that one is a burden on others (Cole et al., 2020). Alcohol misuse is additionally related to financial stress, both as a cause of financial strain (Guillaumier et al., 2017) and a coping mechanism to deal with it (Shaw et al., 2011). In turn, financial stress has been implicated as a factor in many Australian suicide deaths, particularly in men (Leske et al., 2019). Hazardous

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alcohol consumption and suicidal ideation have both been associated with help-negation, a disengagement or refusal of available help as symptoms intensify (Dawson et al., 2006; Wilson et al., 2018). These studies collectively illustrate the complexities involved in mapping the role of alcohol in the development of suicidal ideation.

Further, some studies have found a U-shaped relationship between alcohol use and poor mental health, with non-drinkers experiencing similarly high levels of psychological distress (Lucas et al., 2010; Power et al., 1998), depression and anxiety (Alati et al., 2005; Rodgers et al., 2000). In our recent study of Australian online help-seekers we observed similar U-shaped relationships, with non-drinkers and heavy drinkers both reporting high levels of psychological distress and suicidal ideation compared to low alcohol consumers (Rainbow et al., 2021). Research documenting this U-shaped relationship, or 'abstainer effect', has settled on two main explanations: (1) the 'sick-quitter hypothesis' (Lucas et al., 2010; Shaper et al., 1988), which proposes that distressed abstainers are former heavy drinkers; and (2) the social relations hypothesis, which proposes that abstainers have poorer social connections (Leifman et al., 1995; Lucas et al., 2010). Common to both explanations for the 'abstainer effect' is the presence of mental ill health, which may cause a person to stop drinking, and contribute to feelings of social isolation. Feeling disconnected from society is strongly linked to suicide risk, irrespective of alcohol consumption (Klonsky and May 2015; Van Orden et al., 2010).

There is little research examining the 'abstainer effect' for suicidal ideation, and potential risk factors that may drive it. One likely reason for this is that common statistical methods in cross-sectional studies, such as multiple regression, model differences in outcome variables that are aggregated across a whole sample. In such analyses, case-level individual differences become lost within the unexplained and error variance terms (Lanza and Cooper, 2016). Latent profile analysis (LPA) is a 'person-centred' method that aims to classify people into meaningful groups based on patterns in their data (Spurk et al., 2020), and has been used in several previous studies investigating the development of suicidal thinking in adolescents and young adults (Bernanke et al., 2017; De Luca et al., 2014; Vander Stoep et al., 2009). As LPA takes individual differences into account in this manner, it may allow practitioners and health organisations to improve care-planning and treatments through better identification of combinative patterns that drive suicidal thinking.

The aim of the present analysis was to use LPA to explore how known risk factors for suicidal ideation, such as alcohol consumption, help-seeking intentions, financial wellbeing, sense of belonging, burdensomeness, and sociodemographic factors, might combine to create different suicidal ideation risk profiles in a sample of Australian online help-seekers. Based on our previous study in which alcohol abstinence and high consumption were both correlated with higher levels of psychological distress and suicidal ideation (Rainbow et al., 2021) we hypothesised that abstainers and high consumers of alcohol would form separate profiles that both experienced higher levels of psychological distress and suicidal ideation relative to low consumers of alcohol. As Australian population data shows that men are more likely than women to be hazardous consumers of alcohol (Australian Institute of Health and Welfare [AIHW], 2019), we also hypothesised that men would be over-represented in any high consumption class that might emerge. Due to the exploratory nature of LPA and the nascency of this line of research, we did not generate hypotheses for the remaining risk factors.

2. Methods

2.1. Procedure and participants

The sample comprised 1561 participants who completed an anonymous, online survey hosted on the Qualtrics platform. Most were female (76.6%), single (42%), born in Australia (75.3%) and spoke English at home (82.4%). The mean age was 36.6 years ($SD = 15.6$ years), with 31.5% of the sample aged between 18 and 24 years. Most were in paid

employment (52.8%), living in a major city (52.1%), and heterosexual (76.1%).

Participants were drawn from visitors to the website of Beyond Blue (www.beyondblue.org.au), an Australian mental health support organisation. Visitors who completed a popular online self-assessment of psychological distress (K10; Kessler et al., 2002) between April and October 2020 saw an invitation to participate in the study displayed on their assessment results page, and if interested in participating could click a link through to the survey where electronic consent was obtained.

2.2. Measures

Suicidal ideation. The Suicidal Ideation Attributes Scale (SIDAS; Van Spijker et al., 2014) was used to measure frequency and intensity of suicidal ideation. The SIDAS is a 5-item measure utilising an 11-point Likert scale. Total scores ≥ 21 indicate high intensity suicidal ideation and are associated with a higher risk of suicidal behaviour (Van Spijker et al., 2014). Internal consistency in the current sample was good ($\alpha = 0.89$).

Alcohol use. The Alcohol Use Disorders Identification Test (AUDIT) examines alcohol use and related problems over the past year, using a 5-point Likert scale across 10 items (Saunders et al., 1993). Scores for each item are totalled for a maximum possible score of 40. Medium levels of alcohol problems are suggested with total scores between 8 and 15, and high levels with scores of 16 and above (Babor et al., 2001). Good internal consistency was found in the current study ($\alpha = 0.86$).

Psychological distress. The K10 was used to measure psychological distress (Kessler et al., 2002). The K10 is a 10-item measure using a 5-point Likert scale, with items covering past-month frequency of symptoms associated with depression and anxiety (Kessler et al., 2002). Total scores ≥ 30 indicate greater likelihood of meeting clinical criteria for a mood disorder (Andrews and Slade, 2001). K10 total scores for participants were obtained, with consent, from each participant's Beyond Blue website assessment prior to study entry; this precluded an internal consistency analysis. Strong internal consistency ($\alpha = 0.93$) has been indicated previously (Kessler et al., 2002).

Help-seeking intentions. The General Help Seeking Questionnaire (GHSQ) assesses intent to seek help for personal or emotional problems from both personal and professional sources (Wilson et al., 2005). In the current study, a list of 10 sources were used, each measured on a 7-point Likert scale. Acceptable internal consistency was demonstrated ($\alpha = 0.74$).

Financial wellbeing. The InCharge Financial Distress/Financial Wellbeing Scale (Prawitz et al., 2006) explores perceived financial wellbeing using 8 items capturing ability to cover daily expenses, measured on a 10-point Likert scale. Internal consistency for the current study was good ($\alpha = 0.94$).

Thwarted belongingness and perceived burdensomeness. Thwarted belongingness (TB) and perceived burdensomeness (PB) were measured using a 10-item version of the Interpersonal Needs Questionnaire (INQ; Hill et al., 2015), a self-report two-factor measure exploring interpersonal connections (TB, 6 items) and beliefs that others would be better off without them (PB, 4 items). A 7-point Likert scale was used. Internal consistency was satisfactory for TB items ($\alpha = 0.77$) and good for PB items ($\alpha = 0.90$).

2.3. Analysis

Initial data screening was conducted in SPSS Statistics version 28. Latent profile analysis was performed using Mplus version 8.6 (Muthén and Muthén, 2017). Robust maximum likelihood estimation was used to compensate for non-normal distributions, and multiple starts used to avoid local solutions (Hipp and Bauer, 2006). Model fit was assessed using Bayesian information criterion (BIC), bootstrapped parametric likelihood ratio test (BLRT), and entropy value. Entropy values occur on a spectrum from 0 to 1, with higher values indicating greater precision of

profile membership. An optimal solution was determined by interpreting a combination of lowest BIC, a significant BLRT test ($p < .05$), and largest entropy value. Latent profile classification results were exported back into SPSS to perform multinomial logistic regression, chi-square, t and one-way ANOVA tests.

3. Results

3.1. Suicidal ideation in participants

Table 1 presents means and standard deviations for all variables across the sample. A series of independent samples t-tests were used to compare mean values between participants who reported no suicidal ideation, and participants who reported any suicidal ideation.

Most participants reported at least some suicidal ideation in the past four weeks (75.1%). A total of 383 participants (24.5%) fell into the high intensity range on the SIDAS scale (scores of 21 or above), indicating a higher likelihood of a suicide attempt within the past year (Van Spijker et al., 2014). A small number (1.4%) reported a suicide attempt in the four weeks prior to taking the survey.

Compared to participants with no recent suicidal ideation (SI), those with recent SI had significantly higher levels of psychological distress, thwarted belongingness (TB) and perceived burdensomeness (PB); with help-seeking intentions and financial wellbeing significantly lower. Mean levels of alcohol consumption in the SI group were significantly higher, although mean AUDIT scores for both groups fell in the low-risk consumption range (Babor et al., 2001).

3.2. Latent profile analysis

To examine individual differences in suicidal ideation risk factors, a latent profile analysis (LPA) was performed containing help-seeking intentions, financial wellbeing, TB, PB and alcohol use, with psychological distress and suicidal ideation added as auxiliary variables. The LPA converged on a three-profile model. While the four-profile model had a lower BIC and higher entropy value than the three-profile model, it contained one profile with a small number of participants (2.3% of the sample). Additionally, the four-profile model produced non-identification warnings, indicating the model may be unreliable due to local maxima. Table 2 presents LPA fit statistics.

A series of one-way ANOVAs revealed that the profiles were distinguished by differing levels of SI and alcohol use: (1) low SI/lower alcohol use; (2) high SI/lower alcohol use; and (3) high SI/high alcohol use. Fig. 1 displays the strength of endorsement for all variables measured according to latent profiles, to illustrate the differences in response patterns observed. To aid interpretation, all item scores have been standardised. The sample mean for each variable is represented by

Table 1
Mean and standard deviations of all study variables.

Measure	No SI present (n = 389)		SI present (n = 1172)		t	p
	M	SD	M	SD		
SIDAS	–	–	15.51	12.04	–	–
AUDIT	4.43	5.45	5.87	6.79	–4.22	<0.001
K10	29.07	8.17	35.60	6.35	–14.39	<0.001
GHSQ	34.17	9.89	29.40	9.89	8.24	<0.001
IFDW	6.49	2.38	5.43	2.48	7.42	<0.001
INQ-TB	24.17	7.65	29.69	6.67	–12.73	<0.001
INQ-PB	7.39	4.27	13.91	6.63	–22.45	<0.001

Note. SI = suicidal ideation; SIDAS = Suicidal Ideation Attributes Questionnaire; AUDIT = Alcohol Use Disorders Identification Test; K10 = Kessler-10 Psychological Distress Screener; GHSQ = General Help-Seeking Questionnaire; IFDW = InCharge Financial Wellbeing Scale; INQ-TB = Interpersonal Needs Questionnaire Thwarted Belongingness Subscale; INQ-PB = Interpersonal Needs Questionnaire Perceived Burdensomeness Subscale.

the zero line on the graph. The vertical axis points are measured in standard deviations from the sample mean.

Games-Howell post-hoc analyses showed that Profile 1 exhibited the lowest levels of SI, significantly lower than profile 2 ($p < .001$) and profile 3 ($p < .001$). SI levels between profiles 2 and 3 were not significantly different ($p = .92$). Profile 2 exhibited the highest levels of psychological distress, TB and PB; and the lowest levels of help-seeking intentions. Compared to population norms, financial wellbeing for Profile 2 was below average (Prawitz et al., 2006). While Profile 3 recorded similar levels of suicidal ideation to Profile 2, psychological distress ($p = .02$), TB ($p < .001$) and PB ($p < .001$) were significantly lower, and help-seeking intentions significantly higher ($p = .002$). Profile 1 exhibited the lowest levels of psychological distress, albeit still at a level predictive of a concurrent mood disorder ($M = 30.57$, $SD = 7.41$; Andrews and Slade, 2001). TB and PB were significantly lower, and help-seeking intentions significantly higher than both high SI profiles (all $p < .001$), with financial wellbeing above average for population norms (Prawitz et al., 2006). Further granularity on the alcohol use differences between the profiles is provided in Table 3.

AUDIT score ranges were significantly different between the profiles with a large effect size, $\chi^2 = 1309.52$, $p < .001$, Cramer's $V = 0.65$. Members of the high SI/lower alcohol profile were more than twice as likely to be abstainers from alcohol when compared to the low SI/lower alcohol profile (OR = 2.25, 95% CI [1.77, 2.87]). As expected, no members of the high SI/high alcohol profile were abstainers or low risk consumers of alcohol.

Multinomial logistic regression revealed that when compared to profile 2 (high SI/lower alcohol), members of profile 3 (high SI/high alcohol) were more likely to be male (OR = 2.37, 95% CI[1.58, 3.55]), in a defacto (unmarried) relationship (OR = 2.00, 95% CI[1.13, 3.56]), and already receiving help for their psychological distress (OR = 1.64, 95% CI[1.04, 2.57]).

When compared to profile 1 (low SI/lower alcohol), members of profile 2 (high SI/lower alcohol) were more likely to be aged between 18 and 24 (OR = 2.54, 95% CI [1.49, 4.33]), separated but not yet divorced (OR = 2.55, 95% CI[1.35, 4.82]), living in a rural or remote area (OR = 2.05, 95% CI[1.22, 3.44]), unemployed or looking for work (OR = 4.05, 95% CI[2.36, 6.94]), on a government allowance or pension (OR = 4.52, 95% CI[2.57, 7.96]), primarily performing home duties (OR = 3.02, 95% CI[1.78, 5.13]), and more likely to state that they did not plan to seek help to follow up on their online psychological distress screening (OR = 1.33, 95% CI[1.02, 1.72]).

4. Discussion

The current study aimed to explore risk factors for suicidal ideation (SI) in a sample of psychologically distressed Australian online help-seekers. Our hypothesis that abstainers and heavy alcohol users would form separate high SI latent profiles was partially supported. Two high SI subgroups were identified with starkly different alcohol use patterns: one that exclusively contained heavy alcohol users, and a second that largely (although not exclusively) comprised low risk consumers of alcohol. The main difference between the two high SI subgroups was their level of alcohol consumption: 78% of one subgroup contained abstainers and low risk consumers of alcohol (high SI/lower alcohol, 42.1% of the sample), and the second exclusively contained hazardous consumers of alcohol (high SI/high alcohol, 10.8% of the sample).

The links between heavy alcohol consumption and suicide risk are well documented (Darvishi et al., 2015; Nock et al., 2010; Pompili et al., 2010). Members of the high SI/high alcohol subgroup were more than twice as likely to be male, a finding consistent with previous research demonstrating that men are more likely to meet the criteria for alcohol use disorder (Grant et al., 2015), use alcohol as a coping mechanism for stress (Chaplin et al., 2008) or during a suicidal crisis (De Leo et al., 2005).

Encouragingly, members of the high SI/high alcohol subgroup were

Table 2
Latent profile analysis fit statistics.

Profiles	Fit statistics			Profile membership % (n)			
	BIC	Entropy	BLRT	1	2	3	4
1	28,071.65			100% (1561)			
2	27,342.16	0.69	<0.001	56.8% (887)	43.2% (674)		
3	26,971.96	0.75	<0.001	47.1% (735)	42.1% (657)	10.8% (169)	
4	26,805.84	0.79	<0.001	2.3% (36)	39.7% (619)	43.2% (675)	14.8% (231)

Notes: BIC = Bayesian Information Criterion. BLRT = Parametric bootstrapped likelihood ratio test. Profile numbers are displayed largest to smallest and differ between models.

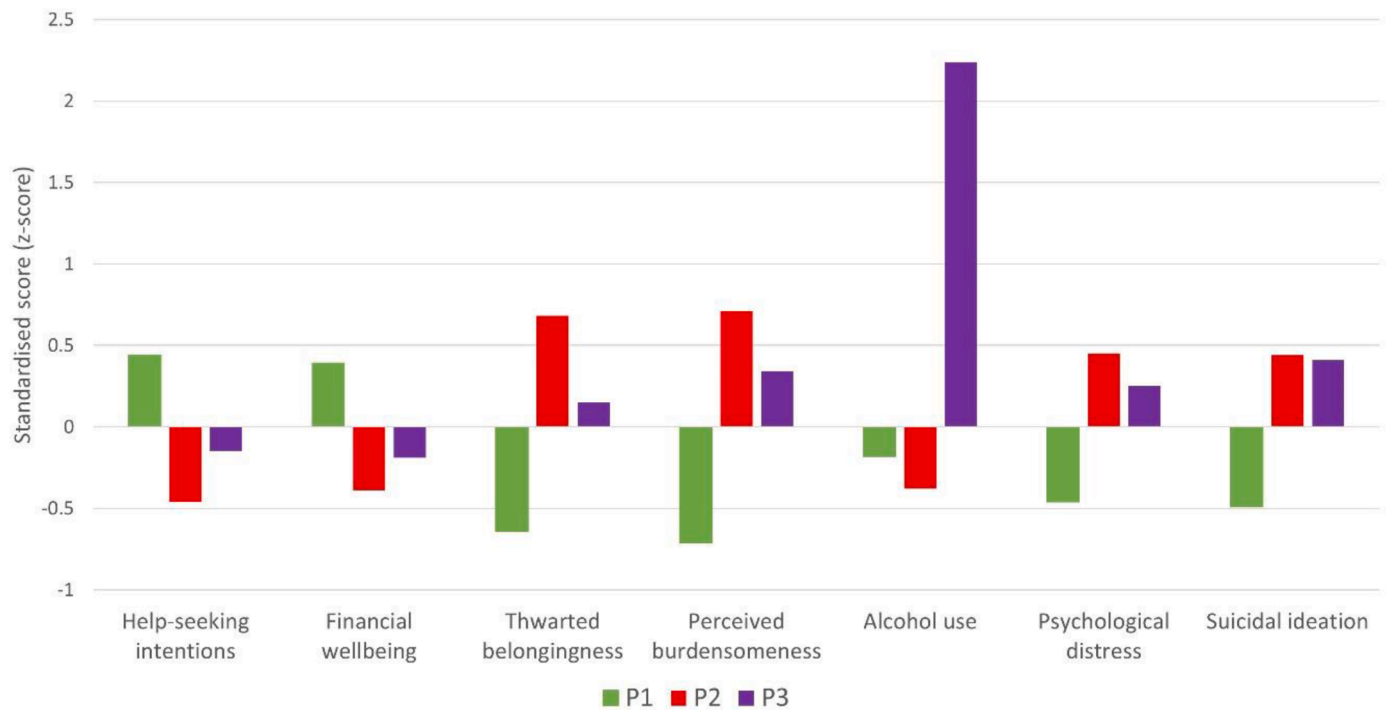


Fig. 1. Standardised variable scores across latent profiles.

Table 3
AUDIT score ranges by profile.

Score range *	P1 %(n)	P2 %(n)	P3 %(n)	Total %(n)
Abstainer (AUDIT score 0)	20.1 (148)	36.2 (238)	0 (0)	24.7 (386)
Low risk range (1–7)	57.8 (425)	49.9 (328)	0 (0)	48.2 (753)
Hazardous range (8–15)	21.2 (156)	13.9 (91)	15.4 (26)	17.5 (273)
High risk range (≥ 16)	0.8 (6)	0 (0)	84.6 (143)	9.5 (149)

Note. SI = Suicidal ideation. P1 = Low SI, lower alcohol. P2 = High SI, lower alcohol. P3 = High SI, high alcohol. * Score ranges as per Babor et al. (2001).

more likely to report that they are already receiving help for psychological distress, however our findings suggest psychosocial factors that may complicate their treatment. Thwarted belongingness (TB) and perceived burdensomeness (PB) are known major contributors to suicidal thinking (Chu et al., 2017), however TB and PB were not as strongly endorsed in this subgroup when compared to the high SI/lower alcohol subgroup. While this may reflect a benefit of receiving treatment, members of the high SI/high alcohol subgroup may also be involved in social circles or relationships that support their risky drinking, as suggested by studies that have shown the size and diversity of social networks to be smaller amongst those with alcohol use disorder (Mowbray et al., 2014). Substantial reductions in alcohol consumption may serve to isolate such individuals from social connections that, while

maladaptive, still act as a protective factor against escalating suicidal ideation (Klonsky and May, 2015). Individuals recovering from alcohol use disorders often work through a process of seeking more supportive social networks (Brooks et al., 2017), which may be challenging for members of the high SI/high alcohol subgroup, who are more likely to be living remotely.

The high SI/lower alcohol subgroup recorded the highest levels of TB and PB, in combination with below average financial wellbeing and the lowest levels of help-seeking intent. An inverse relationship has been observed between help-seeking intent, psychological distress and suicidal ideation (Han et al., 2018), an effect that may be partially explained by impaired cognitive, emotional and behavioural self-regulation (Wilson et al., 2018). Our findings provide some support for this explanation, with members of this subgroup perhaps feeling unable to reach out to informal support networks due to intense feelings of social disconnection and perceptions of being a burden on others. Additionally, below average financial wellbeing suggests these individuals may not be able to afford professional help. Free or low-cost Internet-based interventions may be an option for reaching this cohort, as suicidal ideation has been associated with a preference for online treatments in recent studies (Mok et al., 2020; Wilks et al., 2018).

Demographically, the high SI/lower alcohol subgroup was heterogeneous, but contained more alcohol abstainers than any other group, and the highest levels of psychological distress. Just as with high alcohol

consumption, the relationship between abstinence and suicidal ideation is likely to be complex. For example, the below-average financial well-being recorded in this subgroup may make certain types of alcohol unaffordable. Another explanation may be that abstinence is a choice related to existing mental health problems, with antidepressant or other medication use leading to restricted alcohol consumption. The decision or need to abstain may fuel social isolation, due to social aspects of drinking in Australian culture. However, it should be noted many people find strength in deciding to abstain from drinking based on personal values (Huang et al., 2011), and in camaraderie with like others (Supski and Lindsay, 2017).

Irrespective, given the elevated levels of psychological distress, social disconnection and help-negation observed in our high SI subgroups, practitioners should consider exploring both heavy alcohol use and abstinence when screening for alcohol use, especially in patients experiencing psychological distress. While we are not suggesting that alcohol abstinence is a cause of mental ill health, for some it may indicate mental health concerns that an individual has not immediately disclosed. Such concerns, including recent thoughts of suicide, may be revealed through further questioning about social connections and feelings of perceived burden, providing a vital opportunity for intervention.

4.1. Limitations and future directions

Our sample comprised only people who had chosen to visit a popular mental health website to screen for current psychological distress. Although evidence of help-negation was observed across our profiles as suicidal ideation and psychological distress increased, given our sample self-selected to complete an online mental health assessment it is likely that help-seeking intent overall was higher here than the general population. The demographic make-up included an over-representation of women and 18–24 year olds compared to Australian Census data. Our survey was conducted during the first wave of the COVID-19 pandemic, when government-mandated lockdowns and social distancing regulations were in place across many Australian states. Psychological distress, social disconnection and alcohol consumption may have varied during this period (Griffiths et al., 2020; Rahman et al., 2020). The limitations of latent profile analysis should also be noted, namely that participants are assigned to profiles based on probability scoring (Weller et al., 2020). While most participants assigned to the low SI/lower alcohol category accurately reflected that label, around one in five (22%) were heavier alcohol consumers. Caution should therefore be exercised when interpreting the results of these profiles.

Future research could take a longitudinal approach to examine how an 'abstainer' effect may develop over time. For example, are the psychosocial effects observed here present in those who have previously been heavier drinkers and are now abstaining? Is the effect maintained if abstainers become low-risk or social consumers of alcohol? Are there interactions with number of social contacts and diversity of social networks? Given the heterogeneity of the high SI/lower alcohol class, further granularity could also be explored with respect to why people choose to abstain from drinking, and whether these variables (e.g. comorbid physical or mental health conditions) can explain any observable 'abstainer' effect.

5. Conclusion

Prolonged suicidal ideation has significant quality-of-life impacts and increases the risk for future suicide attempts and deaths. Understanding the different combinations of cognitive, emotional and behavioural drivers that co-occur with suicidal ideation can lead to improved treatment and recovery prospects. The current study's findings highlight the relationship between alcohol consumption and suicidal ideation at both extremes: abstinence from alcohol, and hazardous drinking. While the latter is widely understood to be a contributor to suicide risk, an opportunity exists for more attention to be paid to

abstinence patterns, their links with suicidal ideation and their potential as an early indicator of underlying drivers for suicide risk such as social disconnection, perceived burdensomeness and help-negation.

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Publication ethics

Ethical approval to conduct this study was received from the Victoria University Human Research Ethics Committee (VUHREC), reference number HRE20–028.

Open data

The data that support the findings of this study are available on request from the corresponding author, Christopher Rainbow.

CRediT authorship contribution statement

Christopher Rainbow: Conceptualization, Methodology, Formal analysis, Investigation, Writing – original draft, Writing – review & editing. **Peter Baldwin:** Writing – original draft, Writing – review & editing, Supervision. **Warwick Hosking:** Conceptualization, Writing – review & editing. **Grant Blashki:** Writing – review & editing, Supervision. **Philip J. Batterham:** Methodology, Writing – review & editing.

Declaration of Competing Interest

At the time the study was conducted, CR and GB were employees of Beyond Blue. There are no other competing interests with respect to this article.

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