The impacts of others' drinking on mental health

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Heavy alcohol consumption and depression have been shown to be related problems across a range of settings and studies. Substantial comorbidity between alcohol use disorders and depression has been shown in people in the United States,[1] United Kingdom,[2] New Zealand,[3] Canada[4] and elsewhere.[5] A study in Australia[6] showed that around 17% of adults with an alcohol use disorder had a comorbid mental disorder, and 16% of adults with a mental disorder had a comorbid alcohol use disorder. They found that having an alcohol use disorder increased the odds of reporting depression or anxiety by two to five times. The causal pathways between alcohol consumption and mental health problems are complex and interconnected. A longitudinal study of alcohol dependence and major depression[7] found that the causal pathways operated in both directions, with alcohol dependence leading to depression in some cases, and depression to alcohol dependence in others. In the Global Burden of Disease study, alcohol was estimated to be causally responsible for around 2% of all episodes of unipolar major depression,[8] while in the Australian burden of disease study around 25% of the burden from self-inflicted injuries and suicide was attributed to alcohol consumption.[9]

A second relationship between alcohol consumption and mental health problems may be by way of someone else's drinking. There is reasonably clear evidence that people's health and wellbeing are affected by those around them. For example, people caring for others with chronic illnesses have substantially poorer health than the general population.[10] A small body of literature has consistently shown associations between spousal drinking and depression. A range of qualitative studies based on clinical samples have highlighted the significant strains placed on families of dependent drinkers.[11-13] In general population samples, a number of studies have shown an association between problematic alcohol use by married men and depression and anxiety in their wives.[14-16] Previous work using the same sample used in our study has shown that people with a greater number of heavy drinkers in their lives report lower overall health and wellbeing, with negative effects coming from drinkers both within and outside the respondent's household.[17] This suggests that

ABSTRACT

Objective: To analyse the links between other people's drinking and mental health and to explore the effects on mental health of heavy and problematic drinkers both within and outside spousal relationships.

Design, setting and participants: A secondary analysis of data obtained as part of the Alcohol's Harm to Others survey from 2622 randomly sampled Australian adults interviewed by telephone between October and December 2008.

Main outcome measures: Self-reported anxiety or depression and satisfaction with mental wellbeing; the presence of heavy and problematic drinkers in respondents' lives.

Results: Identification of at least one heavy drinker in the respondents' social network of friends, family and co-workers was significantly negatively associated with self-reported mental wellbeing and anxiety or depression. If the heavy drinker was identified by the respondent as someone whose drinking had had a negative impact on their life in the past year, the adverse effect on mental wellbeing and anxiety was much greater.

Conclusions: Our findings support a causal pathway between alcohol use and mental health problems by way of someone else's drinking. The association with adverse mental health is substantial regardless of the type of relationship an individual has with the heavy drinker whose drinking has had an adverse effect on them.

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the relationship between others' alcohol consumption and depression and anxiety may be broader than what has been studied previously. We present the first Australian analysis of the links between other people's drinking and mental health and the first study anywhere to explore the effects on depression of heavy drinkers both within and outside the spousal relationship.

METHODS

We used data collected in the Alcohol's Harm to Others study, which was based on a telephone survey of Australian adults conducted between October and December 2008. The study has been described in detail elsewhere.[17,18]

Our study's main focus was the impact of the respondents' relationships with heavy and problematic drinkers on their mental health. Respondents identified whether they knew someone in various categories (household members, other family members, co-workers, friends, ex-partners and others) whom they "would consider to be a fairly heavy drinker or someone who drinks a lot sometimes" ("heavy drinkers"). Respondents also identified whether they knew someone whose drinking had had a negative effect on them in the previous 12 months ("problematic drinkers"). We created dichotomous variables to summarise

the degree of involvement the respondent had with others' drinking. The first differentiates between those who reported knowing one or more heavy drinkers and those who reported none; the second differentiates between those who reported adverse effects from others' drinking and those who did not.

Mental wellbeing

Mental wellbeing was measured using an item sourced from a survey measuring the second-hand effects of gambling.[19,20] The item took the form, "Thinking about your own life and your personal circumstances, how satisfied are you with your mental wellbeing?" Responses were invited on a scale from 0 to 10 (0 = "completely dissatisfied"; 5 = "neither satisfied nor dissatisfied"; 10 = "completely satisfied"). In our analysis, the response options were dichotomised: 0–5 = "not satisfied"; 6–10 = "satisfied".

Depression or anxiety

A measure of depression or anxiety came from the EuroQol-5D (EQ-5D), a standardised, non-disease-specific measure of health-related quality of life.[21] Respondents were required to self-rate their health across five domains including whether they were anxious or depressed, with three possible responses (not, moderately, or extremely

anxious or depressed). This item has been found to be sensitive enough to be able to distinguish between those with and those without self-reported chronic depression (using a depression screening test).[22] Analysis of the single anxiety or depression domain item found it had the expected distributions of responses for sociodemographic variables and for chronic medical conditions (including depression). Expected relationships were also observed for comparable items on the 12-item Short-Form Health Survey (SF-12), another health-related quality-of-life measure.[22] The responses for this item were converted into a dichotomous outcome: no problems, and some or major problems.

Control variables

Basic demographic and socioeconomic status variables that have been strongly linked with depression and mental wellbeing were included as control variables. For example, females, people who are unemployed or students, people without any college education and people with lower incomes were more likely to have reported a moderate or extreme problem with anxiety or depression,[22] and hence the following variables were included in our analysis: sex, age group, education level completed, working status and relative remoteness of their residence (using categories collapsed from the Australian Standard Geographical Classification[23]). Respondents' own alcohol consumption was also included.

Statistical analysis

All analyses were undertaken using Stata, version 10.1 (StataCorp, College Station, Tex, USA). To assess whether the two measures being used were measuring a similar underlying construct, the concordance between "Satisfaction with your mental well-being" and the EQ-5D item about feeling anxious or depressed was examined using the Kendall τ-b correlation coefficient (unweighted data) and tests for association used Pearson's χ^2 test. Initial bivariate analyses were undertaken to assess the relationship between individual explanatory variables and the two dependent variables using χ^2 tests. These were followed by multivariate logistic regression models that initially examined associations between the quality-of-life outcome measures and the sociodemographic variables. We progressively added to the models the respondents' own drinking and the two variables related to exposure to others'

heavy drinking and being negatively affected by other drinkers.

RESULTS

Data from 2622 respondents were available for analysis. Twenty people (< 1.0%) did not provide an answer to the EQ-5D item and 12 people (< 1.0%) did not provide a response to the second outcome item for mental wellbeing.

The sociodemographic composition of the sample and the percentages of respondents who were anxious or depressed and not satisfied with their mental health and wellbeing are shown in

1 Selected sociodemographic variables and the proportion of respondents reporting feeling anxious or depressed and not satisfied with their mental wellbeing

Demographics	No.	Anxious or depressed	χ^2	P	No.	Not satisfied with mental wellbeing	χ^2	P
Sex			12.71	0.002			0.28	0.661
Male	1283	20.4%			1283	8.5%		
Female	1346	26.3%			1354	7.9%		
Age			3.01	0.315			5.01	0.198
18–29 years	542	20.6%			542	9.5%		
30–59 years	1496	24.2%			1503	8.5%		
60–99 years	587	24.1%			589	6.1%		
Education completed			13.81	0.003			3.70	0.252
Less than secondary	566	28.8%			568	8.2%		
Secondary	1092	23.2%			1093	9.0%		
Post-secondary	943	20.4%			945	6.7%		
Level of drinking			5.82	0.210			23.04	0.001
Abstainer	389	25.7%			391	7.9%		
Never ≥ 5 drinks	886	23.9%			890	6.6%		
≥ 5 drinks infrequently	997	21.1%			1000	7.4%		
≥ 5 drinks frequently	357	26.2%			357	14.5%		
Working status			7.01	0.013			1.88	0.225
Working	1857	22.0%			1861	7.7%		
Not working	772	26.8%			777	9.3%		
Rurality index			5.29	0.123			0.03	0.989
City	1415	22.5%			1422	8.2%		
Regional	1064	23.7%			1065	8.2%		
Remote	132	31.3%			132	8.6%		
Household make-up			6.12	0.002			0.12	0.671
Sole person	242	29.8%			240	8.8%		
Living with others	2387	22.8%			2397	8.1%		
Partner status			5.66	0.033			2.73	0.185
No partner	766	26.5%			768	9.5%		
Partner	1863	22.2%			1869	7.6%		
Know a heavy drinker*			17.95	< 0.001			11.41	0.004
Yes	1791	25.8%			1796	9.4%		
No	838	18.3%			841	5.5%		
Identified problematic drinker†			78.17	< 0.001			41.01	< 0.001
Yes	759	34.9%			762	13.5%		
No	1870	18.8%			1875	6.0%		

* Yes = reported knowing one or more person whom they would consider to be a fairly heavy drinker or someone who drinks a lot sometimes; no = reported knowing no such people. † Yes = reported adverse effects from others' drinking in the past 12 months; no = reported no such effects. ◆

2 Multivariate logistic regression models for depression or anxiety and not being satisfied with mental wellbeing with the primary explanatory variable knowing a heavy drinker (odds ratio [95% CI])

	Depression or anxiety		Impaired mental wellbeing	
	Without own drinking	With own drinking	Without own drinking	With own drinking
Know a heavy drinker*				
Yes	1.76 (1.39–2.21)	1.76 (1.39–2.24)	1.82 (1.19–2.78)	1.70 (1.10–2.63)
No	1.00	1.00	1.00	1.00
Sex				
Male	1.00	1.00	1.00	1.00
Female	1.38 (1.11–1.71)	1.43 (1.14–1.78)	0.92 (0.64–1.33)	1.09 (0.74–1.59)
Age				
18–29 years	1.00	1.00	1.00	1.00
30–59 years	1.39 (1.02–1.88)	1.41 (1.04–1.92)	0.95 (0.58–1.55)	1.04 (0.64–1.70)
60–99 years	1.22 (0.84–1.77)	1.23 (0.84–1.79)	0.52 (0.28–0.96)	0.58 (0.32–1.07)
Education completed				
Less than secondary	1.00	1.00	1.00	1.00
Secondary	0.79 (0.61–1.02)	0.80 (0.62–1.04)	1.06 (0.70–1.59)	1.10 (0.73–1.65)
Post–secondary	0.66 (0.50–0.86)	0.67 (0.51–0.87)	0.78 (0.50–1.22)	0.83 (0.53–1.31)
Working status				
Working	1.00	1.00	1.00	1.00
Not working	0.78 (0.60–1.00)	0.79 (0.61–1.02)	0.59 (0.39–0.90)	0.55 (0.36–0.85)
Partner status				
No partner	1.00	1.00	1.00	1.00
Partner	0.71 (0.57–0.89)	0.72 (0.57–0.90)	0.81 (0.54–1.22)	0.82 (0.55–1.22)
Own drinking pattern				
Abstainer		1.00		1.00
Never ⩾ 5 drinks		0.86 (0.63–1.17)		0.82 (0.50–1.35)
⩾ 5 drinks infrequently		0.79 (0.56–1.10)		0.93 (0.55–1.56)
⩾ 5 drinks frequently		1.09 (0.71–1.68)		2.00 (1.08–3.70)

* Primary explanatory variable. ◆

Box 1. Concordance between the two items measuring mental health was modest ($\tau = 0.35$, with unweighted data); and there was a strong association between the EQ-5D item and the mental wellbeing item ($\chi^2_1 = 287.2$; $P < 0.001$). That is, while there was substantial variation between the two measures, the respondents who were not satisfied with their mental wellbeing were also more likely to report feeling anxious or depressed, suggesting that the two items measure a similar underlying construct.

Compared with men, women were significantly more likely to report depression or anxiety, as were respondents who had fewer years of formal education. The proportion of risky drinkers (ie, those drinking ⩾ 5 drinks frequently) who reported they were not satisfied with their mental wellbeing was almost double compared with other categories. Those who indicated they lived alone and those who were not in a current relationship were substantially more likely to report being depressed or anxious.

If a respondent had at least one heavy drinker in their social circle of family, friends and co-workers they were significantly more likely to report being depressed or anxious (OR, 1.55 [95% CI, 1.24–1.94]; $P < 0.001$) and not satisfied with their mental wellbeing (OR, 1.77 [95% CI, 1.19–2.63]; $P = 0.005$) than if they did not know such a person in their social circle. If the respondent reported adverse effects from a drinker, they were around twice as likely to report diminished mental health than if they did not know such a drinker who had adversely affected them (anxiety or depression: OR, 2.32 [95% CI, 1.88–2.86]; $P < 0.001$; not satisfied with men-

tal wellbeing: OR, 2.45 [95% CI, 1.75–3.44]; $P < 0.001$).

All sociodemographic variables presented in Box 1 were included in the multivariate logistic models (Box 2 and Box 3), with the exception of rurality, as this was not significantly associated with either of the quality-of-life outcome variables. Given the strong correlation between household status and partner status (if someone else lived in a household it was likely to be a partner [$\tau = 0.47$]), household status was removed to avoid overspecifying the models. The models adjusted for all sociodemographic variables. Models both including and excluding the effect of the respondent's own drinking are presented.

After adjusting for the significant sociodemographic predictors sex, education level, working status, and partner status (in the model excluding the respondent's own drinking pattern) the odds ratio for reporting depression or anxiety was 1.74 (95% CI, 1.38–2.20; $P < 0.001$) if the respondent had at least one heavy-drinking relative or friend compared with none. By comparison, after adjusting for age and working status, the odds ratio for reporting not being satisfied with mental wellbeing was 1.76 (95% CI, 1.17–2.63; $P = 0.006$). Respondents' own risky drinking was not significantly associated with depression ($F_{3,2586} = 1.54$; $P = 0.201$) and had little mediating effect on the relationship between knowing a heavy drinker and depression. By contrast, it was significantly associated with mental wellbeing ($F_{3,2592} = 3.90$; $P = 0.009$), with regular heavy drinkers twice as likely to be dissatisfied with their mental wellbeing. The inclusion of the respondent's own drinking reduced the point estimate for the association between knowing a heavy drinker and reduced mental wellbeing by almost 7%.

Where respondents had been adversely affected by a heavy-drinking relative or friend the odds of reporting depression or anxiety were 2.50 (95% CI, 2.00–3.11; $P < 0.001$) after adjusting for the significant sociodemographic variables sex, age group, education level and partner status. The odds of reporting not being satisfied with mental wellbeing were 2.57 (95% CI, 1.83–3.61; $P < 0.001$) after adjusting for the significantly influential sociodemographic work. When respondents' own drinking behaviour was added to the model, no statistical association with reporting depression was shown ($F_{3,2586} = 1.30$; $P = 0.274$) and it had little impact on the association between knowing a prob-

3 Multivariate logistic regression models for depression or anxiety and not being satisfied with mental wellbeing with the primary explanatory variable reporting negative impact from someone else's drinking (odds ratio [95% CI])

	Depression or anxiety		Impaired mental wellbeing	
	Without own drinking	With own drinking	Without own drinking	With own drinking
Negatively affected by someone else's drinking*				
Yes	2.53 (2.02–3.16)	2.52 (2.01–3.15)	2.52 (1.75–3.61)	2.42 (1.69–3.48)
No	1.00	1.00	1.00	1.00
Sex				
Male	1.00	1.00	1.00	1.00
Female	1.27 (1.02–1.59)	1.32 (1.05–1.65)	0.85 (0.59–1.22)	1.00 (0.68–1.46)
Age				
18–29 years	1.00	1.00	1.00	1.00
30–59 years	1.47 (1.08–2.00)	1.50 (1.10–2.05)	1.00 (0.61–1.64)	1.12 (0.68–1.83)
60–99 years	1.35 (0.93–1.96)	1.37 (0.94–2.00)	0.58 (0.31–1.06)	0.66 (0.36–1.22)
Education completed				
Less than secondary	1.00	1.00	1.00	1.00
Secondary	0.79 (0.61–1.02)	0.80 (0.62–1.03)	1.06 (0.70–1.61)	1.10 (0.73–1.67)
Post–secondary	0.63 (0.48–0.83)	0.64 (0.49–0.84)	0.75 (0.48–1.19)	0.80 (0.51–1.27)
Working status				
Working	1.00	1.00	1.00	1.00
Not working	0.78 (0.60–1.01)	0.78 (0.60–1.02)	0.59 (0.38–0.90)	0.55 (0.35–0.85)
Partner status				
No partner	1.00	1.00	1.00	1.00
Partner	0.69 (0.55–0.87)	0.70 (0.56–0.88)	0.80 (0.53–1.20)	0.80 (0.54–1.20)
Risky drinker				
Abstainer		1.00		1.00
Never ≥ 5 drinks		0.88 (0.64–1.19)		0.83 (0.50–1.37)
≥ 5 drinks infrequently		0.82 (0.58–1.14)		0.96 (0.58–1.60)
≥ 5 drinks frequently		1.12 (0.73–1.72)		2.04 (1.12–3.72)

* Primary explanatory variable. ◆

4 Number of respondents reporting depression or anxiety or not being satisfied with mental wellbeing given the defined relationship with the problematic drinker

Problematic drinker	Depression or anxiety	Impaired mental wellbeing
Partner	89 (42.4%)	89 (22.3%)
Ex-partner	46 (29.4%)	46 (16.9%)
Close family	187 (35.1%)	187 (11.8%)
Extended family	77 (43.0%)	77 (12.5%)
Friend	212 (36.3%)	213 (15.4%)
Co-worker	74 (25.1%)	74 (7.1%)
Other	63 (28.9%)	64 (8.7%)

with their mental wellbeing when they reported that a family member or friend's heavy drinking had adversely affected them than when they simply reported having a heavy-drinking family member or friend. After adjusting for appropriate significant sociodemographics, the odds of reporting depression or anxiety and not being satisfied with mental wellbeing were almost a third greater in the former case.

Box 4 shows the disaggregated data for type of relationship between the respondent and the heavy drinker whose drinking had most adversely affected them. There was no statistical difference between relationship type and respondents' reporting depression or anxiety ($\chi^2_6 = 9.4$; $P = 0.260$) or not being satisfied with their own mental wellbeing ($\chi^2_6 = 11.3$; $P = 0.183$). Although the base numbers for these comparisons were fairly small, there was an overall tendency towards greater dysphoria when the drinker with the greatest adverse impact was the respondent's partner, and for less dysphoria when it was a co-worker.

DISCUSSION

Our study suggests a strong association between alcohol consumption and mental health problems by way of someone else's drinking. It appears that the association between others' drinking and mental health is substantial across a range of relationships, including partners, family, friends and co-workers. Identification of at least one heavy drinker in the respondents' social network of friends and family was associated with a negative effect on self-reported mental well-being and anxiety or depression. When such a drinker was identified by the respondent as someone whose drinking negatively impacted on their life, the association with impaired mental wellbeing and anxiety or depression in the respondent was much stronger.

It is a limitation of the study that the two indicators of dysphoria used are not validated diagnostic measures; the primary purpose of the Alcohol's Harm to Others survey was not to measure mental health. However, on face value, the two items used here can be regarded as useful indicators of mental health. In particular, the depression and anxiety item is drawn from the well established and validated EQ-5D scale. The variations within each of the items as a function of other people's drinking do, to some extent, reflect its impact on mental wellbeing.

lematic drinker and reporting depression or anxiety. Respondents' own drinking behaviour was significantly related to mental wellbeing ($F_{3,2592} = 3.96$; $P = 0.008$) and reduced the point estimate for knowing a heavy drinker by about 4%.

Respondents were more likely to report depression or anxiety or not being satisfied

Our results are consistent with those from a number of studies that have assessed the relationship between alcohol consumption of married men and depression and anxiety in their wives. One study explored comorbidities within married couples and found the strongest associations between alcohol use disorders in the husbands and anxiety and depressive disorders in the wives.[14] Similarly, women with husbands who drink to risky levels have reported significantly higher rates of psychological distress,[15] and depressive symptoms among married women have been shown to be related to their husbands' alcohol problems.

We extended the analysis of mental harm due to others' drinking beyond partners to include the effects of heavy and problematic drinking of people in other close relationships. Respondents reported being negatively affected by the drinking of people in many relationships, including close family and extended family members. They were not statistically more likely to have reported signs of mental ill health due to these relationships except when they involved partners compared with co-workers (results not shown).

Our findings also generalise beyond previous findings concerning relationships between others' drinking and respondents' reported depression or anxiety. Not only problematic drinking of a partner, but also problematic drinking by other family members, is associated with depression or anxiety in the respondent.

Respondents' own drinking status significantly added to the prediction of impaired mental wellbeing but only for respondents who are themselves frequent heavy drinkers. The cross-sectional nature of these survey data cannot exclude the possibility that the respondent's anxiety or depression and dissatisfaction with their mental health may have led the other person to use alcohol, or that mental ill-health in the respondent and the other person's drinking may be related to significant shared life events. Thus, factors such as other drug abuse, childhood trauma, recent grief or other mental health diagnoses potentially affect the self-reported mental health of the respondents surveyed.

Our findings suggest that a broader focus is required on the association between substance use in general and mental health, incorporating the substance use of others as well as that of the person whose mental health is impaired.

COMPETING INTERESTS

None relevant to this article declared (ICMJE disclosure forms completed).

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