Associations between social vulnerability, employment conditions and hazardous alcohol consumption in Chile

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Abstract

Introduction and Aims. Studies from many different countries have found associations between alcohol use, employment and social context. The aim of this study was to investigate associations between hazardous alcohol consumption (HAC), social vulnerability and employment conditions among Chilean adults. Design and Methods. A cross-sectional study, involving analysis of the 2008 National Survey on Drugs in Chile, was conducted on 8316 economically active men and women aged between 18 and 65 years, who completed the alcohol section of the survey. The participants were selected randomly and data collected through face-to-face interviews. Multilevel analysis was used to achieve the study’s objectives. The Alcohol Use Disorders Identification Test was used to define HAC. Results. There were no significant associations between HAC and employment status or occupational category when controlling for potential confounders. Using the social services sector as a reference, the adjusted odds ratio (95% confidence interval) of HAC was 2.60 (1.96–3.46) for those who worked in construction, 2.03 (1.43–2.89) in mining, 1.74 in agriculture (1.16–2.63) and in industry (1.26–2.39), 1.73 (1.31–2.28) in trade, 1.67 (1.29–2.16) in other services and 1.42 (1.01–2.00) in transport. There was no association between the socioeconomic status of the participant’s neighbourhood and HAC in the fully adjusted model. The perception of neighbourhood security (third quartile of insecurity) was associated with HAC (odds ratio 1.22; 95% confidence interval 1.02–1.46). Discussion and Conclusions. HAC was independently associated with the participant’s economic sector and perception of neighbourhood security in Chilean adults. It is important to perform in-depth analyses of contextual effects on individual alcohol consumption. [Ansoleaga E, Castillo-Carniglia A. Associations between social vulnerability, employment conditions and hazardous alcohol consumption in Chile. Drug Alcohol Rev 2013;32:254–261]

Key words: hazardous alcohol consumption, employment condition, social vulnerability, neighbourhood security.

Introduction

It is estimated that there are approximately 70 million people worldwide who experience alcohol use disorders [1] and the harmful use results in nearly 2.5 million deaths per year [2]. In the Americas and middle-income countries, it is the greatest risk factor for disease and disability [2].

In Chile, alcohol dependence is among the top five conditions that cause premature death and avoidable disability (23% of Disability Adjusted Life-Years) in both sexes [3]. Reducing alcohol consumption by 20% would prevent 1380 deaths and 105 063 Disability Adjusted Life-Years per year (corresponding to 2.8% of the total Disability Adjusted Life-Years) [3]. There are also strong associations between alcohol consumption and issues such as domestic violence, traffic accidents, child neglect and absenteeism in the workplace, as well as various health problems [3,4].

One of the difficulties in studying alcohol consumption is that it is a multicausal phenomenon with various consequences. It is associated with individual elements of vulnerability, including biology, genetics, characteristics and coping styles [4], as well as other elements of vulnerability that can be called contextual, that is, a set of factors at the macrosocial (e.g. structural economic
and political factors, economy sector) and microsocial levels (e.g. neighbourhood quality and social vulnerability) [5].

Several reports have shown an association between working conditions and alcohol consumption [6–8], where people in certain occupations present an increased risk of this behaviour [9] and those with a lower employment status possess an increased risk of alcohol consumption regardless of sex, age and other confounding variables [10]. In Chile and Latin America, few studies have analysed these variables. Balsa and French, observed, in Uruguayan workers, strong positive associations between high consumption/ intoxication and participation in the labour market, unlike the results of related literature from developed countries where high alcohol intake was associated with unemployment [11]. In Chile, Trucco et al. [12] showed that there was a high occurrence of work accidents associated with alcohol use, which suggests a need for incorporating employment status as a dimension in studies of problematic alcohol consumption.

On the other hand, social and environmental conditions, such as neighbourhood security and socioeconomic status, have also been associated with alcohol consumption. Numerous studies have reported associations between alcohol consumption and certain conditions of social vulnerability, such as income or educational level [13–20]. Some studies have shown that the quality of a neighbourhood has a significant impact on drug and alcohol consumption [15,21–23]; for instance, people who live in a disadvantaged neighbourhood drink more heavily than those who live in a more favourable area [24]. Some hypothesised underlying mechanisms for these associations have focused on neighbourhood conditions, such as high alcohol outlet density, access to off-premises alcohol outlets and neighbourhood deprivation [25–27]. Other conditions are neighbourhood disorders and perceived security. According to Kuipers et al., higher rates of hazardous alcohol use could increase the occurrence of problematic behaviour among residents, which in turn would increase neighbourhood disorders [28]. Also, an environment that generates daily stress (i.e. drug use in the streets, drug trafficking, assaults or damage to public property) may be associated with mental health problems and drug and alcohol consumption [29]. This last hypothesis has received increasing attention in related literature [30,31].

However, few studies have examined the relationship between social vulnerability and alcohol consumption in Latin America [32]. Our hypotheses are: (i) that there is an association between hazardous alcohol consumption and employment status in Chilean adults; and (ii) that an increased social vulnerability and a poor perception of neighbourhood security in this part of the population increase the odds of hazardous drinking, regardless of an individual’s socioeconomic position.

Therefore, the objective of this study was to explore relationships between hazardous alcohol consumption and employment status, and between hazardous alcohol consumption and social vulnerability in Chilean adults.

**Methods**

**Study design**

We analysed data from the 2008 Eighth Chilean General Population Survey by the National Council for Narcotics Control [33]. The study sampling was performed in three stages: (i) randomly selecting sections nested in communes; (ii) randomly selecting households nested in sections; and (iii) randomly selecting individuals within households. The sections are made up of geographic clusters of an approximated five blocks, and in this study each section is considered a neighbourhood. The survey had a response rate of 77% and all the interviews were conducted by a trained interviewer in the participant’s house.

The sample analysed in this study included men and women aged between 18 and 65 years. The total number of individuals in the sample was 15,586 and 12,781 of the individuals (82%) completed the alcohol questionnaire (people who declared consuming alcohol at least once in their lifetime). As our first objective concerned the economically active population who are paid wages for their labour, we eliminated 5907 economically inactive individuals (students, housewives, retirees and people who reported ‘doing no work’) and an additional 21 subjects who reported performing unpaid work for their families from the analysis. For the second objective we included all subjects who completed the alcohol test.

**Variables**

Hazardous alcohol consumption was measured by the Alcohol Use Disorders Identification Test, developed by the World Health Organization and validated in Chile by Alvarado et al. [34]. The instrument includes 10 items and three dimensions: hazardous drinking, dependence symptoms and harmful drinking. Hazardous drinking was defined by a score equal or above 6 points for the 10 items, which is the cut-off point validated for Chile with a sensitivity and specificity of 83.3% and 87.9%, respectively [34]. For the purposes of this study, the variable was dichotomised at the cut-off point mentioned above.

The employment status variable included people working full- or part-time jobs, employed people with a
medical ailment or prolonged illness, and also unemployed individuals who were seeking work. This variable was regrouped into two categories: employed and unemployed. Ten sectors of the economy evaluated in the survey include the following eight categories: agriculture, mining, industry, construction, services (including education, health and personal), other services, and trade and transportation. The following established occupational categories were used to identify each worker’s position in the occupational hierarchy: employer, self-employed, employee, labourer and domestic service.

The individual-level socioeconomic index included the following factors: years of education, average household income and the negative or positive perception of neighbourhood security, as measured by seven items relating to the identification of environmental problems (detailed below). The social vulnerability index was constructed by measuring the proportion of households in a neighbourhood with an average monthly income below US$600 (approximately CLP$300 000), as well as measuring the proportion of people with less than 12 years of education and the proportion of unemployed people. Levels of vulnerability were defined by the score quartiles, with the fourth quartile being the most vulnerable one.

Finally, the perception of neighbourhood security was calculated from self-reported perceptions of drug traffic, house burglaries, graffiti or damage to public lighting, use of drugs in public places, assaults and robberies in the streets, loitering, shootings and violent acts with guns. This is a one-factor scale and the reliability (Cronbach alpha) for this sample was 0.88. The index was calculated as the standardised sum of the proportion of people in the neighbourhood who reported ‘a lot’ or ‘plenty’ for the seven items. The perception of neighbourhood security was categorised into quartiles, and the fourth quartile represented the neighbourhoods with the most perceived problems.

Statistical analysis

To construct the individual socioeconomic levels and to prevent the loss of a large number of observations in the regression models, missing data were inputted for the income and neighbourhood security variables. We ran a sensitivity analysis testing the inputted and non-inputted data and the imputation procedure did not change the direction or strength of the effect. In both cases, we used a multiple imputation procedure in the Stata statistical package (Stata Corporation, College Station, TX, USA) with the ordinal logistic regression model. The percentage of inputted values for the income variable was 9.29%, while the percentages of inputted values for the neighbourhood security variables were between 2.2% and 14.8%.

To consider the non-independence of subjects within a neighbourhood (clustering) and to perform simultaneous modelling of contextual- and individual-level variables, we used logistic mixed-effect models with two levels.

Various tests were performed in accordance with the study’s hypotheses and controlling for potential confounders, such as sex, age, socioeconomic status and relationship status. All analyses were performed using the unexpanded data and with Stata 11.1 statistical software [35].

The protocol of this study was reviewed and approved by the Ethics in Investigation Committee of Diego Portales University.

Results

Table 1 displays demographic characteristics of the sample who completed the Alcohol Use Disorders Identification Test items, including sex, age, education, relationship status and average monthly household income (US$1 = CLP$500, approximately) of the participants.

Table 2 shows variables related to the employment conditions of the respondents who completed the alcohol test, including the employment status, occupational category and economic sector.

The Alcohol Use Disorders Identification Test had an internal reliability of 0.83 in the total sample. The total prevalence of hazardous alcohol consumption was 14.2%, 26.2% in men and 4.7% in women. When we disaggregated the data by employment status, employed respondents presented a prevalence of hazardous alcohol consumption of 16.8%, while unemployed respondents reported a prevalence of 22.6% (Table 3). The intra-class correlation indicated that 2.9% of the total variability of hazardous drinking is on the neighbourhood level.

When we analysed hazardous alcohol consumption by economic sector (Table 3), we observed areas with high prevalence, particularly in construction (32.5%), mining (28.1%) and industry (21.6%). There were differences in the prevalence of hazardous alcohol consumption when the sample was divided by relationship status, educational level, sex and age (data not reported).

As shown in Table 3, the odds of hazardous alcohol consumption was 45% higher among those who were unemployed. This association decreased to 23% and included the null value after adjusting for sex, age, relationship status and socioeconomic status.

To make comparisons regarding economic sector, we considered the educational, health and personal
services sector as a reference. When compared with the referenced sector, the odds of hazardous alcohol consumption was 6.8 times higher among participants in construction, more than five times higher in mining and agriculture and nearly four times higher in industry (Table 3). When we adjusted the models for sex, age, marital status and socioeconomic status, the effect size decreased (see Figure 1); however, the association remained significant.

In regard to the occupational categories, and compared with the group of employers, labourers were 1.5 [95% confidence interval (CI) 1.13–2.01] times more likely to engage in hazardous alcohol consumption, while domestic workers were 3.5 (95% CI 0.16–0.47) times less likely to. However, after adjusting for potential confounding variables, both associations decreased.

We tested our hypothesis that the aggregated data at the neighbourhood level were associated with hazardous alcohol consumption at the individual level. As shown in Table 4, there is an association between the lowest quartile of the social vulnerability index and hazardous drinking. After adjusting for sex and age, this association was maintained in the fourth quartile, and it excluded the null value in the third quartile. However, by incorporating individual socioeconomic covariates (income, education and unemployment) into the model, the odds ratio decreased and all of the confidence intervals included the null value.

When analysing the perception of neighbourhood security, there was a significant effect of hazardous alcohol consumption in quartiles two, three and four in relation to those who held a poorer perception of their neighbourhood. This association did not remain after adjusting for the individual-level socioeconomic status (income and education) and individual perception of the neighbourhood’s security, except in the third quartile, where the odds ratio decreased from 1.29 (95% CI 1.08–1.53) to 1.22 (95% CI 1.02–1.46).

**Discussion**

In this study we examined the associations between working conditions in economically active adults, neighbourhood social vulnerability, perceived neighbourhood security and hazardous alcohol consumption using a multilevel analysis.

We ran several models to test the hypothesis of an association between hazardous alcohol consumption and employment status. In the bivariate models, we observed associations between hazardous alcohol consumption, employment status, economic sector and
However, after adjusting for socioeconomic factors, sex, age and relationship status, the strength of these associations decreased in all cases. This can be explained, in part, by the associations between employment and alcohol consumption, and variables such as socioeconomic status, sex and age, which act as confounders in the relationship.

One the one hand, our results are consistent with those reported for Uruguay by Balsa and French [11], who observed an association between employment status and alcohol consumption. By contrast, such a result has not always been observed in studies from developed countries [36,37]. The inverse associations between unemployment and alcohol consumption can

Table 3. Relationships among hazardous alcohol consumption and employment status, economic sector and occupational categories

<table>
<thead>
<tr>
<th>Occupational Category</th>
<th>Prevalence (%)</th>
<th>OR (CI 95%)</th>
<th>ORa (CI 95%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Employment status</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employed</td>
<td>16.8</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>Unemployed</td>
<td>22.6</td>
<td>1.45 (1.17–1.80)</td>
<td>1.23 (0.97–1.56)</td>
</tr>
<tr>
<td><strong>Economic sector</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Services</td>
<td>6.7</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>Agriculture</td>
<td>18.3</td>
<td>5.21 (2.19–4.70)</td>
<td>1.74 (1.16–2.63)</td>
</tr>
<tr>
<td>Mining</td>
<td>28.1</td>
<td>5.48 (3.98–7.54)</td>
<td>2.03 (1.43–2.89)</td>
</tr>
<tr>
<td>Industry</td>
<td>21.6</td>
<td>3.90 (2.90–5.44)</td>
<td>1.74 (1.26–2.39)</td>
</tr>
<tr>
<td>Construction</td>
<td>32.5</td>
<td>6.82 (5.27–8.90)</td>
<td>2.60 (1.96–3.46)</td>
</tr>
<tr>
<td>Other services</td>
<td>15.5</td>
<td>2.60 (2.04–3.29)</td>
<td>1.67 (1.29–2.16)</td>
</tr>
<tr>
<td>Trade</td>
<td>14.7</td>
<td>2.43 (1.88–3.14)</td>
<td>1.73 (1.31–2.28)</td>
</tr>
<tr>
<td>Transport</td>
<td>18.5</td>
<td>3.22 (2.34–4.43)</td>
<td>1.42 (1.01–2.00)</td>
</tr>
<tr>
<td><strong>Occupational category</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employer (owner or partner)</td>
<td>16.9</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>Self-employed</td>
<td>18.8</td>
<td>1.14 (0.85–1.52)</td>
<td>1.04 (0.76–1.43)</td>
</tr>
<tr>
<td>Employee</td>
<td>14.7</td>
<td>0.85 (0.65–1.11)</td>
<td>0.72 (0.54–0.97)</td>
</tr>
<tr>
<td>Labourer</td>
<td>23.3</td>
<td>1.51 (1.13–2.01)</td>
<td>0.97 (0.71–1.32)</td>
</tr>
<tr>
<td>Domestic services</td>
<td>5.4</td>
<td>0.28 (0.16–0.47)</td>
<td>0.83 (0.46–1.49)</td>
</tr>
</tbody>
</table>

*Adjusted for sex, age (18–25, 26–34, 35–44, 45–54, 55–65 years), relationship status and individual socioeconomic index. CI, confidence interval; OR, odds ratio; Prevalence of hazardous alcohol consumption.

Figure 1. Hazardous alcohol consumption in different economic sectors.
be interpreted through hypotheses such as the non-criminalisation of alcohol related to work, alcohol consumption for socialisation at work and the possibility that income increases the access to alcohol [11,38,39].

On the other hand, there was a strong association between the economic sector an individual was employed in and whether they engaged in hazardous alcohol consumption, even after controlling for the potential confounders mentioned above. Several hypotheses may help understand these results. One would be the selection of individuals (unskilled workers) with an increased risk of alcohol consumption in some occupations (e.g. manual labour) [40]. Also, people working in blue collar occupations, such as construction, mining, industry and agriculture, may increase their consumption for reasons such as availability of alcohol at work, social pressure to drink, low income levels, collusion by colleagues, strain and stress, and job insecurity [41,42].

According to our second hypothesis that a higher social vulnerability and a poor perception of neighbourhood security are associated with hazardous drinking, we observed an association between hazardous alcohol consumption and both variables at the ecological level. This association remained for the perception of neighbourhood security, even after controlling for individual variables, such as sex, age and/or socioeconomic status. These results support the hypothesis that social context has an influence on behaviour and an individual’s health conditions. Also, our results are similar to findings reported for developed countries, such as the USA and some European countries [15,27,43]. Cerdá et al., in a prospective study of adults (18–30 years old), showed that

<table>
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<th>Table 4. Hazardous alcohol consumption subdivided into quartiles for the social vulnerability index and perception of neighbourhood security</th>
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<tr>
<td>Social vulnerability index</td>
</tr>
<tr>
<td>Quartile 1</td>
</tr>
<tr>
<td>Quartile 2</td>
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<tr>
<td>Quartile 3</td>
</tr>
<tr>
<td>Quartile 4</td>
</tr>
<tr>
<td>Perception of neighbourhood security</td>
</tr>
<tr>
<td>Quartile 1</td>
</tr>
<tr>
<td>Quartile 2</td>
</tr>
<tr>
<td>Quartile 3</td>
</tr>
<tr>
<td>Quartile 4</td>
</tr>
</tbody>
</table>

aAdjusted for sex, age (18–25, 26–34, 35–44, 45–54, 55–65), individual income (eight categories), individual education (eight categories) and unemployment. bAdjusted for sex, age (18–25, 26–34, 35–44, 45–54, 55–65), individual income (eight categories), individual education (eight categories) and individual perceptions of neighbourhood security (scale of seven items). CI, confidence interval; OR, odds ratio; Prev., prevalence of hazardous alcohol consumption.
abuse was 14.5% in the highest socioeconomic level and 28.4% in the lowest level [33].

Likewise, the results of the 2010 Chilean National Survey of Health, Work and Quality of Life indicate that some economic sectors like construction have consistently more precarious employment conditions related to negative health outcomes [46].

The relevance of our results is that they can help identify factors associated with risky alcohol consumption and highlight the hypothesis of contextual effects on individual alcohol consumption which is a new approach towards developing countries. Finally, it is important to perform further analyses of specific sectors and occupations with an increased risk and prevalence of hazardous alcohol consumption.

References


