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The relationship between the density of alcohol outlets and parental supply of alcohol to adolescents

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HIGHLIGHTS

- Greater densities of alcohol sales outlets are associated with greater alcohol use and problems.
- Alcohol outlet densities have been linked to adult and adolescent alcohol-related behaviour.
- However, the mechanisms as to how this may occur are unclear.
- We examined whether density was associated with parental supply of alcohol to adolescents.

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ABSTRACT

This study investigated whether the number of alcohol outlets per 10,000 population in a given area (density) influenced parental supply of alcohol to adolescents; differences in Australian born and acculturating parents were also examined. A state-representative student survey in Victoria identified that the majority of adolescents (55%) reported that they had used alcohol in the past 12 months; 34 % of those who had consumed alcohol reported that it had been supplied by their parents. Multilevel modelling identified that there were no overall effects of density, however there were different effects based on parent country of birth and type of license. Specifically, each unit increase in the density of takeaway liquor stores increased the likelihood by 2.03 that children with both Australian-born parents would be supplied alcohol. Adolescents with both migrant parents on the other hand, had a 1.36 increased risk of being supplied alcohol as the density of outlets requiring at-venue consumption increased. The findings of this study suggest that in Australia, alcohol outlet density is associated with parental supply of alcohol to children, with this effect moderated by the cultural background of the parent and type of outlet density. Future research should investigate the association between the density of alcohol outlets and public approval of parents supplying alcohol to adolescents.

1. Introduction

The early uptake and consumption of alcohol by children and adolescents are precursors to a range of negative outcomes including: behavioural problems; substance use disorders; poor academic achievement (Bonomo, Bowes, Coffey, Carlin, & Patton, 2004; Bonomo et al., 2001; Howard, Qiu, & Boekeloo, 2003); and increased health risk behaviours (Dye & Upchurch, 2006). Although the legal age for purchasing alcohol is 18 years in all Australian states, approximately 51% of Australian children between 12 and 17 years of age have reported consuming alcohol in the previous 12 months (White & Hayman, 2012). Further, approximately 32% of Australian 12 to 17 year-old drinkers report that their parents provided them with their last alcoholic beverage (White & Hayman, 2012).

The operation and practices of licensed sales outlets have been studied to identify sources of alcohol supply to adolescents. Evidence indicates that the greater the number of alcohol sales outlets per capita within a geographic population (density of alcohol outlets), the greater the risk that an adolescent will consume alcohol. This relationship has been found to exist in Australia (Livingston, 2008; Rowland et al., 2013), the United States of America (USA) (Chen, Gruenewald, & Remer, 2009), Switzerland (Kuntsche, Kuendig, & Gmel, 2008) and

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New Zealand (Huckle, Huakau, Sweetsur, Huisman, & Casswell, 2008). Reducing the density of alcohol outlets combined with the enforcement of laws prohibiting sale of alcohol to minors are proposed as possible strategies that could contribute to reducing the proportion of adolescents purchasing and consuming alcohol (Loxley et al., 2004; Rowland et al., 2013).

Few studies have examined precisely how density might influence the supply of alcohol to adolescents. The present study sought to examine the possibility that higher densities of alcohol outlets may lead to greater parental supply of alcohol to teenagers. We also sought to examine whether the effect of densities on parental supply of alcohol may be modified by parental country of birth (COB).

There has been little investigation in Australia of parent practices around supplying alcohol to children. Given that accessing alcohol is a necessary prerequisite for consumption, understanding family and community-level factors related to parental supply is critical in identifying effective policy and prevention strategies. As parents and other adults are the predominant suppliers of alcohol to children in Australia (White & Hayman, 2012), ascertaining how density and cultural background are associated with supply practices may help to understand the context of adolescent alcohol consumption.

In their review, Rowland, Toumbourou, and Stevens (2003) found consistent evidence that Australian adolescents are less likely to consume alcohol when their parents are non-Australian born. Similarly, findings from the longitudinal Household, Income and Labour Dynamics in Australia (HILDA) survey indicate that adolescents with both parents or at least one parent who is an immigrant are less likely to consume alcohol when compared to native-born adolescents with two Australian-born parents (Brandon, 2008). Studies in Holland (van Tubergen & Poortman, 2010), the USA (Brown, Council, Penne, & Gfroerer, 2005) and Canada (Perez, 2002) have also reported similar associations.

There are theoretical reasons why different types of outlet density might interact with family cultural background to influence adult supply of alcohol to children. Social cognitive theory argues that the environment can act as a cue, or may reinforce existing or developing behaviours (Bandura, 1998; Baranowski, Perry, & Parcel, 2002). For example, parents with liberal attitudes may have that attitude reinforced by exposure to a higher number of take-away outlets where alcohol is visibly marketed. Such a context may increase the amount of alcohol purchased for use in the home and thus make it more likely that children are supplied alcohol.

Similarly, laws in the state of Victoria allow parents to supply alcohol to children in licensed venues where food is served. It is therefore possible that proximity to this type of outlet may result in less liberal parents witnessing children being supplied alcohol by other parents and reinforce this as normative for their own children. Over time this may lead newly migrant families who are less likely to supply alcohol to children (Brandon, 2008; Rowland et al., 2003) to adopt this practice as part of the assimilation process. Migrant parents might assume some of the host culture's practices and allow their children to explore the values and behaviours of the new society in order to facilitate the children's adaptation to the new setting (Roer-Strier, 1997).

Using a representative sample of Australian school children in the state of Victoria, and controlling for risk factors known to be associated with adolescent alcohol consumption (Arthur et al., 2007; Hawkins, Arthur, & Catlano, 1995), we examined the hypothesis that higher density would be associated with higher rates of parental supply. This hypothesis recognised that density is associated with higher adult alcohol consumption (Livingston, 2008; Rowland, Toumbourou, Satyan, et al., 2013), and that parents are the primary suppliers of alcohol to adolescents (White & Hayman, 2012). Given that adolescent consumption is lower in non-Australian born families (Brandon, 2008; Rowland et al., 2003), we hypothesised that density would lead to greater increases in supplying alcohol to adolescents when parents were Australian born compared to non-Australian born (acculturating) parents.

A variety of variables were entered to control for potentially spurious associations between density and parent supply of alcohol. Control variables were selected on the basis that they may influence adolescent alcohol consumption (Arthur et al., 2007; Hawkins et al., 1995) or parent supply of alcohol to adolescents (Gilligan, Toumbourou, Kypri, & McElduff, 2013; McMorris, Catalano, Kim, Toumbourou, & Hemphill, 2011; Zucker, 2006) and also show variation across communities. These included area socioeconomic disadvantage, non-metropolitan location and the adolescents: age; school grade level; gender; cigarette smoking; peer alcohol and drug use; and parental attitudes to adolescent drinking.

2. Methods

2.1. Design

Data were collected in 2009 through the HowRU secondary student survey; a study designed to provide representative epidemiological estimates of adolescent health and wellbeing indicators for all metropolitan local government communities and non-metropolitan regions across the state of Victoria in Australia (Williams, Kent, Canterford, & Basile, 2010). A two-stage cluster sample design was used to recruit students. In the first stage, schools were randomly selected based on a probability proportional to each community's grade-level size from a stratified sampling frame of all schools in Victoria (government, Catholic, and independent). In the second stage of the sampling, whole classes in school years 7, 9 and 11 were chosen at random. Survey procedures were approved through the Royal Children's Hospital Ethics Office and relevant school authorities. Of the 13,501 eligible students, 10,273 (77.2%) consented and participated.

Table 1
Sample demographics and the distribution of variables used in the analyses.

		N (%)
Female		5132 (50.6)
Age		
12		1907 (18.8)
13		1671 (16.5)
14		2075 (20.5)
15		1588 (15.66)
16		1754 (17.3)
17		1148 (11.3)
Year 7		3625 (35.7)
Year 9		3640 (35.9)
Year 11		2878 (28.37)
Alcohol in last 12 months		5554 (54.76)
Respondent born in Australia		8774 (87.16)
Parent both Australian born		5229 (52.50)
Parent both non-Australian born		2893 (29.05)
Mother Aust. father non-Aust. born		1071 (10.75)
Father Aust. mother non-Aust. born		767 (7.70)
Regions		
Metropolitan		8515 (83.95)
Non-metropolitan		1628 (16.05)
Alcohol outlet density measures	M (SD)	ln M (SD)
Overall density	25.26 (29.84)	2.31 (1.06)
Packaged density	4.33 (1.71)	1.27 (.41)
General density	4.51 (7.36)	0.41 (1.43)
On premise density	14.78 (20.88)	1.83 (0.60)
Club density	1.69 (1.04)	0.38 (0.60)
Overall density: metropolitan	24.27 (32.46)	2.15 (1.08)
Overall density: non-metropolitan	30.46 (1.51)	3.16 (0.06)
Proportion of friends who use drugs	1.72 (.80)	
Parents favourable attitude to drug use	1.90 (.47)	
SEIFA	1017.17 (46.78)	

N = 10,143. Overall density: all types of alcohol outlets; package density: shops that sell liquor to be consumed elsewhere; on premise: sells food and alcohol (e.g. café); clubs: licensed club where membership is required prior to consuming alcohol. SEIFA: Socio-Economic Index for Area (ABS, 2006). M = mean. Ln M = log normal mean. SD = standard deviation.