

# BMJ Open Cross-sectional study on parental pro-drinking practices and adolescent alcohol drinking in Hong Kong

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## ABSTRACT

**Objectives:** To investigate the association between parental pro-drinking practices (PPDPs) and alcohol drinking in Hong Kong Chinese adolescents.

**Design:** A cross-sectional study.

**Setting:** 4 randomly selected secondary schools in Hong Kong.

**Participants:** 1738 students (mean age 14.6 years  $\pm$ 2.0, boys 67.8%).

**Main outcome measures:** Drinking status, drinking intention and exposure to 9 PPDPs (eg, seeing parents drunk, helping parents buy alcohol, encouraged to drink by parents) were reported by students. Logistic regression was used to compute adjusted ORs (AORs) of drinking and intention to drink by each PPDP and the number of PPDPs (0, 1–2, 3–4, 5 or above), adjusting for sociodemographic characteristics, parental drinking and school clustering.

**Results:** Nearly half (48.6%) of the students were ever-drinkers, 16.2% drank monthly (at least once per month) and 40.3% intended to drink in the next 12 months. Most PPDPs were significantly associated with ever drinking (AORs 1.40–6.20), monthly drinking (AORs 1.12–8.20) and intention to drink (AORs 1.40–5.02). Both ever and monthly drinking were most strongly associated with parental training of drinking capacity (ability to drink more without getting drunk) with AORs of 6.20 and 8.20 (both  $p < 0.001$ ), respectively. Adolescent drinking intention was most strongly associated with parental encouragement of drinking and training of drinking capacity with AORs of 3.19 and 5.02 (both  $p < 0.001$ ), respectively.

**Conclusions:** Exposure to PPDPs was associated with ever drinking, monthly drinking and drinking intention in Hong Kong Chinese adolescents. More studies, especially prospective studies, should be conducted to confirm these results, followed by interventional studies.

## INTRODUCTION

Alcohol kills 3.3 million people per year worldwide and causes serious physical and psychosocial health consequences in adolescents.<sup>1–3</sup> Yet drinking is prevalent both in adults and in adolescents. In the USA, 66% of grade 9–12 students had ever consumed

## Strengths and limitations of this study

- This was the first study to examine a comprehensive list of parental pro-drinking practices.
- This study found novel associations between parental pro-drinking practices and adolescent alcohol drinking in Hong Kong, where drinking prevalence is relatively low.
- Self-reported data were used and causality cannot be inferred by the present cross-sectional study.

alcohol and 35% had consumed alcohol in the past 30 days.<sup>4</sup>

Parents have both antidrinking and pro-drinking influences on adolescents. While parental monitoring and rule setting have been found to be protective,<sup>5–6</sup> parental drinking consistently predicted adolescent drinking.<sup>7–9</sup> In addition, parental approval of alcohol drinking has been associated with a greater risk of adolescent drinking in Western countries.<sup>10–12</sup> In Australia, one-third of students aged 12–17 years had consumed alcohol provided by their parents and 64% of these students drank with parents.<sup>13</sup> Parents popularly believe that introducing alcohol to young adolescents increases their resistance to peer influence on drinking and protects them from alcohol-related problems in adulthood,<sup>14</sup> but results have been conflicting. A cross-sectional study conducted among Australian adolescents indicated that parental provision of adolescents' first alcohol drink was negatively associated with heavy episodic drinking.<sup>15</sup> However, other studies showed that parental supply of alcohol was associated with alcohol use, intention to drink<sup>16–17</sup> and even risky drinking<sup>18</sup> in young adolescents. Another study showed that parental approval of drinking by actively providing alcohol, drinking together, or refraining from disciplining adolescents caught drinking was associated with increased use of alcohol among adolescents.<sup>19</sup>

Apart from these explicit practices, parents might also unknowingly encourage adolescent drinking through various subtle ways, but reports on this are rare. In a recent study, fetching and pouring alcohol for adults were linked to alcohol sipping in adolescents.<sup>20</sup> To the best of our knowledge, no studies have investigated the relation between adolescent drinking and a comprehensive list of parental pro-drinking practices (PPDPs). On the basis of telephone interviews with parents and adolescents and anecdotal reports, we have identified nine PPDPs in Hong Kong and shown that they increased dramatically with the number of parents who drank alcohol in the past 30 days (none/either/both).<sup>21</sup> We also found that PPDPs were associated with higher socio-economic status, and that girls were more likely to report parental training of drinking capacity (ability to drink more without getting drunk).<sup>22</sup> Although the 30-day drinking prevalence of 18% among Hong Kong adolescents is relatively low compared with that among their Western counterparts,<sup>23</sup> drinking has become increasingly socially acceptable in Hong Kong since 2008 when the beer and wine tax was waived to boost alcohol trade.<sup>24</sup> The present study aims to investigate how PPDPs associate with alcohol drinking and the intention to drink among Hong Kong Chinese adolescents.

## METHODS

### Participants and procedures

In 2012, a total of 2200 students from four randomly selected local secondary schools (2 coeducational and 2 boys' schools from different districts in Hong Kong) completed a survey on alcohol use. Details of the survey and consent procedures have been reported elsewhere.<sup>21</sup>

The response rate was 50% at the school level (8 schools were invited in order to successfully recruit 4 schools) and 87.5% at the individual student level. After excluding students who responded to less than half of the survey items (0.4%) or did not provide data on age (1.8%), sex (0.8%), PPDPs (2.9%), individual drinking status (0.4%), individual drinking intention (0.8%) or parental drinking status (14.2%), 1738 (78.8%) students (mean age 14.6 years  $\pm$ 2.0, boys 67.8%) were available for analysis. Participants included and excluded for analysis had similar sociodemographic characteristics, such as age, sex and highest parental education level with small Cohen's *w*, that ranged from 0.04 to 0.18, indicating minimal differences between the two groups.

### Measures

#### Parental pro-drinking practices

PPDPs were categorised into four groups: (1) saw parents (a) drink and (b) drunk; (2) heard parents mentioning (a) the benefits of drinking and (b) that certain alcohol tastes good; (3) helped parents (a) buy alcohol, (b) open a bottle of alcohol and (c) pour

alcohol and (4) parental actions that (a) encouraged me to drink and (b) trained my drinking capacity (ability to drink more without getting drunk). Students were asked whether they had come across the above situations and to choose each that was applicable to them. The PPDPs identified by each student were analysed as (A) individual practices and (B) the total number of practices (0, 1–2, 3–4, 5 or above).

#### Adolescent alcohol drinking and intention to drink

The frequency of alcohol drinking was assessed using the question 'How often do you drink alcohol?' with nine response options from 'I don't drink', ' $\leq$ 1 day/year', '<1 day/month', '1 day/month', '2–3 days/month', '1 day/week', '2–3 days/week', '4–6 days/week' to 'daily'. Ever drinking referred to  $\leq$ 1 day/year or more frequent drinking. Monthly drinking was defined as 1 day/month or more frequent drinking. Drinking intention was assessed using the question 'Will you drink in the next 12 months?', with the response options 'definitely not', 'probably not', 'probably yes' or 'definitely yes'. Participants who chose 'definitely yes' or 'probably yes' were considered to have had an intention to drink.

#### Covariates

Covariates considered in analyses included age, sex, place of birth (Hong Kong or outside Hong Kong including Mainland China, Macau, Taiwan or others), family structure (parents are together or parents are divorced/separated/deceased/others), highest parental education level (primary or below, secondary or tertiary) and perceived family affluence (low, medium or high).

Parental drinking status was also considered a covariate and assessed using the question 'How often did your father/mother drink alcohol in the past 30 days?' separately for each parent. Each question had five response options: 'never' (classified as non-drinkers), 'seldom', 'sometimes', 'frequently' (classified as drinkers) or 'unknown'. Parental drinking status was subsequently classified as 'none', 'either' or 'both'. Consistent with our previous report,<sup>21</sup> participants with unknown drinking status for both parents were excluded from the analysis; when the drinking status of one parent was unknown, parental drinking status was defined as 'none' if the other parent was a non-drinker, and 'either' if the other parent was a drinker.

#### Statistical analysis

Logistic regression using PPDPs as the independent variable yielded adjusted ORs (AORs) and 95% CIs for ever drinking, monthly drinking and drinking intention. In model 1, each PPDP was analysed as a binary variable (present vs absent), and in model 2 the total number of PPDPs (0, 1–2, 3–4, 5 or above) was analysed. Models were adjusted for the aforementioned covariates and for school clustering. School clustering was adjusted using the command 'robust clust (school variable)' in STATA V.10.1.

## RESULTS

Most students were from intact families (81.7%), born in Hong Kong (74.8%), had parents with secondary or tertiary level education (69.7%) and perceived family affluence as medium or high (73.1%). More than half of the fathers (57.5%) and one-third (36.1) of the mothers were ever-drinkers, although few drank frequently (12.0% fathers and 2.5% mothers). Nearly half (47.1%) of the students had ever drunk alcohol and 40.3% had an intention to drink. Details of student sociodemographics have been reported elsewhere.<sup>21</sup>

Seeing parents drink was the most common PPDP (50.3%), followed by opening bottles of alcohol (23.4%), pouring alcohol (22.9%), hearing that alcohol tastes good (22.4%), seeing parents drunk (19.5%), buying alcohol (18.9%), hearing benefits of drinking (8.7%), being encouraged to drink (8.3%), and training of drinking capacity (5.5%).

Each PPDP was significantly associated with ever drinking and monthly drinking except for one association (between monthly drinking and seeing parents drink) (table 1). Adolescent monthly drinking was most strongly associated with the drinking capacity training (AOR 8.2), followed by pouring alcohol (3.03), being encouraged to drink (2.97), opening bottles of alcohol (2.63), hearing that alcohol tastes good (2.32), hearing

about the benefits of drinking (2.23), buying alcohol (2.17) and seeing parents drunk (1.84). An increasing number of PPDPs was associated with monthly drinking in a dose-response fashion with the largest AOR of 6.22 for five or more PPDPs (*p* for trend <0.001). The results of individual PPDPs for ever drinking were similar, although the magnitude of associations was generally not as strong compared with monthly drinking.

Similarly, all PPDPs were associated with drinking intention (table 2): being encouraged to drink (AOR 3.19), drinking capacity training (5.02), pouring alcohol (2.15), hearing benefits of drinking (2.21), opening bottles of alcohol (2.02), seeing parents drink (1.40), hearing that alcohol tastes good (1.76), seeing parents drunk (1.57) and buying alcohol (1.81). Compared with the unexposed, students experiencing 1–2, 3–4 and 5 or above PPDPs were associated with having an intention to drink, with AORs of 1.19, 2.47 and 4.32, respectively (*p* for trend <0.001).

## DISCUSSION

Exposure to PPDPs was associated with increased odds of both ever and monthly drinking in adolescents. According to the Social Learning Theory, adolescents may pick up drinking behaviour by learning from their

**Table 1** Associations of PPDP with adolescent drinking

	Ever drinking			Monthly drinking		
	Per cent when PPDP absent	Per cent when PPDP present	AOR (95% CI)†	Per cent when PPDP absent	Per cent when PPDP present	AOR (95% CI)†
Parents were seen						
Drinking	41.7	55.3	1.50 (1.22 to 1.84)***	15.6	16.7	1.12 (0.81 to 1.55)
Drunk	45.1	61.7	1.40 (1.09 to 1.80)**	14.0	24.9	1.84 (1.28 to 2.62)**
Parents were heard mentioning						
Benefits of drinking	46.2	69.8	1.94 (1.35 to 2.80)***	15.2	25.1	2.23 (1.36 to 3.67)**
Alcohol tastes good	42.3	67.2	2.05 (1.60 to 2.63)***	13.8	23.5	2.32 (1.63 to 3.32)***
Parents being helped						
Buy alcohol	44.8	63.7	1.67 (1.29 to 2.17)***	14.0	25.0	2.17 (1.51 to 3.11)***
Open bottle	42.9	67.1	2.36 (1.85 to 3.01)***	13.2	26.3	2.63 (1.87 to 3.70)***
Pour alcohol	41.3	70.1	2.76 (2.15 to 3.55)***	13.3	24.8	3.03 (2.14 to 4.28)***
Parental actions						
Encouraged drinking	45.6	75.2	2.52 (1.71 to 3.72)***	14.9	28.3	2.97 (1.78 to 4.96)***
Trained drinking capacity	45.4	89.1	6.20 (3.45 to 11.15)***	13.9	46.2	8.20 (4.04 to 16.64)***
	Ever drinking			Monthly drinking		
Number of PPDPs‡	Prevalence (%)	AOR (95% CI)		Prevalence (%)	AOR (95% CI)	
0	32.3	1		10.6	1	
1–2	45.6	1.57 (1.21 to 2.05)***		13.6	1.20 (0.79 to 1.82)	
3–4	62.1	2.85 (2.06 to 3.95)***		19.8	2.57 (1.60 to 4.13)***	
5 or above	78.7	5.61 (3.66 to 8.58)***		32.9	6.22 (3.59 to 9.78)***	
<i>p</i> for trend	<0.001			<0.001		

†Adjusted for age, sex, perceived family affluence, place of birth, family structure, highest parental education, parental drinking and school clustering \**p*<0.05, \*\**p*<0.01, \*\*\**p*<0.001.

‡Possible range of the number of PPDPs from 0 to 9.  
AOR, adjusted OR; PPDP, parental pro-drinking practice.

**Table 2** Associations of PPDP and drinking intention among adolescents

	PPDP absent (%)	PPDP present (%)	AOR (95% CI)†
Parents were seen			
Drinking	33.4	48.3	1.40 (1.14 to 1.72)***
Drunk	36.8	55.9	1.57 (1.21 to 2.04)**
Parents were heard mentioning			
Benefits of drinking	38.4	62.4	2.21 (1.99 to 2.44)***
Alcohol tastes good	35.5	58.9	1.76 (1.39 to 2.22)***
Parents being helped			
Buy alcohol	36.8	56.6	1.81 (1.60 to 2.05)**
Open bottle	34.9	59.5	2.02 (1.64 to 2.48)***
Pour alcohol	34.2	62.4	2.15 (1.58 to 2.93)***
Parental actions			
Encouraged drinking	37.7	71.5	3.19 (2.28 to 4.47)***
Trained drinking capacity	38.1	80.4	5.02 (1.50 to 16.7)***
<b>Number of PPDPs</b>	<b>Prevalence (%)</b>		<b>AOR (95% CI)</b>
0	28.2		1
1–2	36.2		1.19 (0.97 to 1.45)
3–4	56.5		2.47 (2.06 to 2.96)***
5 or above‡	73.1		4.32 (3.22 to 5.80)***
p for trend	<0.001		

†Adjusted for age, sex, perceived family affluence, place of birth, family structure, highest parental education, parental drinking and school clustering \*p<0.05, \*\*p<0.01, \*\*\*p<0.001.

‡Possible range of the number of PPDPs from 0 to 9.

AOR, adjusted OR; PPDP, parental pro-drinking practice.

drinking parents through observation and imitation.<sup>25</sup> Seeing parents drink or drunk provides direct ways of imitation while other PPDP(s) may strengthen drinking behaviour through positive reinforcement. For instance, positive parental comments about alcohol, for example, relating to its taste and benefits, may reinforce adolescent drinking behaviour<sup>26</sup> similar to the effect of parental encouragement of drinking. Supporting these results, parental encouragement of sports and exercise has also increased adolescent involvement in physical activities.<sup>27–29</sup> Among all the PPDPs, parental training of drinking capacity was most strongly associated with both ever and monthly drinking with AORs of 6.2 and 8.2, respectively. This is consistent with previous findings that verbal persuasion of alcohol drinking can reinforce drinking behaviour through enhancing the valuation of drinking.<sup>25–30</sup>

This study examined various types of PPDPs and adds to the evidence from studies on parental drinking and approval of drinking.<sup>19–31</sup> Helping parents buy alcohol, opening bottles of alcohol or pouring alcohol was associated with adolescent ever and monthly drinking. These results are consistent with recent findings that children who helped adults fetch or pour drinks were more likely to sip alcohol (AORs 1.97–2.20).<sup>20</sup> The observed association between PPDPs and adolescent drinking was further supported by the dose–response relation based on the number of PPDPs.

Similar to ever and monthly drinking, adolescent intention to drink was strongly associated with parental training of drinking capacity and encouragement of

drinking. This further supported the relation between PPDPs and adolescent drinking. One study showed that positive expectancies towards alcohol in adolescents predicted their intention to drink during adulthood.<sup>32</sup> Exposure to PPDPs may lead to more positive expectancies towards alcohol drinking and thus enhance drinking intention. It should be noted that the associations of PPDPs with adolescent drinking and intention to drink were independent of parental drinking. While parental drinking is a well-established risk factor for adolescent drinking, our results suggest that to prevent adolescent children from drinking, parents, regardless of their drinking status, should avoid exposing their children to PPDPs.

Uncertain about their prevalence, no time frame was used for PPDPs in the questionnaire so that current and past exposures could be covered. Given the generally stronger associations for monthly drinking than ever drinking, our PPDP items probably reflected more about recent exposures. Moreover, practices in the distant past are unlikely to be reported. For more precise measurements, future studies could examine PPDPs using time frames of 12 months or 30 days, which might show stronger associations with current drinking behaviours.

This study has several limitations. First, exposure to PPDPs was reported by the students only without parental input. However, the consistent associations of different PPDPs with drinking behaviours and intention provided indirect support to the validity of the data. Parental surveys often have lower response rates and

some parents may under-report PPDPs due to social undesirability, whereas students are unlikely to have such concerns in reporting PPDPs. Boys were over-represented in our sample because two boys' schools were included. However, other sociodemographic characteristics (age, place of birth, perceived family affluence and highest parental education level) were comparable with those of a large representative local secondary school sample (N=45 857),<sup>33</sup> where Cohen's  $\kappa$  ranged from 0.02 to 0.20, indicating only small differences between the two groups.

## CONCLUSION

Exposure to PPDPs was associated with drinking and intention to drink among Hong Kong Chinese adolescents. More studies, especially prospective studies, should be conducted to confirm these results, followed by interventional studies. If causal, avoiding exposure to PPDPs may help prevent adolescents from drinking.

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**Competing interests** None declared.

**Ethics approval** The study protocol was approved by the Institutional Review Board of the University of Hong Kong/Hospital Authority Hong Kong West Cluster (UW12-421). The survey was conducted in accordance with the approved guidelines.

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**Data sharing statement** No additional data are available.

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