DRINKING ALCOHOL DURING PREGNANCY: EVIDENCE FROM CANADIAN COMMUNITY HEALTH SURVEY 2007/ 2008

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ABSTRACT

Background
Dinking alcohol during pregnancy may cause many health problems for the child, one of which is fetal alcohol spectrum disorder (FASD). Since FASD is incurable, actions meant to prevent the occurrence of the disability by targeting drinking women become more important. Epidemiological data on drinking among pregnant women, including prevalence and determinants/risk factors, is essential for designing and evaluating prevention programs.

Objectives
To estimate the prevalence of drinking alcohol during pregnancy and examine the determinants of this behaviour.

Methods
Using the 2007/8 Canadian Community Health Survey (CCHS) data, we estimated the weighted prevalence of women who drank alcohol during their last pregnancy by provinces. We used a weighted logistic regression to examine associations between drinking patterns, substance abuse behaviours, health-related and socio-demographic characteristics of the women, and the outcome variable.

Results
There were two main findings of this study. One was that the 2007/8 prevalence of drinking alcohol during pregnancy in ON, BC, and Canada was estimated at 5.4%, 7.2%, and 5.8%, respectively. The other was that the use of general practitioners (GP) or family physicians (FP) associated with a decreased risk of drinking alcohol during pregnancy.

Discussion
The results suggest that interventions that involve GP or FP and that increase the use of GP or FP by pregnant women can be effective in reducing drinking alcohol during pregnancy.

Key Words: *Drinking alcohol, pregnancy, prevalence, determinant, CCHS 2007/8*

Drinking alcohol during pregnancy may cause many health problems for the child, one of which is fetal alcohol spectrum disorder (FASD). FASD is a complex condition, including physical, mental, behavioural and learning disabilities.[1] It is estimated that about 9 babies will have FASD for every 1000 births in Canada.[2] People with FASD may need medical treatment for their physical defects and mental disorders, special education for their cognitive and behavioral disorders, correctional (justice) services for criminal behaviours that they may have, and social and family supports for their ill health.[3] The care of them therefore requires the use of resources that spread well beyond the boundaries of the health care system. The impact of FASD is evidenced in the educational, social services, and even the criminal justice sectors, as well as in the health care sector, the workplace, and the home.[4,5,6,7] The economic burden of FASD in Canada is estimated at $6.2 billion per year. [5] Since FASD is incurable[1], actions meant to prevent the occurrence of the disability by targeting drinking women become more important. Epidemiological data on alcohol drinking among

pregnant women, including prevalence and determinants/risk factors, is essential for designing and evaluating prevention programs. The objectives of this paper are to estimate the prevalence of drinking alcohol during pregnancy and examine the determinants of this behaviour.

METHODS

The Canadian Community Health Survey (CCHS) is a cross-sectional survey that collects information related to health status, health care utilization and health determinants for the Canadian population. People aged 12 and over living in private dwellings in all provinces and territories are targeted. The CCHS covers approximately 98% of the target population. The CCHS uses both English and French to minimize the language barrier.[8]

In CCHS 2007/8 questionnaires, besides core contents that all provinces and territories have to ask for, there were optional contents to be chosen by individual provinces and territories. One of the optional contents was about drinking alcohol during pregnancy that was chose by 2 provinces: Ontario (ON) and British Columbia (BC). Women aged 15-55 years who gave birth(s) in last 5 years, who drank alcohol in last 12 months or ever had a drink alcohol were asked if they drank alcohol during their last pregnancy. Only those who answered yes or no were included in this study. We used the sampling weight in estimating proportions of women who drank alcohol during their last pregnancy by provinces. We considered these proportions as the prevalence of drinking alcohol during pregnancy and presented them in percentages.

We based on literature[9] and the data availability to choose determinants of drinking alcohol during pregnancy to be included in this study. They were drinking patterns, substance abuse behaviours, and health-related and socio-demographic characteristics of the mothers (see Table 1). We expected that the use of other drugs (e.g. tobacco), the drinking patterns (e.g. types of drinkers i.e. regular, occasional…, and frequency of drinking), the ill-health (e.g. poor general health perception and other chronic conditions e.g. cancer, ulcerative colitis...), the ill-mental health (e.g. poor mental health perception, mood disorder, and anxiety disorder), old age (e.g. age>=35 years), and low socio-economic status (e.g. low income, low education...) associated with an increased, while the use of health care professionals (e.g. admitted to a hospital, visited to a specialist, and visited to a general practitioners (GP) or family physician (FP)) associated with a decreased, risk of drinking alcohol during pregnancy. We excluded the use of illicit substances because the data was only available in BC, but not ON. We used a weighted logistic regression to examine associations between these determinants and the outcome. Stata/MP version 11 (StataCorp LP, 4905 Lakeway Drive, College Station, TX 77845, USA) was used for data analysis.

RESULTS

In total, we analysed 3004 women aged 15-55 years who gave birth(s) in last 5 years, who drank in last 12 months or ever had a drink and who answered yes or no to the question "Did you drink any alcohol during your last pregnancy?" This sample represented for 767,479 women in the country. The prevalence of drinking alcohol during pregnancy in ON and BC was estimated at 5.4% and 7.2%, respectively (see Table 2). The difference between the two provinces was not statistically significant. Extrapolating to the whole country, the Canadian prevalence was 5.8%.

TABLE 1 Description of the variables and the sample

Sample size =3004 **Population size** =767479

Variable names	Description	Weighted %	Expectation
Behavioural characteristics			
drink_preg	Drank alcohol last pregnancy (the outcome variable)	5.75	
drink	Regular drinker (last 12 months)	45.75	Increase
drinkoc	Occasional drinker (last 12 months)	25.91	Increase
drink_breast	Drank alcohol last breast feeding	17.47	Increase
freq1	Frequency of drinking >= once a week	14.06	Increase
freq2	Frequency of binge drinking* >= 2-3 times a month	3.01	Increase
smoke	Daily smoker at the present	13.88	Increase
Health-related characteristics			
health	Self-perceived health-poor	0.8	Increase
stomach	Has stomach or intestinal ulcers	2.29	Increase
uc	Has a bowel disorder - ulcerative colitis	0.31	Increase
cancer	Has cancer	0.35	Increase
mood	Has a mood disorder	8.18	Increase
anxiety	Has an anxiety disorder	7.04	Increase
mental	Self-perceived mental health - poor	0.67	Increase
hos	hospitalization last year	28.72	Decrease
spe	specialist visit last year	38.81	Decrease
gp	General doctor/family physician visit last year	84.49	Decrease
reguladr	Has regular medical doctor	93.45	Decrease
Socio-demographic characteristics			
bc	British Columbia	18.71	Increase
canada	Country of birth - Canada	66.88	Decrease
hhs	Household size >=4	62.14	Increase
marital	Marital Status - married	73.95	Decrease
own	Dwelling - owned by a member of household	67.88	Decrease
edu	Highest level of education<secondary graduation	8.14	Increase
race	Cultural or racial origin-white	66.6	Decrease
occup	Working status last week-had a job-at work last week	48.71	Decrease
poor	Total household income from all sources<$40,000/year	22.87	Increase
age	age>=35	37.7	Increase

*binge drinking=had 5 or more drinks on one occasion

TABLE 2 Prevalence of drinking alcohol during pregnancy by provinces

	Drink during pregnancy		
	Yes	**No**	**Total**
Ontario	5.4%	94.6%	100%
British Columbia	7.2%	92.8%	100%
Total	5.8%	94.3%	100%

Number of observations=3004; Population size=767479; P = 0.2178

Table 3 shows the results of a weighted logistic regression on associations between the determinants and the outcome. Of the 27 determinants, 7 were and 20 were not significant. All of the significant determinants associated with the outcome in an expected way. Regular drinkers last 12 months, drank during the last breastfeeding, daily smokers at the present, had a ulcerative colitis diagnosis, had a mood disorder diagnosis, and aged 35 years or over associated with an increased, while the use of GP or FP associated with a decreased, risk of drink alcohol during pregnancy, significantly.

TABLE 3 Weighted logistic regression: Associations between determinants and the outcome

drink_preg	**Odds Ratio**	**P value**	**95% Confidence interval**	
drink*	5.804	0.009	1.560	21.597
drinkoc	3.518	0.057	0.964	12.830
drink_breast*	10.098	0.000	5.849	17.432
freq1	1.401	0.191	0.845	2.323
freq2	2.060	0.062	0.965	4.396
smoke*	1.960	0.027	1.081	3.555
health	0.376	0.308	0.057	2.471
uc*	24.001	0.001	3.651	157.792
cancer	5.708	0.123	0.623	52.286
stomach	2.038	0.307	0.520	7.987
mental	0.447	0.287	0.101	1.969
mood*	2.311	0.027	1.101	4.851
anxiety	1.262	0.580	0.554	2.874
gp*	0.520	0.024	0.296	0.916
reguladr	0.747	0.461	0.343	1.625
hos	1.288	0.280	0.814	2.040
spe	1.483	0.093	0.936	2.350
bc	0.883	0.624	0.536	1.453
canada	1.386	0.334	0.714	2.690
hhs	0.783	0.292	0.498	1.233
own	0.856	0.689	0.399	1.836
age*	2.432	0.000	1.519	3.894
marital	0.830	0.602	0.413	1.671
edu	1.915	0.301	0.559	6.560
race	0.746	0.340	0.409	1.362
poor	0.700	0.482	0.258	1.894
occup	0.734	0.219	0.448	1.202

*significant variables (P<0.05); Number of observations = 3004; Population size = 767479; Pseudo R2 = 0.280; Prob > chi2 = 0.000

DISCUSSION

There are two main findings of this study. One is that the 2007/8 prevalence of drinking alcohol during pregnancy in ON, BC, and Canada was estimated at 5.4%, 7.2%, and 5.8%, respectively. The other is that the use of GP or FP associated with a decreased risk of drinking alcohol during pregnancy.

The prevalence of drinking alcohol during pregnancy seems to decrease over time in Canada if our results are compared to the previous estimates. The 1994/5 National Population Health Survey (NPHS) and the 1994/5 National Longitudinal Survey of Children and Youth (NLSCY) reported that between 17% and 25% of women drank alcohol during their pregnancy.[9] This percentage decreases to 14.4% in the 1998/9 NLSCY, and to 13.7% in the 2000/1 CCHS.[8] In 2005, Alberta Alcohol and Drug Abuse Commission (AADAC) showed that 9.2% of Alberta women aged 18-44 reported that they drank during their last pregnancy.[10]

It should be acknowledged that there are weaknesses in comparing the results of different surveys. For example, AADAC targeted Alberta women aged 18-44 years, while the 2007/8 CCHS targeted Canadian women aged 15-55 years. There were only two provinces that performed the optional content on drinking alcohol during pregnancy in the 2007/8 CCHS, and thus the results may not representative for the whole country.

Also, it should be acknowledged that there are some limitations in estimating the prevalence of drinking alcohol during pregnancy from the CCHS data. First, the CCHS surveys do not include women who are living in group homes, shelters or on the streets, who are at a high risk of alcoholics and drug abuse problems, and thereby at a high risk of drinking during pregnancy. This may result in an underestimate of the prevalence. Second, the survey questions regarding drinking during pregnancy do not differentiate between levels of exposure to alcohol. This prevents a deeper analysis on patterns of drinking during pregnancy. Finally, one may argue that there is a response bias that inherits in self-reported data collection because drinking during pregnancy is a "sensitive" issue. However, by getting the respondents' consent and respecting the respondents' privacy, this bias is likely to be minimal in the CCHS surveys.

The association between the use of GP or FP and a decreased risk of drinking alcohol during pregnancy found in this study can be a policy implication. This suggests that interventions that involve GP or FP and that increase the use of GP or FP by pregnant women can be effective in reducing drinking alcohol during pregnancy.

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