

ALCOHOL CONSUMPTION AMONG WOMEN

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ABSTRACT

Alcohol (ethanol) consumption in pregnancy is the etiology of fetal alcohol spectrum disorder (FASD), a leading cause of congenital disability worldwide. Hence, any attempt to prevent or manage FASD must start from comprehensive understanding of alcohol consumption by women in general, and by women of reproductive years in particular. This review presents and synthesizes studies conducted worldwide on alcohol consumption by pregnant women, risk factors associated with gestational drinking, as well as doses and definitions of drinking behaviours.

Alcohol (ethanol, ethyl alcohol) is legal, easily accessible, and widely consumed. The Canadian Alcohol and Drug Use Monitoring Survey (CADUMS) conducted in 2011 indicated that 78% of Canadians (81.9% of men and 74.3% of women) aged 15 years and older consumed alcohol in the 12 months preceding the survey.¹ It was reported that 15.0% of women who consumed alcohol exceeded the recommended quantity of alcohol outlined in Canada's Low-Risk Alcohol Drinking Guidelines to reduce chronic health risks, which suggests no more than 10 drinks/week and no more than 2 drinks/day on most days for women.² Furthermore, 9.5% of female drinkers exceeded the recommended quantity of alcohol outlined to reduce acute health risks, which suggests no more than 3 drinks in one day.² In 2010, 40.2% of Canadian women reported light infrequent use (<5 drinks/occasion, less than once a week), 28.2% light frequent use (<5 drinks/occasion, once or more per week), 3.6% heavy infrequent use (>5 drinks/occasion, less than once a week), while 1.8% reported heavy frequent use (>5 drinks/occasion, once or more per week) (Health Canada, 2010). In the US, 51% of adults (59% of men, 43% of women) 18 years of age or older were reported to be current regular drinkers (12+ drinks in the past year) in a national health survey conducted in 2010.³

Alcohol consumption during pregnancy

Although women typically reduce or stop their ethanol consumption once a pregnancy is detected, many pregnant women expose the fetus to alcohol before they are aware of the pregnancy, while others simply continue to drink even after pregnancy recognition.⁴ The reported prevalence of drinking during pregnancy varies depending on the population in question, survey methodology, drinking definitions, and the patterns of drinking included or excluded in a particular study.

Using data from the 2000/1 Canadian Community Health Survey (CCHS), 13.3% of women who were pregnant at the time of the survey reported alcohol use in the week before the survey.⁵ For the most part, women who reported drinking during their pregnancy in the 2000/01 CCHS did so infrequently, however, among the self-reported drinkers in the past year, 6.9% of pregnant women reported heavy drinking (defined as regular consumption of >12 drinks/week), with 0.5% reporting heavy drinking in the week prior to the survey.⁵ The reported overall rates of drinking (any amount) during pregnancy in subsequent CCHS surveys are similar; 12.4% in 2003 and 10.5% in 2005 (assessed among women who gave birth in the 5 years preceding the survey).

More recent data from the 2007/8 CCHS, which also asked women who gave birth in the preceding 5 years whether they drank any alcohol during their last pregnancy, indicated a lower prevalence of drinking in pregnancy of 5.8%.⁶ However, some methodological differences do exist between the 2007/8 CCHS and previous CCHS surveys in that the 2007/8 data was extrapolated based on data from only two provinces (Ontario and British Columbia).

Higher rates of maternal alcohol use in pregnancy were reported in the National Longitudinal Survey of Children and Youth (NLSCY), where 15.6-15.5% of mothers reported drinking during pregnancy in 2002-03 and 2004-05 cycles, and 9.4% in 2006-07, which is relatively similar to the previous reports of 14.4% in 1998-99, of which 4.9% drank throughout pregnancy.⁷ The 2005/6 and 2006/7 Maternity Experiences Survey (MES) reported that 10.5-10.8% of women indicated drinking during pregnancy, which mainly reflects low to moderate maternal alcohol consumption.⁸⁻⁹ During the three months prior to pregnancy or detection of pregnancy, 62.4% of women consumed alcohol with variable frequency, and this percentage decreased to 10.5%, after pregnancy recognition, the majority of which reported infrequent drinking ($\leq 2-3$ times/month).⁹

Similar numbers are reported in the United States, where the Centers for Disease Control and Prevention estimated that for 2006-2010, 51.5% of non-pregnant women of childbearing age (18-44 years) and 7.6% of pregnant women used alcohol in the past 30 days, compared to 54.6% and 11.2% estimated in 2001-2005, respectively.¹⁰⁻¹¹ Binge drinking (≥ 4 drinks/occasion) was estimated at 1.4% among pregnant women and 15.0% among non-pregnant women for the 2006-2010 period; and the average frequency and intensity of binge episodes in pregnant and non-pregnant women were similar - approximately 3 times/month and 6 drinks/occasion. Similar numbers were reported in the 2010 National Survey on Drug Use and Health (NSDUH), which found that among pregnant women aged 15 to 44, 10.8% reported current alcohol use, 3.7% reported binge drinking (10.1% in the first trimester), and 1.0% reported heavy

drinking. Higher estimates were reported in another US study that determined the prevalence of drinking in pregnancy using data from the National Birth Defects Prevention Study from 1997-2002.⁴ Here, it was estimated that as many as 30% of all women reported drinking at some point in pregnancy, of which 8.3% reported binge drinking (4+ drinks/occasion) and 2.7% reported drinking throughout pregnancy with 7.9% during the third trimester.⁴

From the published data on women's alcohol consumption during pregnancy, it appears that the rates in Canadian and US are similar, ranging between 5-15%, and have generally been declined.^{9,12-13} Retrospective studies that assess drinking in pregnancy and those asking about drinking prior to pregnancy recognition report significantly higher rates of alcohol consumption, presumably since women who report alcohol use after the fact and outside of prenatal clinics are more truthful and accurate.¹⁴⁻¹⁵ The rates of alcohol consumption in other countries are variable, with many European countries and Australia reporting higher prevalences.^{9,16-19} For example, in a study from France, only 53% of women reported complete abstinence during pregnancy²⁰ in a Spanish study; 22.7% reported alcohol consumption during pregnancy (Palma et al., 2007); in Australia, 24.6% women self-reported alcohol consumption in pregnancy in an antenatal clinic¹⁹; and 40% of women reported at least one episode of binge drinking since conception in a study from Denmark. The rates in other countries also vary considerably, with 57.4% of women reporting alcohol consumption in pregnancy in a prenatal clinic in Chile²¹; 46.7%-59% reporting prenatal alcohol consumption in Russian studies²²⁻²³ and 46-73% in studies from Mexico.^{24,25}

Risk factors associated with alcohol consumption during pregnancy

Numerous factors have been shown to be related to maternal alcohol consumption during pregnancy and pre-conceptual binge drinking.

These include maternal age, whether the pregnancy was planned, substance use, marital status, a history of physical and emotional abuse, mental health, self-esteem, prenatal care,

nutrition, and socioeconomic status.^{4,26-27} Prevalence reports suggest that alcohol use in pregnancy varies depending on the age of the mother. In the CCHS surveys, women over the age of 35 or those between 15 and 19 years of age were generally more likely to report alcohol consumption than mothers between the ages of 20 and 34.¹³ Being unmarried, having an unintended pregnancy, and being from socioeconomically disadvantaged groups were shown to be correlated with maternal alcohol consumption

during pregnancy, as was having limited access to health care services and poor prenatal care.²⁸ Likewise, lower education level, prenatal use of cocaine and tobacco, paternal drinking and drug use, and inadequate nutrition were also shown to be associated with alcohol consumption in pregnancy.^{27,29} However, no single profile identifies all women at risk for drinking in pregnancy, making the detection of prenatal alcohol exposure extremely challenging.

TABLE 1 Definition of a “standard drink” or “unit of alcohol” in different countries

<i>Country</i>	<i>Mass of Ethanol</i>	<i>Volume of Ethanol</i>
	<i>(g)</i>	<i>(mL)</i>
Canada	13.45 – 13.6	17.05 – 17.24
United States	14	17.74
United Kingdom	8	10.13
Netherlands	9.9	12.55
Australia	10	12.67
New Zealand	10	12.67
Finland	11–12	13.94 –15.21
Italy	10–12	12.67–15.21
Japan	19.75–23.5	25.03 –29.78
France	10–12	12.67–15.21
Portugal	14	17.74

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Doses and definitions of drinking behaviours

In many countries, alcohol intake is typically quantified in terms of number of standard drinks consumed. Although the exact definition of what constitutes a “standard drink” varies somewhat from country to country (Table 1), it signifies a specific amount of pure ethanol contained in the alcoholic beverage. For example, in Canada one standard drink contains 17.05 mL (13.45 g) of pure ethanol and in the US it equals to 18 mL (14.00 g) of pure alcohol. This roughly

corresponds to one 12 fl. oz. (341 mL) bottle of beer, cider, or cooler (all 5% alcohol); one 5 fl. oz.(142 mL) glass of wine (12% alcohol); or 1.5 fl.oz. (43 mL) shot of 80-proof spirits or liquor (40% alcohol).^{2,30} Likewise, the definitions of drinking behaviours vary greatly between countries, studies, surveys, and guidelines. Some terms and definitions that have been used by different government agencies and in national surveys are presented in Table 2.

TABLE 2 Definitions of drinking behaviours by government agencies in Canada and USA

Agency	Classification	Definition
Health Canada ¹	Abstainer	Never used alcohol in their life.
	Former drinker	Used alcohol in their life, but not in the past year.
	Light infrequent drinker	< once/week on average in a year; usually < 5 drinks/occasion
	Light frequent drinker	Once or more/week on average in a year; usually < 5 drinks/occasion.
	Heavy infrequent drinker	< once/week; usually ≥ 5 drinks/ occasion.
	Heavy frequent drinker	Once or more/week on average in a year; usually ≥ 5 drinks/ occasion.
Statistics Canada ²	Heavy drinking	≥ 5 / occasion, ≥ 12 times over the past year.
Center for Disease Control ³	Moderate drinking	≤ 1 drink/day for women, ≤ 2 drinks/ day for men.
	Heavy drinking	On average > 2 drinks/day for men, > 1 drink/day for women, ≥ 5 drinks/ occasion for men or ≥ 4 drinks on a single occasion for women, generally within about 2 hours.
National Institute on Alcohol Abuse and Alcoholism ⁴	Moderate or "low-risk" drinking	≤ 4 drinks on any single day AND ≤ 14 drinks/week for men. ≤ 3 drinks on any single day AND ≤ 7 drinks/week for women.
	Binge drinking	≥ 5 drinks (male), or ≥ 4 drinks (female), in about 2 hours (BAC $\geq 0.08\%$).
Substance Abuse and Mental Health Services Administration ⁵	Binge use	≥ 5 drinks/occasion on at least 1 day in the past 30 days.
	Heavy use	≥ 5 drinks/occasion on each of 5 or more days in the past 30 days.

¹CADUMS 2010; ²CCHS 2011; ³CDC, 2012; ⁴NIAAA 2013; ⁵SAMHSA, 2011

When describing alcohol consumption and drinking behaviours, it may also be important to differentiate between alcohol use, abuse, and dependence. The term "alcohol abuse", although loosely used in the literature, is defined as a maladaptive pattern of drinking that leads to clinically significant impairment or distress in DSM-IV.³⁴ This may manifest as recurrent use of alcohol when it is physically harmful, recurrent

alcohol-related legal problems, impaired ability to work and failure to fulfill major obligations, and continued alcohol use despite resulting/exacerbated persistent or recurrent social or interpersonal problems.³⁴ Long-term alcohol abuse can lead to alcohol dependence, also known as alcohol addiction and alcoholism. Alcohol dependence is a chronic disease that typically manifests as persistent desire for alcohol, inability

to limit or cut-down alcohol use, the occurrence of tolerance and withdrawal symptoms, and continued use despite repeated physical or psychological problems that are caused or exacerbated by drinking. Individuals with alcohol dependence may be spending a great deal of time on activities necessary to obtain, use, or recover from the effects of drinking, while limiting social, occupational, or recreational activities due to their alcohol consumption.³⁴

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