

# ATTITUDES AND APPROACHES OF CANADIAN PROVIDERS TO PRECONCEPTION COUNSELLING AND THE PREVENTION OF FETAL ALCOHOL SPECTRUM DISORDERS

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## ABSTRACT

### Background

Health care providers play an important role in the prevention of fetal alcohol spectrum disorders (FASD).

### Objective

To determine the attitudes and approaches of Canadian providers to preconception counselling and the prevention of FASD.

### Methods

Between October 2001 and May 2002, a survey was mailed to a national random sample of paediatricians, psychiatrists, obstetricians and gynaecologists, family physicians, and midwives in Canada, who were current members of professional organisations (N=5361).

### Results

Overall response rate was 41.3%. There were significant differences ( $p < 0.05$ ) across provider group in several areas. Ninety-four percent of providers agreed fetal alcohol syndrome (FAS) was an identifiable syndrome; 54% felt prepared to care for pregnant women who were alcohol dependent/abusing while 70% were prepared to access resources for these patients. Less than 50% of providers frequently discussed smoking, alcohol use, or addiction history with women of childbearing age. Less than 15% inquired about a history of sexual or emotional abuse. Once women were pregnant, 94% of family physicians, midwives, and obstetricians inquired about alcohol use. Time was the primary barrier to discussing adverse effects of alcohol prior to conception (58%). Approximately 60% of respondents agreed a registry of consultation specialists, clinical practice guidelines for diagnosis of FAS, and referral resources for women with alcohol problems would be helpful supports in their clinical practice.

### Discussion

There are missed opportunities in preconception screening which would identify women at risk for preventable, adverse pregnancy outcomes related to alcohol consumption. Provider training in identification of women at risk would allow for increased access to appropriate resources.

**Key Words:** *Fetal alcohol spectrum disorders; fetal alcohol syndrome; prevention and control; physician's practice patterns; professional practice; prenatal care; alcohol consumption; directive counseling ;risk factors*

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Current reports regarding increased rates of alcohol use in women of childbearing age and the anticipated impact on the occurrence of conditions such as fetal alcohol syndrome (FAS) have highlighted the need for improved understanding of attitudes and knowledge of health care providers towards alcohol consumption and prevention strategies before and during pregnancy. Studies have shown that physicians' knowledge, attitudes and beliefs about a health problem, such as alcohol abuse, can either predispose or deter them from screening, identifying and managing the problem.<sup>1</sup>

FAS refers to a group of symptoms, including facial features, growth deficiency and central nervous system dysfunction, in children whose mothers consumed alcohol during pregnancy and is thought to be the most common and preventable cause of mental disability in the western world.<sup>2</sup> The adverse effects of gestational alcohol exposure exist along a continuum with full expression of FAS, Partial FAS, Alcohol Related Birth Defects (ARBD) and Alcohol Related Neurodevelopmental Disorder (ARND) used as diagnostic terms to describe conditions along this spectrum.<sup>3</sup> Fetal Alcohol Spectrum Disorder (FASD) is an umbrella term to describe all the above related conditions and is not a diagnostic term.

Based on a synthesis of best available evidence, the estimated global incidence of FAS is 0.97 per 1000 live births and is higher among "heavy" drinkers (i.e. 2 or more drinks per day or 5-6 drinks per occasion) at 43.1 per 1000 live births.<sup>4</sup> The estimated North American incidence of FASD is 9.1 per 1000 live births.<sup>5</sup> In the United States FAS has not been reported among women whose alcohol intake was less than one drink per day.<sup>4</sup>

Over the past decade the pattern of drinking among pregnant women has changed. The proportion of women who drank frequently during pregnancy increased from 0.8% in 1991 to 3.5% in 1995.<sup>6</sup> A 1995 study of 30,415 women showed 50% of US women drank alcohol and that 16% of women continued to drink some alcohol during pregnancy.<sup>6</sup> In other studies, the prevalence of moderate alcohol consumption among pregnant women ranged from 5.0% to 20.0%.<sup>7;8</sup> Furthermore, another study established that

women who binge drink were far more likely to experience unintended pregnancy.<sup>9</sup>

This is important to consider since in 1977, 14% of college women reported getting drunk 1 to 3 times per month and 3% were drunk weekly. In 1989, the figures escalated to 37% and 6.7%, respectively.<sup>10</sup> Further, the reported volume of alcohol being consumed by U.S. college women was 27% greater in 1985 than in 1977.<sup>10</sup>

There is suggestion that early detection of children and mothers at risk results in improved outcomes for both, and as such, it is appropriate for health care professionals to become more knowledgeable and proactive in the prevention and detection of FASD.<sup>11</sup> The benefits of prevention and detection of FASD are also seen in economic terms. The economic burden of FAS is substantial with estimated lifetime costs of \$844,066 for additional education, disability payments, and health care per individual with FASD (excludes costs from judicial system)<sup>12</sup> however, other estimates, some of which include incarceration costs, are as high as \$3.0 million.<sup>13;14</sup> It has been estimated in the United States that the cost of providing effective pre-pregnancy prevention programs for a mother, who has already given birth to an FAS child, would be thirty times less than the cost of raising another child with FAS.<sup>15</sup>

In the United States, a national goal has been set to increase the proportion of pregnant women who abstain from alcohol from 86% as found in 1996-97 to a level of 94% by 2010.<sup>16</sup> In the last decade, there has also been a number of health and social policy initiatives in the United States and Canada that have focused on public awareness, prevention and improved detection of FASD and maternal alcohol consumption (Centres of Disease Control in the US, Prairie Northern Pacific Partnership and Federal FAS Funding Initiative in Canada). Key components of these initiatives are strategies to improve health provider awareness of the detrimental effects of alcohol on pregnancy outcomes and the early detection of FASD.<sup>11;17</sup> Initiatives have focused on physicians because they are typically the primary provider of medical care for pregnant women and play an important role in the prevention and diagnosis of FASD.<sup>1;8;18;19</sup> For instance, the Alberta Clinical Practice Guidelines give specific prevention strategies for health professionals to

deliver a consistent message to all patients, prevent FASD, and prevent future siblings from being affected by FASD through counselling on alcohol use and contraceptive use.<sup>20</sup> As well, the American Academy of Pediatrics has recommended that paediatricians and other health care professionals become informed and assume a leadership role in public education regarding in utero alcohol exposure.<sup>21</sup> Yet, there is considerable disparity among physicians in terms of knowledge, attitudes, practices, and educational needs regarding this condition.<sup>22</sup>

The purpose of this survey was to determine attitudes and knowledge of health care providers in Canada with regard to FASD and preconception counselling to determine the existence of missed opportunities to identify women at risk. Finding such opportunities would provide a basis for appropriately tailoring training initiatives directed at providers. Furthermore, this study provides baseline data upon which the success of educational interventions can be determined.

## METHODS

The questionnaire used in this study was modified from a prior survey used by the Alberta Medical Association and a Saskatchewan study by Nanson et al.<sup>17,23</sup> Modifications that increased the scope of the questionnaire were based upon six months of consultation with a National Advisory Committee on Fetal Alcohol Syndrome and professional groups (Obstetricians and Gynaecologists, Family Physicians, Paediatricians, Psychiatrists and Midwives). The questionnaire was then piloted among health professionals attending an FAS conference, and responses were reviewed to assess completion time, the level of complexity, readability, and interest. Feedback from both the pilot survey and professional organization reviews was incorporated to arrive at the final questionnaire. As the only condition to the participation and endorsement of professional organizations, the research team avoided questions related to ethnicity and personal lifestyle habits (e.g. smoking, alcohol use).

The questionnaire consisted of 4 parts including: General Knowledge (10 questions); Prevention Issues (13 questions); Diagnostic

Issues (15 questions); and Demographic and Practice Information (10 questions). All were a forced-choice format with response options varying depending on question content (e.g., yes/no; Likert-type scales; select all that apply). The Likert scales used were 4 or 5-point scales such as: frequently, sometimes, rarely, never; or strongly agree, agree, undecided, disagree, and strongly disagree.

The questionnaire could be completed as a paper copy or electronically on the web and in English or in French. The final questionnaire was formatted into a Teleform data management program for electronic data entry. The web-based version was programmed with HTML for secure completion at an independently created web page on the University of Calgary web site. The questionnaire package was also professionally translated into French. To increase the accuracy of the French translation, two translators were involved in the process, one of which had specialized training in medical translation. Return of the completed questionnaire was taken to signify consent to participate.

## Ethics

The study was approved for scientific and administrative merit by the Calgary Health Region Child Health Scientific Review Committee. Ethical approval was granted by the Conjoint Health Research Ethics Board (CHREB) of the Faculties of Medicine, Nursing and Kinesiology, University of Calgary, and the Affiliated Teaching Institutions.

## Sampling

Potential participants were randomly selected from membership lists obtained from the Canadian Association of Midwives (N = 344), the College of Family Physicians of Canada (N = 11,258), the Canadian Paediatric Society (N = 2,374), the Canadian Psychiatric Association (N = 1,439), and the Society for Obstetricians and Gynaecologists of Canada (N = 1,728). To allow for sufficient sample size for potential analysis by region of practice, 60% of the midwives membership was randomly selected. Given the large population of family physicians, paediatricians, and psychiatrists, and original underestimates of the number of obstetricians, random sampling in these groups was based on

the number of active members in each province to gather sufficient data for regional analysis. For these groups, 20% were randomly sampled from provincial populations where providers numbered greater than 500, 25% were chosen from populations of 101 to 500, and 50% were chosen from populations less than 100. The final non-overlapping sample included physicians from paediatrics ( $n = 1,396$ ), family practice ( $n = 2,378$ ), psychiatry ( $n = 1,439$ ), and obstetrics ( $n = 539$ ), as well as practicing midwives ( $n = 197$ ).

### Sample Recruitment

The professional groups were surveyed in two waves. The first mail out of survey packages to midwives, psychiatrists and paediatricians ( $n=2,493$ ) began in October 2001 and collection was completed 12 weeks later after follow-up. Family physicians and obstetricians ( $n = 2,984$ ) were surveyed between March and May 2002, and collection was completed in October 2002 after follow-up.

### Survey Package

The survey package contained:

1. A cover letter describing the relevance of the study, printed on letterhead of the appropriate professional organization, hand-signed in blue ink by a co-principal investigator and copy-signed by the president of the professional organization. The exception was family physicians who received the package on University of Calgary letterhead and the letters were hand-signed by each of the co-principal investigators;
2. A Preamble and Instruction sheet describing the contents of the questionnaire and instructions for completing the paper or web-based version of the questionnaire;
3. The questionnaire; and
4. Notice of eligibility for a random draw for a Palm Pilot if the questionnaire was completed and returned within 3 weeks of mail out.

### Follow Up Strategy

A reminder post card was sent to non-respondents approximately three weeks after the initial mailing ( $n = 4,241$ ). Three weeks later, a reminder letter and second copy of the survey was sent to non-respondents ( $n = 3,707$ ). Approximately three weeks after that, a second reminder post card was mailed with the instruction to contact the study

team if the non-respondent had actively chosen not to participate ( $n = 3,365$ ). Finally, a follow-up telephone call inviting participation was made to a random sample of obstetricians and gynaecologists as well as family physicians in the attempt to improve the response rates. Those contacted were offered the opportunity to participate by completing the survey through telephone interview, completing it on-line, or having the paper version re-mailed or faxed to them. Interviewers fluent in the preferred language of the respondent conducted the phone follow-up.

Attempts were also made to locate eligible participants whose surveys were returned due to incorrect mailing addresses or who were found to have incorrect telephone numbers in the telephone follow-up. This included cross-referencing contact information with publicly available physician directories and telephone directory assistance.

### Statistical Analysis

The planned sample size for this descriptive survey was estimated to be large enough to allow for data modelling and to control for potential covariates, such as year of graduation and rural/urban practice. Preliminary sample size calculations were completed, and based on a minimum sample size of 375 within physician speciality, we would find as significant a difference of about 14% ( $n = 174$  per group) in response to a survey item such as "It is OK to drink after the first trimester."

All data were transferred into SPSS/PC version 11.0 for analysis. Descriptive analysis and bivariate comparisons ( $\chi^2$  and  $\chi^2$  trend) were completed to understand providers' attitudes, knowledge and practices towards FASD across provider group. Comparisons were made across provider group and a p value of 0.05 or less was considered significant. We have included the exact p values in the tables, so the reader can assess both the clinical and statistical relevance of the finding. There is variation in the denominator because not all questions were applicable to all participants and because of missing data for some questions.

## RESULTS

Of 5334 surveys distributed, 2216 were returned for a response rate of 41.3%. Respondents in the Prairies may be over-represented while those in Quebec under-represented, as compared to national distributions of providers; however, the

distribution of responses for the West, Ontario and the East reflected the national distribution of providers (Table 1). Response rates were greatest for midwives (63.5%) and paediatricians (52.7%) and lowest for family physicians (31.1%) (Table 2).

**TABLE 1** Distribution of Responses Compared to National Data<sup>1</sup>

Region	Provinces Included	Distribution of Responses %	National Distribution %
West	British Columbia, NWT, Yukon, Nunavut	14.4	13.6
Prairies	Alberta, Saskatchewan, Manitoba	21.0	14.9
Ontario	Ontario	39.9	40.7
Quebec	Quebec	15.7	24.2
East	New Brunswick, Nova Scotia, PEI, Newfoundland	9.0	6.6

**TABLE 2** Response Rate by Professional Group

Professional Group	Total Membership N	Random Sample (returned/sent)	Response Rate %
Paediatricians	2374	735/1396	52.7
Family Physicians	11258	740/2378	31.1
Psychiatrists	1439	391/851	45.9
Obstetricians and Gynaecologists	1728	225/539	41.7
Midwives	344	125/197	63.5

### Demographics

Family physicians had the highest proportion of providers under age 40 ( $p < 0.01$ ) (Table 3). Paediatricians and psychiatrists were significantly more likely to have university appointments ( $p < 0.01$ ) and to have urban practices ( $p < 0.01$ ) (Table 3).

### Awareness, Attitudes and Preparedness of Providers

Overall, 94% of providers agreed that FAS was an identifiable syndrome. Paediatricians had the highest level of agreement (77.8%) that alcohol's effects on the fetus were clear ( $p = 0.013$ ) (Table

4). While over 85% of providers agreed that discussion of alcohol use would not deter clients from treatment or frighten/anger clients, only 55% felt prepared to care for pregnant women or birth mothers in the area of alcohol use or dependency and 70% were prepared to access resources for these patients. Obstetricians, followed by psychiatrists, reported the highest levels of preparedness to care for pregnant women ( $p < 0.001$ ) and birth mothers in the area of alcohol use and dependency. Midwives reported feeling the most prepared to help pregnant women access resources in the area of alcohol abuse (85.8%), followed by psychiatrists (80.9%), and obstetricians (74.3%) ( $p < 0.001$ ) (Table 4).

**TABLE 3** Sample Description

	<b>Overall n (%)</b>	<b>Paediatrician n (%)</b>	<b>Psychiatrist n (%)</b>	<b>Midwife n (%)</b>	<b>Family Physician n (%)</b>	<b>Obstetrician n (%)</b>
<b>Age group p&lt;0.05</b>						
<40	672(30.8)	182(24.8)	47(12.2)	37(29.8)	341(46.4)	65(29.1)
40+	738(33.8)	223(31.1)	133(34.6)	51(41.1)	252(34.3)	79(35.4)
50+	541(24.8)	202(28.2)	134(34.9)	31(25.0)	125(17.0)	49(22.0)
60+	232(10.6)	110(15.3)	70(18.2)	5(4.0)	17(2.3)	30(13.5)
Total	2183(100.0)	717(100.0)	384(100.0)	124(100.0)	735(100.0)	223(100.0)
Mean age (SD)	45.7(10.3)	47.8(10.8)	50.4(9.0)	43.8(9.3)	41.3(8.8)	46.3(10.0)
<b>Year of Graduation p&lt;0.05</b>						
<1959	50(2.4)	32(4.4)	15(3.9)	1(1.9)	173(23.6)	3(1.4)
<1979	810(39.4)	348(47.7)	206(53.6)	19(35.2)	224(0.6)	83(39.3)
<1989	633(30.8)	209(28.6)	126(32.8)	21(38.9)	336(45.8)	74(35.1)
1990+	565(27.5)	141(19.3)	37(9.6)	13(24.1)	733(100.0)	51(24.2)
Total	2058(100.0)	730(100.0)	384(100.0)	54(100.0)	1466(100.0)	211(100.0)
<b>University Appointment p&lt;0.05</b>						
Yes	1143(53.4)	503(71.1)	244(65.2)	23(19.0)	251(34.8)	122(55.7)
No	998(46.6)	204(28.9)	129(34.5)	98(81.0)	470(65.2)	97(44.3)
<b>Gender</b>						
Male	1125(51.0)	399(54.6)	251(64.9)		367(49.7)	108(48.2)
Female	1079(49.0)	332(45.4)	136(35.1)	124(100.0)	371(50.3)	116(51.8)
<b>Practice p&lt;0.05</b>						
Urban	1677(78.5)	686(90.0)	324(87.1)	79(64.8)	486(67.4)	152(70.7)
Rural	424(19.8)	62(8.8)	41(11.0)	30(24.6)	230(31.9)	61(28.4)
Both	36(1.7)	9(1.3)	7(1.9)	13(10.7)	5(0.7)	2(0.9)
<b>Region p&lt;0.05</b>						
West	319(14.4)	80(10.9)	53(13.6)	25(20.0)	110(14.9)	51(22.7)
Prairie	466(21.0)	133(18.1)	79(20.2)	14(11.2)	183(24.7)	57(25.3)
Central ON	884(39.9)	287(39.0)	181(46.3)	68(54.4)	288(38.9)	60(26.7)
Central QC	348(15.7)	170(23.1)	47(12.0)	15(12.4)	82(11.1)	34(15.1)
East	199(9.0)	65(100.0)	31(7.9)	3(2.4)	77(10.4)	23(10.2)

**TABLE 4** FAS Awareness and Attitudes about Prevention

	Overall n (%)	Paediatrician n (%)	Psychiatrist n (%)	Midwife n (%)	Family Physician n (%)	Obstetrician n (%)	Chi Square p≤
<b>Agreed with the following:</b>							
Alcohol's effects on fetus are clear	1651(74.9)	568(77.8)	296(75.9)	85(68.0)	553(75.1)	149(67.1)	0.013
Prenatal alcohol exposure is a risk factor for permanent brain damage	2059(93.3)	694(94.8)	360(92.1)	112(90.3)	688(93.5)	205(91.5)	0.093
FAS is an identifiable syndrome	2066(94.0)	698(96.0)	362(92.6)	111(90.2)	690(94.0)	205(91.9)	0.028
FAS occurs in all strata of society	2107(95.4)	700(95.8)	368(94.1)	123(98.4)	701(95.1)	215(96.0)	0.615
Physicians' role to manage problems in area of alcohol use	1670(76.1)	544(74.8)	288(73.8)	72(61.0)	615(83.6)	151(67.7)	0.001
Discussing alcohol use <i>will not</i> deter from treatment	1895(86.1)	601(82.3)	353(90.5)	103(85.1)	640(87.0)	198(88.4)	0.009
Discussing alcohol use <i>will not</i> frighten/anger patients	2065(93.6)	672(91.9)	374(95.7)	113(91.1)	698(94.8)	208(92.9)	0.053
The practice of telling patients to drink in moderation*	1302(60.7)	445(62.3)	255(67.8)	612(51.3)	416(57.9)	125(57.6)	0.003
<b>Prepared to care for:</b>							
Pregnant women in area of alcohol abuse or dependency†	831(54.2)	120(40.5)	154(58.1)	64(54.7)	358(55.2)	135(65.2)	0.001
Birth mothers in area of alcohol abuse or dependency†	879(55.6)	178(50.4)	158(58.3)	57(50.4)	371(56.6)	115(61.2)	0.076

### Preconception Counselling and Prevention Practices for Non-Pregnant Women

The most common anticipatory guidance issue discussed by family physicians, obstetricians and midwives with women was birth control (86%) as outlined in Table 5. No more than 50% of providers frequently discussed folic acid, the risks of smoking, alcohol use, drug use, or history of addictions with women of childbearing age, and there was significant variation across provider group ( $p < 0.001$ ). Fewer than 15% of providers frequently obtained a history of past sexual or emotional abuse among women of childbearing age, and again there was significant variation across provider group ( $p < 0.001$ ). Family physicians were least likely to discuss folic acid and the risks of smoking, alcohol use, and drug use with non-pregnant patients (all  $p < 0.001$ ) (Table 5).

### Items Routinely Included in Interviews with Patients Regarding Alcohol Use During Pregnancy

Family physicians had the highest reported rate of use of a standard screening tool with 74%

indicating routine use for prenatal patients compared to 20% of midwives (Table 6). Of those who used a tool, the CAGE was used by 87%, followed by the T-ACE at 23% (not mutually exclusive and could check more than one tool). Almost 94% of providers asked *all* prenatal patients if they were currently drinking alcohol, while 97.4% *routinely* asked about frequency and quantity of alcohol use. As well, over 85% of providers asked women about their alcohol consumption prior to knowing about the pregnancy.

Overall, family physicians were most likely to recommend no alcohol be consumed during pregnancy (89.7%) although there were significant inter-group differences (Table 6). Binge drinking was least likely to be routinely included in patient interviews by midwives, while family history of alcohol abuse or dependency was discussed most routinely by midwives and family physicians. Midwives were also most likely to ask about a history of sexual abuse ( $p < 0.001$ ) (Table 6).

**TABLE 5** Prevention Issues Related to General Practices

	Overall n (%)	Midwife n (%)	Family Physician n (%)	Obstetrician n (%)	Chi Square $p \leq$
<b>Frequently discussed the following with all women of childbearing age:</b>					
Role of folic acid in decreasing neural tube defects	461(50.1)	19(70.4)	331(47.2)	111(57.8)	0.003
Risks of smoking during pregnancy	453(49.2)	23(82.2)	322(46.9)	108(56.0)	0.001
Risks of alcohol during pregnancy	369(40.1)	21(75.0)	265(37.9)	83(43.0)	0.001
Risks of drug use during pregnancy	358(38.9)	19(67.9)	251(35.9)	88(45.8)	0.001
Birth control	791(85.9)	22(81.5)	597(85.2)	172(89.1)	0.302
<b>Frequently obtained a detailed history of the following from all women of childbearing age:</b>					
Sexual abuse	124(13.5)	13(50.0)	76(10.8)	35(18.2)	0.001
Emotional abuse	124(13.5)	15(57.7)	80(11.4)	29(15.1)	0.001
Alcohol use	526(57.5)	17(65.4)	417(59.8)	92(47.9)	0.009
Addictions	419(45.6)	13(50.0)	324(46.2)	82(42.7)	0.619
Family history of addictions	219(23.9)	10(38.5)	178(25.5)	31(16.1)	0.006
<b>Frequently or sometimes provided all women of childbearing age with:</b>					
Written information on prenatal alcohol exposure	154(16.8)	11(37.9)	102(14.6)	41(21.2)	0.001

**TABLE 6** Items Discussed in Patient Interviews Regarding Alcohol Use During Pregnancy

	Overall n (%)	Midwife n (%)	Family Physician n (%)	Obstetrician n (%)	Chi Square p≤
Used a standard tool to screen all prenatal patients for alcohol use	630(62.3)	21(19.8)	520(73.6)	89(44.7)	0.001
Asked all women who are pregnant if they are currently drinking alcohol	998 (93.6)	131 (99.2)	670 (92.3)	207 (95.0)	0.010
Recommended no alcohol during pregnancy	900(87.5)	84(79.2)	639(89.7)	177(83.9)	0.001
<b>Items routinely included in patient interviews regarding alcohol use during pregnancy:</b>					
Drinking history of partner	226(21.4)	46(39.3)	138(19.1)	42(19.4)	0.001
Family history of alcohol abuse or dependency	558(52.7)	68(56.7)	400(55.4)	90(41.5)	0.001
Personal history of sexual abuse	356(33.8)	87(73.7)	182(25.3)	87(40.5)	0.001
History of addictions treatment	671(64.0)	75(64.7)	446(61.9)	150(70.8)	0.063
Quantity of alcohol intake	1034(97.4)	116(96.7)	708(97.7)	210(96.8)	0.684
Frequency of alcohol intake	1030(97.4)	114(96.6)	706(97.6)	210(96.8)	0.677
Personal history of binge drinking	772(73.0)	70(59.3)	537(74.2)	165(76.4)	0.002
Type of alcohol consumed	813(76.9)	77(66.4)	577(79.7)	159(73.3)	0.002
History of drinking prior to knowing about pregnancy	911(86.2)	102(85.7)	624(86.5)	185(85.3)	0.878
Evidence of alcohol related birth defects in other children	418(39.8)	49(42.2)	272(37.8)	97(45.5)	0.108

### Prevention Approaches Related to Moderate Drinking

Family physicians were most likely of all the professional groups to discuss with the patient what “in moderation” meant and to always counsel pregnant women to abstain from further alcohol use when they reported moderate alcohol consumption or binge drinking (Table 7). In general though, there was consistency across professional group with regard to management of women who report moderate or greater alcohol consumption during pregnancy (Table 7).

### Supports Perceived as Helpful by Providers

Table 8 reveals that providers would value a registry of specialists for consultation about FAS/FAE (62%), clinical practice guidelines (61%) and referral resources for women of

childbearing age with alcohol problems (63%) as a support to their clinical practice. Fewer than 26% were interested in training on addiction counselling or Telemedicine (either assistance with the diagnosis or access to information on FAS) (Table 8).

### Barriers to Discussing Alcohol Use During Pregnancy as Identified by Providers

Obstetricians and family physicians (60%) were significantly more likely to report time as a barrier to the discussion of alcohol use during pregnancy with women before they are pregnant as compared to midwives. Almost half of all providers felt that existing information was not in a useful form for clients (Table 9).

**TABLE 7** Prevention Approaches Related to Moderate and Heavy/Binge Drinking

	Overall n (%)	Midwife n (%)	Family Physician n (%)	Obstetrician n (%)	Chi Square p≤
Frequently discussed what patient thinks “in moderation” means	511(48.2)	44(37.0)	373(51.4)	94(43.7)	0.001
<b>Among pregnant women who reported moderate alcohol use:</b>					
Always discussed adverse effects of alcohol use	491(64.9)	63(82.9)	325(64.2)	103(58.9)	0.029
Always advised to abstain from alcohol	534(70.0)	42(55.3)	370(72.4)	122(69.3)	0.038
Always advised to reduce consumption	442 (60.1)	48 (64.0)	285 (57.9)	109 (64.5)	0.068
Always referred to treatment	86 (11.6)	13 (18.6)	57 (11.4)	16 (9.2)	0.032
<b>Among pregnant women who reported heavy or binge drinking:</b>					
Always discussed adverse effects of alcohol use	493(88.2)	36(87.8)	331(88.5)	126(87.5)	0.456
Always advised to abstain from alcohol	472(85.0)	33(80.5)	325(87.6)	114(79.7)	0.301
Always advised to reduce consumption	397(73.7)	30(75.0)	259(71.7)	108(78.3)	0.666

**TABLE 8** Supports Perceived as Very Helpful by All Professional Groups

	Overall n (%)	Paediatrician n (%)	Psychiatrist n (%)	Midwife n (%)	Family Physician n (%)	Obstetrician n (%)	Chi Square p≤
Literature on the impact of alcohol use during pregnancy	1087(50.0)	319(44.7)	191(49.5)	92(75.4)	360(49.3)	125(56.8)	0.001
Pregnancy history checklists including terms on alcohol use	851(39.4)	241(34.0)	138(35.8)	69(57.0)	311(42.7)	92(41.8)	0.001
Materials or training on FAS/FAE	1119(51.7)	387(54.2)	181(47.3)	88(72.7)	365(50.1)	98(44.7)	0.001
Training on addiction counselling	558(25.9)	120(17.0)	99(26.1)	39(32.5)	250(34.3)	50(23.0)	0.001
Registry of specialists available for consultation about FAS/FAE	1341(61.8)	386(53.9)	227(53.9)	103(85.1)	489(66.9)	136(62.1)	0.001
Referral resources for women of childbearing age with alcohol problems	1357(62.6)	337(47.5)	226(58.7)	100(82.0)	536(73.0)	158(72.1)	0.001

Clinical Practice Guidelines for diagnosis of FAS	1323(60.8)	478(66.7)	214(55.7)	85(69.7)	439(59.8)	107(48.9)	0.001
Assistance with diagnosis of FAS/FAE through Telemedicine	521(24.1)	190(26.5)	81(21.1)	50(42.0)	158(21.7)	42(19.3)	0.001
Access to information about FAS/FAE through Telemedicine	558(25.8)	202(28.3)	86(22.6)	54(45.0)	168(22.9)	48(22.1)	0.001
Internet Resources	774(35.8)	270(37.8)	127(33.4)	65(54.2)	250(34.3)	62(28.6)	0.001

**TABLE 9** Barriers to Discussing Alcohol Use During Pregnancy

	Overall n (%)	Midwife n (%)	Family Physician n (%)	Obstetrician n (%)	Chi Square p $\leq$
There is not enough time to talk to women about alcohol before they are pregnant	528(58.0)	2(6.7)	409(59.4)	117(60.9)	0.001
There are other sources of information on alcohol use to which I refer women	241(26.7)	10(37.0)	171(24.9)	60(31.6)	0.087
There is not enough solid information available about alcohol use	98(10.9)	2(7.1)	75(11.0)	21(11.1)	0.810
Many clients are not interested in discussing alcohol use	280(31.1)	6(20.7)	206(30.2)	68(36.4)	0.125
Many clients already have good knowledge about alcohol use	387(42.8)	21(72.4)	283(41.3)	83(43.7)	0.004
Information is not in a useful format for clients	437(48.8)	10(37.0)	326(48.0)	101(53.4)	0.193

**Client Barriers to Seeking Treatment for Alcohol Use During Pregnancy as Identified by Providers**

Barriers to women seeking treatment for alcohol use during pregnancy are outlined in Table 10. In general, health professionals recognised numerous barriers exist for women with regard to accessing

services in the area of alcohol use and addictions. As compared to the other groups, midwives were significantly more likely to identify fear of losing children, economic and cultural barriers, language, lack of addictions services, and lack of gender specific services as barriers (p<0.002).

**TABLE 10** Identified Barriers to Women Seeking Treatment for Alcohol Use During Pregnancy

	<b>Overall n (%)</b>	<b>Midwife n (%)</b>	<b>Family Physician n (%)</b>	<b>Obstetrician n (%)</b>	<b>Chi Square p≤</b>
Dual diagnosis (e.g. depression, bipolar disorder)	836(78.7)	91(77.8)	580(79.9)	165(75.3)	0.342
History of sexual abuse	760(71.8)	90(76.9)	515(71.3)	155(70.5)	0.409
History of domestic abuse	873(82.6)	101(86.3)	596(82.7)	156(80.4)	0.388
Co-dependence (partner/peer/parental substance abuse)	981(91.9)	109(92.4)	671(92.0)	201(91.4)	0.933
Current violence in the home	934(87.9)	110(93.2)	635(87.7)	189(85.9)	0.136
Extrinsic barriers: child care, housing, poverty	903(85.0)	107(91.5)	606(83.5)	190(86.8)	0.058
Fear of public shame, blame	969(91.1)	114(97.4)	662(90.7)	193(88.9)	0.028
Misinformation about the safety of alcohol use during pregnancy	736(69.4)	89(76.10)	501(69.2)	146(66.7)	0.198
Fear of losing children to partner or child welfare	974(91.5)	116(98.3)	650(89.7)	208(95.1)	0.002
Systemic racism	514(49.1)	97(82.9)	327(45.7)	90(42.1)	0.001
Systemic prejudice based on social/economic class	662(62.9)	104(88.9)	428(59.3)	130(61.0)	0.001
Communication/language barriers	680(64.2)	97(82.9)	444(69.3)	139(63.8)	0.001
Lack of addiction treatment services	718(67.9)	96(82.8)	483(66.7)	139(64.1)	0.001
Lack of gender specific addiction treatment services	688(65.4)	98(84.5)	456(63.2)	134(62.6)	0.001

## DISCUSSION

This study reveals cross discipline and regional differences in knowledge, attitudes, and practices related to alcohol use during pregnancy, preconception counselling and risk factors for FASD. While every effort was undertaken to increase the response rate, including incentives, repeat mailings, web-based survey completion and phone follow up, we achieved a final response rate of 41.3%.<sup>24-27</sup> The challenges associated with lower response rates relate to the generalizability of the findings to the surveyed population, such that if responders differ substantially from non-responders, the generalizability of the findings is questionable. However, if non-responders were similar to responders, the response rate will not affect the generalizability to the surveyed populations.<sup>28-30</sup>

Studies of physician responses to surveys have suggested that questionnaires with relatively low response rates (e.g., 40%) for which there are limited systematic differences between responders and non-responders could be considered valid.<sup>31</sup> Indeed, comparisons of late responders, as a proxy for non-responders, to early responders in physician surveys have revealed few differences with respect to demographics and practice characteristics such that non-response bias may be less of a concern in physician surveys than in surveys of the general public.<sup>24</sup> Indeed, with the exception of family physicians (31.1%), we were able to achieve a response rate greater than 40% across provider groups, which may not necessarily be unacceptable for physician surveys.<sup>30,31</sup> The distribution of responses suggests that the results

are likely generalizable to most regions of Canada.

Survey findings indicate that almost all professionals (94%) asked all pregnant women if they were currently drinking alcohol and asked about details such as the frequency and quantity of consumption. These findings are similar to results from a Michigan study of obstetrician-gynaecologists (97%)<sup>1</sup> but higher than those from a smaller scale Toronto study of family physicians (75%).<sup>32</sup> The majority of professionals appropriately counselled women that no alcohol is best during pregnancy (88%); however, some providers did not. Although 65% to 70% of physicians reported always discussing adverse effects of alcohol when moderate alcohol use is discovered in a pregnant woman, this implies that 30% did not do so. Of interest, in an ongoing community-based randomized clinical trial of 1500 women regarding prenatal care, preliminary results indicated that, on average, 53.7% of prenatal patients attending 3 low-risk maternity clinics recalled being asked about alcohol use during pregnancy.<sup>33</sup> The data from these two studies indicates that there is a discrepancy between physicians' reported practice and prenatal patients' perception of counselling related to alcohol use during pregnancy.

Survey results indicate that when patients reported moderate alcohol consumption or binge drinking during pregnancy, most providers discussed the adverse effects and advised abstinence or a reduction in consumption although rates were lower than previous findings specific to obstetrician-gynecologists.<sup>1</sup> Only 53% of providers indicated that women who reported binge or heavy drinking during pregnancy would always be referred to treatment.

Although the current study revealed fairly consistent practice patterns in advising pregnant women to abstain from consuming alcohol during pregnancy and in posing the question of alcohol use to all pregnant women, the use of standard screening tools requires further investigation. Over 60% of professionals reported using a standard tool to screen prenatal patients for alcohol use, which is higher than findings from previous regional studies in North America.<sup>1,32</sup> However, we hypothesize that standardized tools were primarily used if a professional suspected alcohol use, which would result in missed

opportunities for identification of women at risk. Standardized questionnaires, such as the CAGE, AUDIT, TWEAK, SMAST, and T-ACE, have been developed to overcome the biases inherent in self-report.<sup>34</sup>

These 5 minute tools are easy-to-use and score. Each of the scales has been validated in different populations and has varying sensitivity and specificity.<sup>35</sup> When comparing AUDIT, SMAST and T-ACE, the latter was the most sensitive screen for lifetime alcohol diagnosis, risk drinking, and current alcohol consumption.<sup>35,36</sup> The T-ACE is more sensitive to heavy drinking than the CAGE questionnaire due to the tolerance question (how many drinks does it take to get high).<sup>4</sup> To be most useful these tools should be used with all patients and not just when the provider suspects alcohol use. Further information on the T-ACE can be found at the National Institute of Alcohol Abuse and Alcoholism website

([http://www.niaaa.nih.gov/publications/t\\_ace.htm](http://www.niaaa.nih.gov/publications/t_ace.htm))

Providers were aware of the detrimental effects of alcohol on fetal development as a significant risk factor for brain damage, yet 25% of professionals felt that the effects of alcohol on the fetus remained unclear. The majority agreed it was the physician's role to manage client issues associated with alcohol misuse and that these discussions would not deter women from seeking or continuing treatment. However, only half of providers felt prepared to care for clients in the area of alcohol misuse although a greater proportion was willing to access resources. Of note, the majority of providers did not want training on addiction counselling to assist them with patient management in this area, but rather indicated that improved access to referral resources or a registry of specialists would be beneficial. Various programs have been developed to assist women with alcohol misuse and dependency, and they appear to have met with some success in reducing alcohol consumption during pregnancy.<sup>37-40</sup> As noted in the Alberta Clinical Practice Guidelines and in a recent review, brief motivational intervention strategies are successful in reducing both moderate and heavy alcohol consumption.<sup>20,41</sup>

It is important to address alcohol prevention strategies within the broader prevention/promotion framework advocated by

Health Canada.<sup>42</sup> Of note, although 86% of professionals discussed birth control with all women of childbearing age, fewer than half frequently discussed the role of folic acid, the risks of smoking, alcohol use, drug use or addictions history. Less than 15% of professionals frequently obtained a detailed history of sexual and emotional abuse, an important determinant of alcohol use in general and a risk factor for gynaecologic problems.<sup>43;44</sup> Furthermore, as other research found, despite substantially high rates of physical (38-66%), emotional (19-37%) and sexual abuse (17-33%), over 90% of women had not disclosed this to their obstetrician or gynaecologist.<sup>45</sup> In a university clinic where a screening tool was implemented, 72% of women had chart documented screening for intimate partner violence, potentially suggesting that appropriate mechanisms which facilitated discussion may lead to increased identification of women at risk.<sup>46</sup>

As found in other studies<sup>1</sup>, barriers to discussion of alcohol use noted in this study included lack of time to talk to women about dangers of alcohol prior to pregnancy, a belief that the information was not in a useful form for clients, and a belief that clients already had good knowledge about alcohol abuse. However, providers had a good understanding of the multiple health, social and cultural barriers that deter women from seeking addictions treatment while pregnant, indicating that providers are sensitive to the extremely complex nature of identifying and treating alcohol use and abuse during pregnancy.

## CONCLUSION

While providers are acutely aware of the detrimental effects of alcohol on fetal development, there are opportunities for improvement in preconception counselling and screening for the identification of women at risk of alcohol use during pregnancy.

### *Acknowledgments*

We would like to acknowledge the financial contribution of Health Canada to this survey, Health Canada and the FAS National Advisory Committee for their support on survey development, and the professional organisations

for their support and assistance. Also, we would like to recognise the assistance of Jocelynn Cook, Lysanne Delogne, Monica Jack, Janelle Jubb, Christine Look, Laura Schorn, and Jonathan Snider.

Institutions work should be attributed to: The University of Calgary and Calgary Health Region

### **Support:**

This study was funded by Health Canada and supported by the FAS National Advisory Committee and the Calgary Health Region.

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## REFERENCES

1. Diekman ST, Floyd RL, Decoufle P, Schulkin J, Ebrahim SH, Sokol RJ. A survey of obstetrician-gynecologists on their patients' alcohol use during pregnancy. *Obstet Gynecol* 2000; 95(5):756-763.
2. Clarren SK, Smith DW. The fetal alcohol syndrome. *N Eng J Med* 1978; 298(19):1063-1067.
3. Alberta Medical Association. Guideline for the diagnosis of fetal alcohol syndrome (FAS). Edmonton (AB): Alberta Medical Association; 1999.
4. Abel EL. An update on incidence of FAS: FAS is not an equal opportunity birth defect. *Neurotoxicol Teratol* 1995; 17(4):437-443.
5. Sampson PD, Streissguth AP, Bookstein FL, Little RE, Clarren SK, Dehaene P et al. Incidence of fetal alcohol syndrome and prevalence of alcohol-related neurodevelopmental disorder. *Teratology* 1997; 56(5):317-326.
6. Centers for Disease Control and Prevention. Alcohol and other drug-related birth defects awareness week - May 11-17, 1997. *MMWR Morb Mortal Wkly Rep* 1997; 46(16):345.
7. Stewart PJ, Potter J, Dulberg C, Niday P, Nimrod C, Tawagi G. Change in smoking prevalence among pregnant women 1982-93. *Can J Public Health* 1995; 86(1):37-41.
8. Stoler JM, Holmes LB. Under-recognition of prenatal alcohol effects in infants of known alcohol abusing women. *J Pediatr* 1999; 135(4):430-436.
9. Naimi TS, Lipscomb LE, Brewer RD, Gilbert BC. Binge drinking in the preconception period and the risk of unintended pregnancy: implications for women and their children. *Pediatrics* 2003; 111:1136-1141.

10. Gladstone J, Nulman I, Koren G. Reproductive risks of binge drinking during pregnancy. *Reprod Toxicol* 1996; 10(1):3-13.
11. Roberts G, Nanson JL, for Canada's Drug Strategy Division, Health Canada. Best practices: fetal alcohol syndrome/fetal alcohol effects and the effects of other substance use during pregnancy. Ottawa: Minister of Public Works and Government Services Canada; 2000. Cat. No. 49-156/1-2001E. ISBN 0-662-30212-5.
12. Stade B. The Burden of Prenatal Exposure to Alcohol: Quality of Life and Costs. Unpublished PhD thesis presented at the 4th Annual Fetal Alcohol Canadian Experience Research Roundtable, Edmonton, AB, September 2003.
13. Square D. Fetal alcohol syndrome epidemic on Manitoba reserve. *CMAJ* 1997; 157(1):59-60.
14. Alberta Health and Wellness. Health is everyone's business: a snapshot of some of Alberta's wellness initiatives. Edmonton (AB): Alberta Health and Wellness - Communication Branch; 2000.
15. Astley SJ, Bailey D, Talbot C, Clarren SK. Fetal alcohol syndrome (FAS) primary prevention through FAS diagnosis: I. Identification of high-risk birth mothers through the diagnosis of their children. *Alcohol Alcohol* 2000; 35(5):499-508.
16. U.S. Department of Health and Human Services. Healthy people 2010: understanding and improving health. 2 ed. Washington, DC: U.S. Government Printing Office; 2000.
17. Nanson JL, Bolaria R, Snyder RE, Morse BA, Weiner L. Physician awareness of fetal alcohol syndrome: a survey of pediatricians and general practitioners. *CMAJ* 1995; 152(7):1071-1076.
18. Jones KL. Early recognition of prenatal alcohol effects: A pediatrician's responsibility. *J Pediatr* 1999; 135(4):405-406.
19. Koren G, Koren T, Gladstone J. Mild maternal drinking and pregnancy outcome: perceived versus true risks. *Clin Chim Acta* 1996; 246(1-2):155-162.
20. Alberta Medical Association. Recommendations: prevention of fetal alcohol syndrome (FAS). Edmonton (AB): Alberta Medical Association, 1999.
21. American Academy of Pediatrics Committee on Substance Abuse and Committee on Children With Disabilities. Fetal alcohol syndrome and alcohol-related neurodevelopmental disorders. *Pediatrics* 2000; 106(2 Pt 1):358-361.
22. Clarke ME, Teskey J. Physician awareness of fetal alcohol syndrome (pilot study). Calgary (AB): Alberta Children's Hospital; 1999.
23. Teskey J, Clarke ME. Fetal alcohol syndrome: a survey of knowledge, needs and resources. [Unpublished manuscript]. 1998.
24. Kellerman SE, Herold J. Physician response to surveys: a review of the literature. *Am J Prev Med* 2001; 20(1):61-67.
25. Dillman DA. Mail and telephone surveys: the total design method. New York: John Wiley; 1978.
26. Man-Son-Hing M, Molnar F, St. John P, Brymer C, Rockwood K. Increasing physicians' response rates to mailed surveys: effect of investigator's name recognition. *Annals RCPSC* 2000; 33(1):7-9.
27. Dooley D. Social research methods. 3rd ed. Englewood Cliffs (NJ): Prentice Hill; 1995.
28. Fowler FJ. Survey research methods. Newbury Park (CA): Sage; 1988.
29. Grady KE, Wallston BS. Research in health care settings. Newbury Park (CA): Sage; 1988.
30. Cummings SM, Savitz LA, Konrad TR. Reported response rates to mailed physicians questionnaires. *Health Serv Res* 2001; 35(6):1347-1355.
31. Gehlbach SH. Interpreting the medical literature. New York: McGraw-Hill; 1993.
32. Nevin AC, Parshuram C, Nulman I, Koren G, Einarson A. A survey of physician's knowledge regarding awareness of maternal alcohol use and the diagnosis of FAS. *BMC Fam Pract* 2002; 3(1):2. Epub 2002 Feb 08.
33. Tough SC, Johnston DW. Community Perinatal Care Study, Calgary, AB, 2001-2004. Preliminary analysis. [Unpublished work].
34. Legge C, Roberts G, Butler M. Situational analysis: fetal alcohol syndrome / fetal alcohol effects and the effects of other substance use during pregnancy. Ottawa: Minister of Public Works and Government Services Canada; 2001. Cat. No. H49-156/2-2001E. ISBN 0-662-85707-0.
35. Bradley KA, Boyd-Wickizer J, Powell SH BM. Alcohol screening questionnaires in women: a critical review. *JAMA* 1998; 280(2):166-171.
36. Chang G, Wilkins-Haug L, Berman S, Goetz MA, Behr H, Hiley A. Alcohol use and pregnancy: improving identification. *Obstet Gynecol* 1998; 91(6):892-898.
37. Allard-Hendren R. Alcohol use and adolescent pregnancy. *MCN Am J Matern Child Nurs* 2000; 25(3):159-162.
38. Chang G, Goetz MA, Wilkins-Haug L, Berman S. A brief intervention for prenatal alcohol use: an in-depth look. *J Subst Abuse Treat* 2000; 18(4):365-369.
39. Handmaker NS, Miller WR, Manicke M. Findings of a pilot study of motivational interviewing with pregnant drinkers. *J Stud Alcohol* 1999; 60(2):285-287.
40. Allen J. Measuring outcome in interventions for alcohol dependence and problem drinking: executive summary of a conference sponsored by the National Institute on Alcohol Abuse and

- Alcoholism. *Alcohol Clin Exp Res* 2003; 27(10):1657-1660.
41. Berglund M, Thelander S, Salsapuro M, Franck J, Andreasson S, Ojehagen A. Treatment of alcohol abuse: an evidence-based review. *Alcohol Clin Exp Res* 2003; 27(10):1645-1656.
  42. Health Canada, Chomik T. The population health template: key elements and actions that define a population health approach. Ottawa: Health Canada; 2001.
  43. Schei B. Psycho-social factors in pelvic pain: a controlled study of women living in physically abusive relationships. *Acta Obstet Gynecol Scand* 1990; 69(1):67-71.
  44. Golding J, Taylor D, Menard L, King M. Prevalence of sexual abuse history in a sample of women seeking treatment for premenstrual syndrome. *J Psychosom Obstet Gynaecol* 2003; 21(2):69-80.
  45. Wijma B, Schei B, Swahnberg K, Hilden M, Offerdal K, Pikarinen U et al. Emotional, physical, and sexual abuse in patients visiting gynaecology clinics: a Nordic cross-sectional study. *Lancet* 2003; 361(9375):2107-2113.
  46. Scholle S, Buranosky R, Hanusa B, Ranieri L, Dowd K, Valappil B. Routine screening for intimate partner violence in an obstetrics and gynecology clinic. *Am J Public Health* 2003; 93(7):1070-1072.

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<sup>i</sup> Canadian provider national distribution data from: Canadian Medical Association. Number of Active Physicians by Province/Territory and Specialty, Canada, 2001. *CMA Masterfile*. 2001. Available from: <http://www.cma.ca/staticContent/HTML/N0/I2/statinfo/pdf/specialty-prov2001.pdf>