

Rural–urban differences in provider practice related to preconception counselling and fetal alcohol spectrum disorders

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Objective: Fetal alcohol spectrum disorders (FASDs) are the most common form of nongenetic birth defect in North America with devastating, long-term consequences. Physicians are the primary providers of medical care for pregnant women and they play an important role in the prevention and diagnosis of FASD. We sought to determine whether differences exist between rural and urban health care providers in knowledge of, attitudes about and awareness of FASD and preconception counselling.
Methods: Surveys were mailed to a national, random sample of Canadian health care providers (n = 5361) between October 2001 and May 2002. Bivariate data analysis was completed using SPSS 14.0.
Results: Compared with their urban counterparts, rural providers were more likely to report being prepared to access resources related to alcohol use and dependency, yet they were less likely to agree that it was the physician's role to manage these issues (78.4% v. 82.8%, $p < 0.05$). Rural providers were more likely than urban providers to use a standardized tool to screen patients for alcohol use, to ask all pregnant women if they were drinking, to have cared for a patient with an FASD (56.7% v. 48.8%), to agree that providers do not make a diagnosis because of lack of time and training, and to recognize legal issues and inappropriate behaviour as secondary outcomes of FASD. Rural and urban providers were similar in their diagnostic knowledge of FASD.
Conclusion: Few differences between rural and urban providers exist with regard to knowledge and diagnosis of FASD; however, rural providers are more prepared to access resources for women with addiction issues and are more likely to care for patients with an FASD.

Objectif : L'ensemble des troubles causés par l'alcoolisation fœtale (ETCAF) constitue la forme la plus courante de malformation congénitale non génétique en Amérique du Nord et elle a des conséquences à long terme dévastatrices. Les médecins sont les principaux fournisseurs de soins médicaux aux femmes enceintes et jouent un rôle important dans la prévention et le diagnostic de l'ETCAF. Nous avons cherché à déterminer s'il existe des différences entre les fournisseurs ruraux et urbains de soins de santé au niveau de la connaissance de l'ETCAF, des attitudes et de la sensibilisation, ainsi que du counselling avant la conception.
Méthodes : On a envoyé des questionnaires par la poste à un échantillon aléatoire national de prestateurs de soins de santé du Canada (n = 5361) entre octobre 2001 et mai 2002. On a effectué une analyse bidimensionnelle de données au moyen du progiciel SPSS 14.0.
Résultats : Comparativement à leurs homologues urbains, les fournisseurs ruraux étaient plus susceptibles de se déclarer prêts à consulter des ressources liées à la consommation et la dépendance de l'alcool, mais ils étaient moins susceptibles de reconnaître qu'il incombe aux médecins de gérer ces questions (78,4 % c. 82,8 %, $p < 0,05$). Les fournisseurs ruraux étaient plus susceptibles que les fournisseurs urbains d'utiliser un outil normalisé pour dépister la consommation d'alcool chez les patientes, de demander à toutes les femmes enceintes si elles consommaient de l'alcool, d'avoir traité

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un patient atteint de l'ETCAF (56,7 % c. 48,8 %), de reconnaître que les fournisseurs ne posent pas de diagnostic par manque de temps et de formation, et de reconnaître les problèmes légaux et le comportement inapproprié comme des résultats secondaires de l'ETCAF. Les fournisseurs urbains et ruraux se ressemblaient par leur connaissance du diagnostic de l'ETCAF.

Conclusion : Il y a peu de différences entre les fournisseurs ruraux et urbains en ce qui a trait à la connaissance et au diagnostic de l'ETCAF, mais les fournisseurs ruraux sont plus disposés à consulter des ressources pour les femmes qui ont des problèmes d'accoutumance et plus susceptibles de s'occuper de patients atteints de l'ETCAF.

INTRODUCTION

Fetal alcohol spectrum disorders (FASDs), which can result from prenatal alcohol exposure, are the most common form of nongenetic birth defect in North America, with devastating, long-term medical, social and financial consequences for individuals, families and communities.[1–5] Individual deficits may present as primary disabilities such as physical defects (i.e., craniofacial defects, microcephaly) or neurodevelopmental abnormalities, or as secondary disabilities that develop as a consequence of living with primary disabilities, and may include mental health comorbidities or problems in school and with the criminal justice system.[6,7] The community incidence of fetal alcohol syndrome (FAS) varies widely but has been reported to be as high as 190 affected per 1000 children.[8,9] 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 drinks/d or 5–6 drinks/occasion) at 43.1 per 1000 live births.[1] The incidence of FASD, which includes FAS, partial FAS, alcohol-related neurodevelopmental disorder and alcohol-related birth defects, is believed to be about 10-fold higher, at 9.1 per 1000 live births or about 1% of births.[3]

Several studies have found that the incidence of FAS is highest in rural and remote communities with reports as high as 190 per 1000 children.[3,10–12] In a recent South African study, women in rural communities were more likely to have children with FAS (odds ratio 7.93) compared with urban women.[11] In addition, there are disparities in overall health status between rural and urban communities, including higher prevalence of health risk factors (including smoking and being overweight), lower functional health status and higher rates of chronic disease and mental health issues among residents of rural or remote areas. Rural dwellers are also more likely to have lower self-reported ratings of health status.[13] It is unclear if differences in FASD incidence are influenced by economic factors, corporate practices, culture or health care delivery.

There is some evidence that early detection of at-risk children and mothers results in improved outcomes for both and, as such, it is appropriate for health care professionals to be knowledgeable and proactive in the prevention and detection of FAS.[14] In the last decade, there have been health and social policy initiatives in the United States and Canada that have focused on public awareness, primary prevention and improved detection of FASD and maternal alcohol consumption (e.g., Centers for Disease Control and Prevention, Prairie Northern Pacific Partnership and Federal FAS Funding Initiative, Health Canada, Canadian Task Force on the Periodic Health Examination). Key components of these initiatives have been strategies to improve provider awareness of issues related to the detrimental effects of alcohol on pregnancy outcomes and improve early detection of FASD.[14,15] Studies have shown that physicians' knowledge, attitudes and beliefs about a health problem related to alcohol abuse can either predispose or deter them from screening, identifying and managing the problem.[16] Physicians are typically the primary provider of medical care for pregnant women and they play an important role in the prevention and diagnosis of FASD.[16–19] The American Academy of Pediatrics has recommended that pediatricians and other health care professionals become informed and assume a leadership role in public education regarding in utero alcohol exposure.[20] However, there may be a considerable disparity among physicians in terms of knowledge, attitude, practices and educational needs regarding this condition, and provider training must be tailored appropriately to meet identified needs.[21]

The purpose of our study was to determine if differences exist between rural and urban health care providers in knowledge of, attitudes about and awareness of FASD and preconception counselling related to alcohol use.

METHODS

A questionnaire was modified from a prior survey based on extensive consultation and pilot testing with the National Advisory Committee on FAS and professional groups. The questionnaire consisted of 4 parts, including general knowledge, prevention and diagnostic issues, and background information. All but 2 questions were in forced-choice format with response options varying depending on question content (e.g., yes/no, Likert scales). The survey package was translated into French, electronically scanned into a database for analysis and programmed in HTML for a Web-based version.

Surveys were mailed to a national, random sample of Canadian providers, selected from the mailing lists of medical professional organizations, between October 2001 and January 2002. Not all questions were relevant for all provider groups so the denominator and respondent group varies in some cases. Packages contained a hand-signed cover letter, instructions for completing paper- or Web-based versions, the survey, a stamped return envelope and notice of a draw for a Palm Pilot. Mailed questionnaires were followed up with 2 reminder postcards, repeat mailings, telephone follow-up and an attempt to reach participants whose original contact information was incorrect. Return of the completed questionnaire was taken to signify consent to participate.

Sample size and statistical analysis

Preliminary sample size calculations were completed, and, based on a minimum sample size of 375 within provider specialty, we found a difference of about 14% (n = 174 per group) to be significant in response to a question such as "It is OK to drink after the first trimester." All data were transferred into SPSS/PC version 14.0 (Softonic International) for analysis. Descriptive analysis and bivariate comparisons (χ^2 and χ^2 trend) were completed to understand provider attitudes, knowledge and practices toward FAS by provider group. *P* values refer to comparisons made across provider groups.

RESULTS

Surveys were sent to 5361 Canadian health providers; 2101 providers, who identified their practice as either rural or urban, returned the survey for a response rate of 39.2%. The breakdown by specialty was as follows: family practice (n = 2378), obstetrics and gynecology (n = 539), pediatrics (n = 1396), psychiatry (n = 851) and midwifery (n = 197). Of the 2101 respondents, 1677 (79.8%) were urban providers and 424 (20.2%) were rural. Providers were similar with regard to practice patterns, sex and region. More providers were located in urban areas and more of those with urban practices had university appointments (Table 1).

There was no difference between urban and rural providers with regard to community awareness and attitudes toward managing health problems related to FAS (Table 2). Rural providers were significantly less likely ($p < 0.05$) to believe it was the physician's role to manage problems in the area of alcohol abuse (78.4% v. 82.8%); however, they were significantly more prepared to care for and access resources for pregnant women and birth mothers in regard to alcohol use and dependency (Table 2). Overall, about 55% of providers felt prepared to care for women in the area of alcohol use, and about 70% were prepared to access resources. Sources of information regarding FASD did not differ substantially between the groups and primarily included medical school, residency or fellowships. However, rural providers were significantly more likely to gain knowledge through parents or patients (29.7% v. 22.8%) (data not shown).

Among family physicians, obstetricians and midwives, there were few differences in practice between urban and rural providers related to preconception counselling. Almost 90% of providers frequently discussed birth control with women of childbearing age. Overall, less than 50% of providers frequently discussed issues related to folic acid, smoking, alcohol use or history of addictions and less than 15% obtained a detailed history of sexual or emotional abuse (Table 3).

Slightly over 60% of all providers agreed with the practice of "moderate alcohol consumption" among nonpregnant patients, although less than 50% defined "moderate" for their patients. Moderate consumption was defined by the majority of providers as less than 3 drinks per occasion and less than 4 occasions per week (Table 4).

The majority of providers (94%) asked all pregnant women if they were consuming alcohol, including frequency, quantity and consumption before knowledge of pregnancy. Overall, almost 90% of providers recommended that no alcohol be consumed during pregnancy (Table 4). Once women were pregnant, survey responses of midwives, family physicians and obstetricians indicated that rural providers were more likely than urban

providers to use a standard tool for alcohol screening (69.4% v. 60.6%), to ask all women if they were drinking alcohol (97.2% v. 91.9%) and to determine if there was a history of binge drinking (77.2% v. 70.9%). Over 85% of providers advised pregnant women who were binge drinking of the adverse effects and recommended abstinence during pregnancy. Less than 70% provided similar advice to those who reported moderate use of alcohol during pregnancy (data not shown). Barriers to discussions of alcohol use before conception/pregnancy included lack of time (58.4%), information not in a useful format (48.9%) and a belief that clients already had good information on alcohol use (31.4%). Rural providers were significantly more likely to agree that there were other sources of information on alcohol to refer women to (31.9% v. 24.0%) (data not shown).

Rural providers were more likely to report caring for patients with FAS ($p = 0.003$) and to have referred a patient for a diagnosis ($p = 0.025$) (Table 5). Less than 15% of providers used a diagnostic schema; however, among those that did, urban providers preferred the American Academy of Pediatrics and rural providers preferred the 4-Digit Diagnostic Code. Level of diagnostic knowledge did not differ by rural/urban status; however, rural providers were significantly more likely to identify legal problems and inappropriate sexual behaviour as secondary outcomes associated with FAS (Table 5). Rural providers were significantly more likely ($p < 0.001$) than urban providers to report that time

Table 1. Sample description of survey participants

Variable	No. (%) of providers			*p* value*
	Overall	Urban	Rural	
Year graduated				
1959 or earlier	46 (2.3)	45 (2.8)	1 (0.3)	< 0.001
1960–1979	759 (38.5)	651 (41.0)	108 (28.1)	
1980–1989	617 (31.3)	494 (31.1)	123 (32.0)	
1990 or later	548 (27.8)	396 (25.0)	152 (39.6)	
Total	1970	1586	384	
Age, yr				
< 40	651 (31.3)	474 (28.6)	177 (41.9)	< 0.001
40–49	700 (33.7)	556 (33.6)	144 (34.1)	
50–57	519 (25.0)	436 (26.3)	83 (19.7)	
≥ 60	209 (10.0)	191 (11.5)	18 (4.3)	
Total	2079	1657	422	
University appointment				
Yes	1123 (53.8)	994 (59.7)	129 (30.6)	< 0.001
Primary mode of practice				
Solo	610 (30.4)	479 (30.0)	131 (31.9)	< 0.001
Group	1075 (53.6)	826 (51.8)	249 (60.6)	
Other	321 (16.0)	290 (18.2)	31 (7.5)	
Sex				
Male	1071 (51.0)	867 (51.8)	204 (48.1)	< 0.179
Female	1028 (49.0)	808 (48.2)	220 (51.9)	
Region				
West	309 (14.7)	229 (13.7)	80 (18.9)	< 0.001
Prairie	444 (21.1)	351 (20.9)	93 (21.9)	
Central (Ontario)	834 (39.7)	702 (41.9)	132 (31.1)	
Central (Quebec)	320 (15.2)	260 (15.5)	60 (14.2)	
East	194 (9.2)	135 (8.1)	59 (13.9)	
Provider group				
Pediatrician	698 (33.2)	636 (37.9)	62 (14.6)	< 0.001
Psychiatrist	365 (17.4)	324 (19.3)	41 (9.7)	
Midwife	109 (5.2)	79 (4.7)	30 (7.1)	
Family physician	716 (34.1)	486 (29.0)	230 (54.2)	
Obstetrician/gynecologist	213 (10.1)	152 (9.1)	61 (14.4)	
Total	2101	1677	424	

*Determined by the χ^2 test.

(31.9% v. 20.4%) and specific training (71.3% v. 61.6%) were barriers to diagnosis (Table 6).

The following supports were identified as most helpful by more than 60% of respondents: referral resources, registry of specialist for consultation and clinical practice guidelines. Rural providers were significantly more likely to identify telehealth options as desirable, although less than 30% of rural providers selected this as a "very helpful" option (data not shown).

Table 2. Fetal alcohol syndrome awareness and attitudes about prevention*

Awareness and attitudes	No. (%) of providers			*p* value†
	Overall	Urban	Rural	
Agree alcohol's effects on fetus are clear‡	1578 (76.6)	1266 (76.9)	312 (75.5)	0.056
Agree prenatal alcohol exposure is a risk for permanent brain damage	1953 (95.8)	1561 (95.9)	392 (95.4)	0.647
Agree FAS is an identifiable syndrome	1965 (95.9)	1565 (95.6)	400 (95.9)	0.979
Agree FAS occurs in all strata of society	2000 (96.0)	1588 (95.5)	412 (98.1)	0.015
Agree diagnosis of FAS changes things for the child	1909 (94.2)	1535 (94.3)	374 (93.5)	0.518
Agree it is the physician's role to manage problems in the area of alcohol use	1597 (81.9)	1292 (82.8)	305 (78.4)	0.043
Agree discussing alcohol use *will not* deter from treatment	1803 (89.0)	1446 (89.1)	357 (88.6)	0.746
Agree discussing alcohol use *will not* frighten/anger patients	1962 (95.0)	1568 (94.7)	394 (96.1)	0.259
Prepared to care for pregnant women in area of alcohol abuse or dependency	790 (54.0)	584 (52.5)	206 (58.7)	0.042
Prepared to care for birth mothers in area of alcohol abuse or dependency	832 (55.2)	616 (53.2)	216 (61.9)	0.004
Prepared to access resources for pregnant women in area of alcohol abuse or dependency	1113 (70.9)	837 (69.3)	276 (76.2)	0.011
Prepared to access resources for birth mothers in area of alcohol abuse or dependency	1136 (70.8)	858 (69.2)	278 (76.2)	0.010

FAS = fetal alcohol syndrome.
*Responses provided by pediatricians (n = 689), psychiatrists (n = 365), midwives (n = 109), family physicians (n = 716) and obstetricians (n = 213); denominator varies due to number of responses received.
†Determined by the χ^2 test.
‡Agreement defined as "agree" and "strongly agree."

Table 3. Prevention issues related to preconception counselling*

Prevention issues	No. (%) of providers			*p* value†
	Overall	Urban	Rural	
Frequently discuss folic acid in decreasing neural tube defects among all women of childbearing age	437 (49.4)	316 (52.8)	121 (42.3)	0.001
Frequently discuss risk of smoking during pregnancy among all women of childbearing age	431 (48.7)	295 (49.5)	136 (47.1)	0.133
Frequently discuss risks of alcohol use during pregnancy among all women of childbearing age	352 (39.7)	234 (39.2)	118 (40.8)	0.072
Frequently discuss risks of drug use during pregnancy among all women of childbearing age	339 (38.3)	229 (38.4)	110 (38.1)	0.917
Frequently discuss birth control among all women of childbearing age	763 (86.1)	517 (86.5)	246 (85.4)	0.609
Frequently obtain a detailed history of sexual abuse among all women of childbearing age	118 (13.3)	79 (13.2)	39 (13.5)	0.952
Frequently obtain a detailed history of emotional abuse among all women of childbearing age	119 (13.4)	77 (12.9)	42 (14.6)	0.744
Frequently obtain a detailed history of alcohol use among all women of childbearing age	510 (57.8)	351 (59.0)	159 (55.4)	0.676
Frequently obtain a detailed history of addictions among all women of childbearing age	407 (45.9)	283 (47.3)	124 (43.1)	0.589
Frequently obtain a detailed history of family history of addictions among all women of childbearing age	214 (24.2)	148 (24.8)	66 (23.0)	0.353

*Responses provided by midwives (n = 109), family physicians (n = 716) and obstetricians (n = 213).
†Determined by the χ^2 test.

DISCUSSION

Our study represents the first national survey of providers from rural and urban areas across Canada in the area of knowledge, attitudes and practices related to alcohol use during pregnancy, preconception counselling and risk factors for FASD. Rural and remote health care providers face a unique set of challenges, and there have been many reported differences in both the population health status and medical practice patterns between urban and rural areas.[13] Rural and remote regions are often underserviced, both in terms of numbers of professionals and access to appropriate modern medical technology.[14,15] Residents in rural communities often have limited access to support services and fewer service alternatives, and often must travel farther than urban residents to receive health services.[22] Rural and remote areas are serviced by half as many physicians per 1000 population compared with urban centres.[23] For example, about 7% of Canadians live more than 25 km from the nearest physician, but two-thirds of the northern remote population live more than 100 km from a physician.[23] A lower proportion of rural and remote Canadians rated their health as "excellent" when compared with the national average. This rating may be attributed to numerous factors, including a higher prevalence of health risk factors such as physical inactivity, obesity and smoking, a lower self-reported degree of functional health (based on vision, hearing, speech, mobility, dexterity, feelings, cognition and pain), higher rates of certain chronic diseases and mental health issues, as well as a higher report of unmet health needs.[11,13,24]

In our study, rural health care providers were more likely than their urban colleagues to be younger, to be more recent medical school graduates (39.6%) and to practise in a group setting (60.6%). The majority of rural professional respondents in our study were family physicians (54.2%), and rural areas were less likely to have care provided by specialists such as pediatricians or obstetricians. Previous surveys have suggested family physicians are in greater supply in rural areas than are specialists, with nearly 16% of family physicians and slightly more than 2% of specialists providing care in rural areas. In Canada, for example, 1% of pediatricians, 3% of obstetricians and gynecologists, 2% of emergency medicine specialists and 3% of psychiatrists are located in small-town or rural areas servicing 21.1% of Canada's population.[25] This indicates that there is an opportunity for improvements to rural health care provision through the development

Table 4. Routinely included in patient interviews regarding alcohol use during pregnancy*

Interview points	No. (%) of providers			*p* value†
	Overall	Urban	Rural	
Agree with telling patients to drink in moderation‡	1234 (60.7)	994 (61.3)	240 (58.3)	0.261
Moderate drinks per occasion ≤ 2	1736 (90.9)	1388 (91.6)	348 (88.5)	0.044
Moderate occasions per week ≤ 3	1401 (74.3)	1122 (75.0)	279 (71.4)	0.160
Frequently discuss what patient thinks "in moderation" means	496 (48.8)	338 (48.1)	158 (50.2)	0.494
Recommend no alcohol during pregnancy	861 (87.3)	584 (86.8)	277 (88.5)	0.790
Ask all women who are pregnant if they are currently drinking alcohol	956 (93.5)	647 (91.9)	309 (97.2)	0.002
Use a standard tool to screen all prenatal patients for alcohol use	612 (63.4)	403 (60.6)	209 (69.4)	0.008
Drinking history of partner	210 (20.8)	137 (19.7)	73 (23.1)	0.214
Family history of alcohol abuse or dependency	536 (52.8)	365 (52.1)	171 (54.3)	0.527
Personal history of sexual abuse	336 (33.3)	233 (33.5)	103 (32.8)	0.822
History of addictions treatment	637 (63.4)	429 (62.1)	208 (66.5)	0.183
Quantity of alcohol intake	991 (97.3)	681 (97.0)	310 (98.1)	0.315
Frequency of alcohol intake	987 (97.3)	678 (97.0)	309 (98.1)	0.314
Personal history of binge drinking	739 (72.9)	495 (70.9)	244 (77.2)	0.037
Type of alcohol consumed	784 (77.3)	538 (76.9)	246 (78.3)	0.601
History of drinking prior to knowing about pregnancy	870 (85.9)	592 (84.9)	278 (88.0)	0.198
Evidence of alcohol-related birth defects in other children	399 (39.7)	264 (38.2)	135 (43.0)	0.146

*Responses provided by midwives (n = 109), family physicians (n = 716) and obstetricians (n = 213).
†Determined by the χ^2 test.
‡Dichotomous yes/no variable.

of alternative options, such as specialist outreach clinics or specialist telehealth sessions, which may alleviate the burden felt by family physicians in rural practice.[22] Telehealth sessions can range from a telephone call to a specialist to a session in which a specialist or specialist team joins a rural physician and patient by video conference.

Rural providers were less likely than urban providers to agree that it is the physician's role to manage alcohol-related health problems; however, they were more prepared to care for and manage client issues associated with alcohol misuse. Surveys from Canada, the United States and Australia have shown that rural family doctors offer a wider range of clinical procedures to meet the needs of rural populations.[25,26] Rural family physicians are significantly more likely to practise obstetrics, have intensive care unit privileges, care for patients in the emergency department and perform specialized procedures (e.g., sigmoidoscopy, colposcopy) than their urban colleagues.[27] This suggests that rural general practitioners may be more likely to believe that, although certain services may not be their primary role, they are among the few professionals in

Table 5. Practice patterns and knowledge about diagnosis and long-term outcomes associated with fetal alcohol syndrome*

Practice patterns and knowledge	No. (%) of providers†			*p* value‡
	Overall	Urban	Rural	
Practice patterns				
Have diagnosed FAS	658 (35.3)	54 (35.9)	118 (32.9)	0.280
Have cared for patient with FAS	939 (50.0)	736 (48.8)	203 (56.7)	0.003
Have suspected but not diagnosed FAS	905 (48.8)	734 (49.1)	171 (47.8)	0.659
Referred a patient to confirm diagnosis of FAS	638 (34.4)	497 (33.2)	141 (39.5)	0.025
Use a diagnostic schema	266 (14.4)	212 (14.3)	54 (15.1)	0.678
Used 4-Digit Diagnostic Code (of those using a schema)	63 (25.9)	44 (23.5)	19 (40.4)	0.020
Used American Academy of Pediatrics (of those using a schema)	107 (45.7)	90 (48.1)	17 (36.2)	0.143
Identified as characteristic features of FAS				
Flat philtrum	1346 (74.3)	1093 (74.5)	253 (73.5)	0.929
Thin upper lip	1252 (69.4)	1017 (69.8)	235 (67.7)	0.402
Short palpebral fissures	1155 (64.2)	944 (64.8)	211 (61.5)	0.255
CNS dysfunction	1602 (87.9)	1295 (87.6)	307 (89.0)	0.769
Prenatal growth deficiency	1463 (80.3)	1180 (80.1)	283 (81.3)	0.404
Agree combination of growth, brain and facial abnormalities provide the most accurate info about diagnosis of FAS	1032 (59.5)	831 (59.7)	201 (59.1)	0.481
Long-term secondary disabilities associated with FAS				
Long-term emotional disorders	1284 (70.9)	1025 (70.4)	259 (72.5)	0.448
Disrupted school experience	1239 (67.3)	999 (67.3)	240 (66.7)	0.732
Addictions	1133 (61.6)	898 (60.7)	235 (65.6)	0.110
Legal problems	1274 (69.3)	1012 (68.4)	262 (73.2)	0.028
Inappropriate sexual behaviour	647 (35.2)	499 (33.6)	148 (41.8)	0.003

CNS = central nervous system; FAS = fetal alcohol syndrome.
*Numbers may not add to total as some questions may not have been answered by all participants. Responses provided by pediatricians (n = 698), psychiatrists (n = 365), midwives (n = 109), and family physicians (n = 716).
†n = 1901.
‡Determined by the χ^2 test.

Table 6: Identified barriers to diagnosis and helpful supports*

Barriers to diagnosis	No. (%) of providers			*p* value
	Overall	Urban	Rural	
Making a diagnosis of FAS was within scope of practice	475 (25.2)	398 (26.1)	77 (21.2)	0.054
Agree many doctors do not make a diagnosis of FAS in their practice because of lack of time	419 (22.6)	306 (20.4)	113 (31.9)	0.001
Agree many doctors do not make a diagnosis of FAS in their practice because of lack of specific training	1181 (63.4)	927 (61.6)	254 (71.3)	0.001

FAS = fetal alcohol syndrome.
*Numbers may not add to total as some questions may not have been answered by all participants. Responses provided by pediatricians (n = 698), psychiatrists (n = 365), midwives (n = 109) and family physicians (n = 716).

the community, in cooperation with psychologists, social workers and substance abuse workers, qualified to perform those services, such as management of alcohol misuse and alcohol-related health problems. Rural providers may also feel more prepared to manage alcohol issues through accessing resources for women in the area of alcohol abuse or dependency. Rural providers were more likely than their urban counterparts to perceive literature, FAS training, improved access to referral resources or a registry of specialists, and improved clinical practice guidelines for diagnosis of FAS to be useful and helpful in their management of patients.[28] By developing clinical guidelines for the diagnosis of FAS, incorporating these guidelines into physician education and training, and developing and referring patients to standardized preconception counselling websites (30% of both rural and urban physicians never refer patients to relevant medical websites), health care providers may be better equipped to convey information to women of childbearing age.[29]

Rural providers in this study were also more likely to use a standard screening tool to screen prenatal patients for alcohol use. This is consistent with data from a recent US survey of obstetricians and gynecologists which found that those who use screening tools are more likely to be recent graduates and more likely to state that they are very prepared to assess alcohol use with their patients,[16] both of which were true of rural physicians. Standardized questionnaires, such as the CAGE, AUDIT, TWEAK, SMAST and T-ACE, have been developed to overcome the biases inherent in self-reporting and physician interview.[30] 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.[31] When comparing AUDIT, SMAST and T-ACE, the latter was the most sensitive screen for lifetime alcohol diagnosis, risk drinking and current alcohol consumption.[31,32]

Although the majority of both urban and rural providers (93.5% overall) ask pregnant women about current alcohol consumption, there are missed opportunities for identification of women potentially at risk by not screening for a history of abuse (now a standard practice in all emergency departments for all patients in the Calgary Health Region) or for a family history of addictions. It is important to address alcohol prevention strategies within the broader prevention/promotion framework advocated by Health Canada.[33] Of note, although 86% of urban and rural providers discussed birth control with all women of child bearing age, less than one-half frequently discussed the role of folic acid, smoking, alcohol, drug use or addictions history. Less than 15% of urban or rural providers frequently obtained a detailed history of sexual and emotional abuse, an important determinant of alcohol use in general and a risk factor for gynecologic problems.[34,35]

Although both urban and rural providers identified barriers to the diagnosis of FAS, rural providers were significantly more likely than urban providers to identify both a lack of time and a lack of specific training as barriers to the diagnosis of FAS and implementation of subsequent early intervention strategies. Rural physicians may be more likely to identify lack of time as a barrier because although they work about the same number of non-call hours per week as their urban counterparts, rural physicians spend more time on call, see more patients while on call and spend more of their on-call time providing medical services than do their urban counterparts.[25] Rural physicians in this study also cited lack of specific training as a barrier, which is consistent with data from a recent US survey that found rural physicians are often recent medical graduates and are more likely to indicate that more training in both the areas of pediatric care and high-risk obstetrics would be beneficial.[27] This has implications for the prenatal and perinatal care of alcohol-abusing women, as well as for the care and management of the affected child.

Limitations

Although every effort was undertaken to increase the response rate, including incentives, repeat mailing, Web-based survey completion and telephone follow-up, we achieved a final response rate of 41.5%.[36–39] Studies of physician responses to surveys have suggested that questionnaires with relatively low response rates (e.g., 40%) and for which systematic differences between responders and nonresponders are limited could be considered valid.[40] Indeed, comparisons of late responders, as a proxy for nonresponders, to early responders in physician surveys have revealed few differences with respect to demographics and practice characteristics such that nonresponse bias may be less of an concern in physician surveys than in surveys of the general public.[36] Indeed, with the exception of family physicians, a response rate greater than 40% was achieved across provider groups, which may be acceptable for physician surveys.[40,41]

CONCLUSION

Our study found that although many differences exist in the practice of urban and rural physicians in relation to FAS, strong similarities and appropriate practice standards were consistent regardless of setting. Although both urban and rural providers were acutely aware of the detrimental effects of alcohol on fetal development, there are opportunities for improvement in preconception counselling and screening, as well as for the diagnosis and care of patients affected by alcohol misuse and FAS, including additional physician training, increased use of screening questionnaires and improvements to telehealth and other additional supports for physicians practising in rural areas.

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