

“IF WE HAVE THE KNOWLEDGE, THEN THAT IS POWER TO HELP OUR
EXPECTANT MOMS”:
NORTHERN ONTARIO HEALTH CARE STUDENTS’ KNOWLEDGE AND ATTITUDES
ADDRESSING ALCOHOL CONSUMPTION DURING PREGNANCY

by

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of the requirements for the degree of
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Thesis Defence Committee/COMITÉ DE SOUTENANCE DE THÈSE

Abstract

The current document is a paper-based dissertation investigating health care professionals' knowledge, attitudes, and self-efficacy regarding fetal alcohol spectrum disorder (FASD) and alcohol consumption during pregnancy. This dissertation incorporates findings from a secondary data analysis of health care professionals in Ontario, as well as original data from health care students training in Northern Ontario. While previous research has demonstrated that health care professionals remain under-educated concerning FASD and alcohol use during pregnancy, limited research has investigated the knowledge and experiences of health care students. The first paper included is a secondary data analysis of the 2001-2002 Fetal Alcohol Syndrome Survey for Health Professionals. Ontario-specific data ($N=834$) were used to examine the awareness of FASD held by various provider groups in both rural and urban settings. Results from this study indicate that many physicians, midwives, and other health care professionals may have inconsistent knowledge regarding the impact of prenatal alcohol exposure, resulting in mixed messages for women of childbearing age about the safety of alcohol use during pregnancy. The second paper included is a qualitative analysis of scenario-based vignettes regarding alcohol use during pregnancy. Although almost all students ($N=21$) recognized that no alcohol consumption during pregnancy is the safest recommendation, many students noted that this advice is not always conveyed to pregnant women. Finally, the third paper included is also a qualitative analysis based on a thematic analysis of scenario-based vignettes and semistructured interviews. The third paper explores health care students' ($N=21$) attitudes and beliefs about women who may continue to consume alcohol throughout their pregnancy and presents the often stereotypical and stigmatic perceptions of FASD and alcohol use during pregnancy held by health care

professionals. Recommendations and implications for increasing students' and professionals' knowledge and self-efficacy regarding FASD management and prevention are discussed.

Keywords:

Fetal alcohol spectrum disorder, developmental disability, alcohol, qualitative, vignettes, Northern Ontario, health care students, health care professionals, prevention, health behaviour, self-efficacy, women's health

Statement of Co-Authorship

I declare that this thesis includes materials that are the result of joint research collaborations. The following includes a list of the publications containing material produced in this thesis, with the nature and scope of work from co-authors.

Coons, K. D., Clement, A. L., & Watson, S. L. (in press). Are rural and urban Ontario health care professionals aware of fetal alcohol spectrum disorder? A secondary data analysis of the Fetal Alcohol Syndrome Survey for Health Professionals. *Journal on Developmental Disabilities*.

K. D. Coons was responsible for the inception of this project. She developed the research questions, acquired the data, conducted the data analysis, and wrote the majority of this manuscript.

A. L. Clement was responsible for supporting the primary investigator (K. D. Coons) and her supervisor (S. L. Watson). She assisted with data analysis and table creation, and contributed to the writing of this manuscript. She provided feedback on several drafts of this article.

S. L. Watson was the doctoral supervisor and provided thoughtful feedback and revisions on several drafts of this article. She contributed significantly to the writing of this manuscript.

I am aware of Laurentian University's Policy on Authorship and I certify that I have properly acknowledged the contribution of other researchers to my thesis. I have obtained written permission from each of the co-authors to include the above materials in my thesis.

I certify that this thesis, and the research to which it refers, is the product of my own work.

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Chapter 1: Introduction

Prenatal exposure to alcohol is a preventable cause of disability that is now considered to be the foremost cause of developmental disability in the Western world (Public Health Agency of Canada, 2005a, 2011). Fetal Alcohol Spectrum Disorder (FASD) has been identified as a major public health concern in Canada, and accordingly there is a need for accurate dissemination of information about the potential negative outcomes associated with alcohol use during pregnancy. FASD is an umbrella term that is used to describe a continuum of effects associated with prenatal exposure to alcohol. Health care providers, such as physicians, midwives, and nurse practitioners, play a significant role in the prevention of FASD through prevention messaging, as well as their support in educating women about low-risk drinking guidelines and the risks of alcohol use during pregnancy. While survey results of health care providers across Canada indicate that almost all are aware of FASD, many providers still do not consistently discuss the risks of alcohol use during pregnancy with all women of childbearing age (Canada FASD Research Network, 2013; Public Health Agency of Canada, 2005b). Furthermore, while the knowledge, awareness, and attitudes of Canadian health care providers has been explored, limited research has examined the experiences of health care professionals in the Province of Ontario.

1.1 Fetal Alcohol Spectrum Disorder

Previously, the term FASD was used to describe a range of conditions including fetal alcohol syndrome (FAS), fetal alcohol effects (FAE), partial FAS (pFAS), and alcohol related neurodevelopmental disorder (ARND; Stade et al., 2009; Streissguth et al., 2004). However, the Canadian guidelines for FASD diagnosis were updated in 2015. FASD is now a diagnostic term that refers to an assortment of presentations and impairments resulting from prenatal alcohol

exposure which include: physical, behavioural, emotional, adaptive, and neurocognitive disabilities (Cook et al., 2015; Pei, Tremblay, McNeil, Poole, & McFarlane, 2017). Potential diagnoses now include FASD with or without sentinel facial features (i.e., short palpebral fissures, smooth philtrum, and thin upper lip). The Canadian guidelines for diagnosis across the lifespan also now include an at-risk category identifying individuals who may have a confirmation of prenatal alcohol exposure but who do not necessarily meet the threshold for an FASD diagnosis (e.g., severe impairments on a standardized neurodevelopmental measure), or those who have all three sentinel facial features, but who do not have documentation or evidence of the neurodevelopmental impairments (Cook et al., 2015).

Individuals with FASD face serious challenges because of cognitive and behavioural deficits, such as attention problems, cognitive impairments, and memory deficits. As a result of these primary disabilities, individuals with FASD have increased vulnerabilities for further complications, termed secondary disabilities (Streissguth et al., 2004). These secondary disabilities include mental health issues, legal problems, disrupted school experiences, inappropriate sexual behaviour, and addiction or substance use problems (Clark, Lutke, Minnes, & Ouellette-Kuntz, 2004; Streissguth et al., 2004). Both primary and secondary disabilities can pose significant challenges for individuals with FASD, their families, communities, and health care professionals.

Estimates for the prevalence of FASD are relatively unknown due to challenges with the diagnostic process. A number of ‘diagnostic dilemmas’ influence reported FASD prevalence rates, including challenges with changing diagnostic criteria (e.g., updated guidelines, different diagnostic tools in different countries) and changing facial characteristics (e.g., less pronounced facial characteristics over time), inconsistencies in the level of understanding of the disability, as

well as the stigmatization of the label of FASD for both families and children (Chandrasena, Mukherjee, & Turk, 2009). There are no national statistics on the prevalence rates of FASD in Canada, although the generally accepted prevalence rate is approximately 1 in 100, translating to more than 330,000 individuals in Canada (Cook et al., 2015).

Researchers who have estimated the prevalence of FASD have reported an approximate rate of 1 to 6 per 1,000 live births in the general population (Stade, Stevens, Ungar, Beyene, & Koren, 2006), with some estimates as high as 9.1 per 1,000 live births in both Canada and the United States (Alberta Alcohol and Drug Abuse Commission, 2004; Chudley et al., 2005). One study in an isolated, Aboriginal community in British Columbia estimated the prevalence of FASD to be 190 per 1000 live births (Robinson, Conry, & Conry, 1987). Two additional studies in Manitoba estimated the prevalence of FASD to be 7.2 per 1,000 in one community (Williams, Odaibo, & McGee, 1999) and 55 to 101 per 1,000 in a First Nations community (Square, 1997). However, early prevalence studies were often limited in their scope, and changing diagnostic criteria and terminology continue to make determining accurate prevalence rates difficult. A recent systematic review of quantitative, international research conducted by Popova, Lange, Probst, and Rehm (2017) estimated that one in every 67 women who consumed alcohol during pregnancy would give birth to a child with FAS. Additionally, a recent study examining the prevalence and characteristics of FASD among first grade students in a representative Midwestern United States community revealed that as many as 1 in 20 children may have an FASD, indicating that FASD may be more prevalent among children than previously predicted (May et al., 2014).

Due to these diagnostic dilemmas, researchers have suggested that the numbers may be drastically underestimated in North America (May, 2017; May & Gossage, 2001; Olson, Oti,

Gelo, & Beck, 2009). For example, researchers in Alberta, Canada attempted to estimate the incidence and prevalence of FASD by age. The prevalence of FASD was highest in the youngest age group (32.7 per 1,000) and lowest in the second highest age group (40 to 49; 3.9 per 1,000; Thanh, Jonsson, Salmon, & Sebastianski, 2014), potentially indicating that the incidence of FASD is increasing in Alberta, Canada or that the incidence rates of FASD may be underestimated due to the short follow-up time (e.g., ten years). The incidence of FASD in Alberta is estimated to be at least 44 per 1,000 births, with a reported prevalence rate of 11.7 per 1,000 (Thanh et al., 2014). These findings suggest that new incidence and prevalence of FASD is higher than commonly cited (e.g., 1%; Stade et al., 2006).

Given the difficulty in determining how prevalent alcohol related disabilities may be, it is not surprising that health care providers remain confused about the existence of FASD and the potential consequences of alcohol use during pregnancy. The existing literature is contradictory regarding the level of knowledge and awareness of FASD demonstrated by health care professionals, with some studies indicating that family physicians and psychiatrists may have a good overall general knowledge of FASD, and others indicating that professionals, such as general practitioners, nurses, psychologists, and obstetricians, frequently lack knowledge in critical areas, such as FASD identification, long term outcomes of prenatal alcohol exposure (e.g., secondary disabilities), diagnostic criteria, and alcohol use screening tools (Anderson et al., 2010; Brimacombe, Nayeem, Adubato, DeJoseph, & Zimmerman-Bier, 2008; Caley, 2006; Mengel et al., 2006; Peadon, O'Leary, Bower, & Elliott, 2007; Wedding et al., 2007). Few studies examining medical students' knowledge, awareness, and self-efficacy in relation to FASD exist (Arnold et al., 2013; Walter & Kerr, 2011). Furthermore, these studies are based on American medical curricula. While the Centers for Disease Control and Prevention (CDC) has

seven core competencies for FASD practice (Brems, Boschma-Wynn, Dewane, Edwards, & Robinson, 2010; Centers for Disease Control and Prevention, 2009), no such guidelines exist in Canada. Due to the drastically underestimated numbers of FASD in North America, it is imperative that future Northern Ontario health care professionals have an adequate knowledge of FASD and a strong sense of self-efficacy in their personal capacity to engage with individuals with FASD and their families, as health care professionals remain at the forefront of primary, secondary, and tertiary prevention activities across Canada's four levels of prevention (Centers for Disease Control and Prevention, 2009; Dewane, 2010; Poole, 2008; Public Health Agency of Canada, 2005b).

1.2 Literature Review

The following section provides an overview of the relevant literature as it pertains to the scope of this dissertation. Specifically, the following section includes an overview of three critical areas: the lack of knowledge, awareness, and understanding of FASD demonstrated by health care providers, the provincial and national policy landscape related to addressing and preventing FASD, and the cultural, rural, and Northern Ontario context as it relates to the present research.

1.2.1 Lack of Knowledge, Awareness, and Understanding of FASD

National survey results suggest that Canadian health care providers require further training and education regarding both individuals at risk for having a child with FASD and for individuals with FASD, as well as their families (Clarke, Tough, Hicks, & Clarren, 2005; Public Health Agency of Canada, 2005b; Tough, Clarke, Hicks, & Clarren, 2005a;). In particular, findings suggest health care professionals need assistance in making accurate diagnoses and

referrals (Clarke et al., 2005; Public Health Agency of Canada, 2005a; Tough et al., 2005a). Only 60% of health care providers surveyed in two studies accurately recognized the most correct information about a diagnosis of FAS (e.g., a combination of growth, brain, and facial abnormalities (Clark et al., 2004; Public Health Agency of Canada, 2005a), therefore health care professionals require better training on the diagnostic features of FASD.

Health care professionals play a critical role in the prevention of FASD, particularly through guidance regarding alcohol use and consumption during pregnancy. Women of childbearing age should be informed of the risks of alcohol consumption during pregnancy before becoming pregnant, but challenges exist if health care providers are unaware of recommended clinical practice guidelines. For example, the Public Health Agency of Canada (2005a) recommends a better implementation strategy of the existing clinical practice guidelines and advocate that no alcohol be consumed during pregnancy. These suggestions mirror the current recommendations of the Canadian Centre on Substance Abuse (Finnegan, 2013) for Canada's Low Risk Drinking Guidelines, developed by Butt and colleagues (Butt et al., 2011). However, Canadian results suggest that less than half of family physicians discuss the risks of alcohol use, drug use, or smoking during pregnancy with women of childbearing age (Tough et al., 2005a). Improvements in information exchange between health care professionals and patients about key health issues are also warranted, in particular clarifying the definition of moderate alcohol consumption and the use of alcohol and drugs during the prenatal period and/or pregnancy. Less than half of health care professionals report frequently discussing these issues with women of childbearing age (Public Health Agency of Canada, 2005a).

Providing clear and consistent information to women is also critical (Raymond, Beer, Glazebrook, & Sayal, 2009), as a "faulty information delivery system" (Anderson, Hure, Kay-

Lambkin, & Loxton, 2014, p. 5) between the provider and the patient can lead to varying perceptions and interpretations about 'safe levels' of alcohol consumption during pregnancy. Anderson et al. (2014) found that when women received multiple and conflicting information regarding alcohol use during pregnancy, they created a hierarchy of information, often relying on health care providers to explain these discrepancies. Women not only view their health care provider as a reliable source of information, but also believe they hold expert knowledge (Anderson et al., 2014).

Parents and caregivers often perceive health care professionals to be uneducated regarding FASD when they attempt to obtain answers about their child's challenges or seek out information (Coons, Watson, Yantzi, & Schinke, 2016). Because of this perceived lack of awareness, parents and caregivers feel as if they have no one to turn to for answers about how to best support their children (Coons, Watson, Schinke, & Yantzi, 2016; Coons, Watson, Yantzi, et al., 2016). As a result, many parents recommend the need for education of professionals (Coons, Watson, Yantzi, et al., 2016). Particularly, families have emphasized the need to begin educating individuals about FASD early and propose adding more information about FASD to university, medical, and teacher's college school curricula (Coons, Watson, Yantzi, et al., 2016). These recommendations are not surprising, given that they reflect existing findings in the FASD literature. For example, in the United States, developing educational programs to help health care professionals prevent and treat individuals with FASD has become a public health priority (Caley, 2006; Centers for Disease Control and Prevention, 2009).

While existing studies have attempted to examine the level of knowledge of FASD (e.g., depth and breadth of knowledge) demonstrated by health care professionals, there are a number of challenges with the existing body of literature that need to be addressed. Firstly, the majority

of studies examining health care professionals' knowledge of FASD rely heavily on survey methods. Few studies have employed the same survey instrument, complicating comparisons across the studies. Secondly, the majority of these studies report very low response rates and have small sample sizes, which limits the generalizability and implications of the results to other professional populations or countries (e.g., studies from Canada, the United States, and Australia). Thirdly, because of the varied use of survey tools, there are discrepancies with changing terminology that confound the results of the studies. For example, while most studies are described as addressing knowledge of FASD, most studies in fact assess knowledge of FAS (e.g., physical diagnostic criteria and visible facial characteristics; Brimacombe, Aduato, Cohen, Wilson, & Lamendola, 2005; Brimacombe et al., 2008). In addition to the changing terminology, most survey tools used do not employ an operational definition of "knowledge," which raises questions regarding what knowledge health care professionals do have and what knowledge they should have. In some instances, knowledge of FASD equates only to knowledge of the diagnostic criteria for FAS. However, knowledge of FASD should stem beyond being able to diagnose and should also consider knowledge and comprehension of the effects of secondary disabilities. In other situations, knowledge of FAS or FASD equates to a general knowledge of the existence of the syndrome or disorder. Other studies have also assessed knowledge regarding the basic science, clinical signs, symptoms, and epidemiology of FAS (Gahagan et al., 2006). Lastly, to the author's knowledge, only two studies exist examining medical students' knowledge, awareness, and self-efficacy in relation to FASD (Arnold et al., 2013; Walter & Kerr, 2011), and only a handful of studies include nurses (Brimacombe et al., 2008; Caley, 2006), and midwives (Gilinsky, 2009; Payne et al., 2014). To the author's knowledge, no studies include nurse practitioners. Each of these studies are briefly discussed.

Arnold et al. (2013) assessed the knowledge and screening practices of pre-clinical medical students (fourth year medical students) and clinical providers (resident physicians) from a Washington, DC medical school on FAS, FASD, and alcohol consumption ($n=55$). Results of this cross-sectional survey study indicated that only 38% of clinical provider respondents stated that they always ask pregnant women about their alcohol consumption and 50% of the medical student respondents reported that they screen pregnant patients for alcohol consumption. When questioned about their perceived belief regarding safe amounts of alcohol consumption during pregnancy, 65% of medical students and 67% of clinical providers stated that there is no safe amount of alcohol consumption, indicating that both trainees and healthcare professionals require further information regarding FASD. Walter and Kerr (2011) also used a cross-sectional survey method and administered a questionnaire to third year medical students in the United States ($n=259$) to assess their knowledge and self-efficacy in counselling and screening alcohol use among pregnant women. The results of this study indicated that while most participants were knowledgeable about the health risks associated with consuming alcohol while pregnant, they were less knowledgeable about self-help, group support, and treatment programs available to patients. Findings further demonstrated that mean levels of knowledge, counselling self-efficacy scores, and screening self-efficacy scores were low, indicating that medical students have a dearth of knowledge and perceived self-efficacy in counselling and screening pregnant women for alcohol use (Walter & Kerr, 2011).

Brimacombe and colleagues (2008) included nurses and nursing students among a larger sample of health and allied health professionals in New Jersey ($n=126$). In this study, pre- and post-tests were administered following a quasi-experimental study of an FAS educational program. Results for the nurses and nursing students indicated significant increases in knowledge

regarding: safe amount of alcohol; whether screening women of childbearing age should be mandatory; FAS-related disabilities; issues related to secondary disabilities; and the importance of a team approach to assess and manage individuals suspected of having a FASD. Caley (2006) also conducted a small study with 25 school nurses in New York State. All respondents in this study knew that pregnant women or women planning to become pregnant should abstain from consuming alcohol; however, few nurses recognized the association between prenatal alcohol exposure and infantile withdrawal symptoms, addictions, and ADHD. Furthermore, the majority (64%) reported that they had not suspected a patient of having FAS, had not recognized a patient as having FAS (76%), had diagnosed no patients as having FAS (76%), had referred no patients to confirm FAS (84%), and had cared for no children with FAS (80%).

Finally, Payne et al. (2014) and Gilinsky (2009) examined midwives' knowledge, attitudes, and practices regarding alcohol exposure and the risk of FASD in Western Australia and the United Kingdom, respectively. Findings from Gilinsky (2009) indicate that midwives are not fully confident in their ability to advise women regarding alcohol consumption. Additional individual, semistructured interview research with midwives in New South Wales indicated that midwives may ask women at the initial antenatal visit about how much and how often they consume alcohol (Jones et al., 2011), but may be reluctant to discuss the risks of prenatal alcohol exposure to the fetus because they do not want to distress women. However, findings from Payne et al.'s (2014) cross-sectional questionnaire research study in Western Australia indicate that midwives may be better prepared to educate and counsel pregnant women. Findings from their study showed that 93.2% of midwives asked pregnant women about their alcohol consumption. 99.4% reported advising pregnant women that not drinking is the safest option. Unfortunately, around half of midwives also reported that asking about alcohol consumption during pregnancy

could distress or anger the pregnant woman, cause anxiety and guilt in the pregnant women, and lead the women to feel judged. These findings demonstrate that despite knowledge regarding the need for screening and counselling, stigma related to FASD may also be present in the midwife population.

Research conducted with health and allied health professionals has revealed a discrepancy between FASD knowledge and application of that knowledge (Brems et al., 2010) that Wedding et al. (2007) have referred to as a chasm (i.e., the gap between published clinical practice guidelines and physicians' knowledge of these practices). Interviews with health and allied health professionals reveal that respondents feel limited in their abilities to turn knowledge of FASD into successful prevention, intervention, and treatment activities (Brems et al., 2010). A specific example of an application gap given by health care professionals included understanding the meaning and importance of behaviours of individuals with FASD, specifically understanding that lateness was not caused by the individual being wilfully defiant, but rather because of their organic brain damage (Brems et al., 2010). Consequently, participants in Brems and colleagues' (2010) study recommended the addition of practicums for students in health care programs to include working with an individual with FASD or a diagnostic team, as well as case-based learning examples. However, according to Arnold et al. (2013), medical school curricula vary widely in their educational practices about FASD (e.g., knowledge requirements, amount of teaching on FASD).

Research from Zoorob, Aliyu, and Hayes (2010) examined the time devoted and format of FAS curricula in a medical college in the United States and found that 34% of pre-doctoral directors and 61% of residency directors reported the inclusion of FASD in their curriculum. The most common teaching format for both pre-doctoral and residency programs were formal

conference lectures. The majority of pre-doctoral programs (61%) and residency programs (71%) had less than 25% of faculty members teaching about FASD. Furthermore, the results also indicated that there was a preference for case-based learning scenarios, and both pre-doctoral and residency program educators agreed that a need exists for the inclusion of FASD in their curricula (Zoorob et al., 2010). For these reasons, researchers provided suggestions for a standardized, brief package curriculum on FASD (Arnold et al., 2013).

Although some studies have examined medical students' knowledge of FASD, no studies, to the author's knowledge, have examined nurse practitioner or midwifery students. The inclusion of other primary care providers, such as nurse practitioners and midwives, is critically important, given their scopes of practice in relation to FASD. Nurse practitioners play an influential role in FASD prevention, management, and education, as they can identify high-risk women and their partners before a pregnancy occurs, they can work with caregivers to facilitate early identification and prompt referral for diagnosis, they can utilize evidence-based interventions to prevent secondary disabilities, and they can support both children and adults with FASD (Caley, Shipkey, Winkelman, Dunlap, & Rivera, 2006; Quick, 1996). Additionally, nurse practitioners can have an impact on the prevalence of FASD through educating their patients about FASD and the risks of alcohol consumption during pregnancy, and facilitating public awareness through educational efforts with individuals, families, and communities (Quick, 1996). Furthermore, midwives are specialists in normal, low-risk pregnancies whose primary role is to take care of pregnant women and their babies throughout antenatal care, during labour and birth, and for the six weeks following birth (Association of Ontario Midwives, 2017). In addition to physicians and nurse practitioners, midwives also play a dominant role in FASD prevention and are a key resource for informing women about the risks and consequences of

alcohol consumption during pregnancy. Therefore, conducting research into the current level of understanding held by health care students, particularly medical students, nurse practitioner students, and midwifery students, is warranted.

1.2.2 A Lack of Policy

Health care concerns, policies, and plans within each of Canada's health systems are molded by the ideological and political climates specific to each province and territory (Raphael & Bryant, 2006). Canadians expect their health system to guarantee them comparable access to similar services of equal quality, regardless of where they live (Romanow, 2002). However, in specific relation to FASD, access to services may be varied as provinces and territories hold differing views regarding the priority of addressing FASD (Government of Alberta, 2008, 2011; Government of British Columbia, 2003, 2008; FASD ONE, 2010a, 2010b, 2010c). Furthermore, the size and scope of the existing services and resources that support individuals with FASD and their families in a number of areas (e.g., health care, education, employment, housing, legal) vary across the country (Government of Canada, 2007).

A lack of awareness regarding FASD has contributed to a challenging policy climate in both Ontario and Canada. In 1996, the Government of Canada, in conjunction with a number of national associations, medical associations, and other active groups, published a *Joint Statement on Prevention of Fetal Alcohol Syndrome and Fetal Alcohol Effects (FAS/FAE) in Canada* recognizing FASD as a national health concern (Government of Canada, 2007). As a result of this joint statement, in 1999 the federal government allocated \$11 million over three years to FASD in the federal budget, with \$5 million on-going annually (Government of Canada, 2007). In 2000, the Government of Canada also created a federal, provincial, and territorial agreement on early childhood development. Ontario was part of this agreement, and identified FASD as a

priority and increased their support to those affected by FASD (Government of Canada, 2007). Because of these initiatives, strategic planning process meetings and a series of consultations were held regarding FASD.

Unfortunately, no policy document addressing the strategic priorities for preventing and managing FASD currently exists in Ontario (though a provincial strategy has recently been released); however, there are a number of relevant policies and recommendations that are important to note in relation to FASD, including Sandy's Law (Alcohol and Gaming Commission of Ontario, 2017), Canada's Low Risk Drinking Guidelines (Butt et al., 2011), Bill C-227, Fetal Alcohol Spectrum Disorder: A Framework for Action (Public Health Agency of Canada, 2005a), and The International Charter on Prevention of Fetal Alcohol Spectrum Disorder (Jonsson, Salmon, & Warren, 2014).

In Ontario, as part of the *Liquor Licence Act*, there is a mandatory signage requirement that certain premises (i.e., restaurants/bars licensed to sell alcoholic beverages; LCBO stores, The Beer Store, and other authorized retailers; and licensed ferment on premise facilities) must post signs warning that drinking alcohol during pregnancy can cause FASD (Alcohol and Gaming Commission of Ontario, 2017). While the intention of the legislation is to address the risks of FASD, the sign does not explicitly state that drinking during pregnancy can cause FASD; rather, it states that alcohol during pregnancy can cause birth defects and brain damage. In Canada, the Canadian Centre on Substance Abuse has developed Canada's Low Risk Drinking Guidelines to help Canadians decide when, where, why, and how they should drink (Butt et al., 2011). According to these guidelines, a standard drink is defined as: 131 ml (12 oz) of 5% alcohol content beer, 341 ml (12 oz) of 5% alcohol content cider/cooler, 142 ml (5 oz) of 12% alcohol content wine, and 43 ml (1.5 oz) of 40% alcohol content distilled alcohol (Butt et al.,

2011). In addition to recommendations about safe drinking behaviours in general, the guidelines identify that if you are pregnant or planning to become pregnant, ‘zero is safest’.

Furthermore, in September 2013, the first international conference focusing on the prevention of FASD was held in Edmonton, Alberta, Canada. As an outcome of that conference, an international charter on the prevention of FASD was produced, endorsed, and adopted by more than 700 people from 35 countries around the world calling on governments to act to raise awareness of FASD and the risks of alcohol use during pregnancy, and to prevent this disability (Jonsson et al., 2014). As has been highlighted previously, one major obstacle to the prevention of FASD is the lack of awareness of FASD and the risks associated with women drinking throughout pregnancy. The charter calls on governments to promote consistent, evidence-based messages about prevention by supporting the development and circulation of public health information that is both clear and consistent. According to the charter, action should focus on information about the risks of alcohol use during pregnancy, access to reliable contraceptives, and help to deal with addiction and abstinence from alcohol during pregnancy. However, these actions require both knowledge and mobilization on the part of health care professionals, which could be challenging if there is a lack of knowledge of FASD. These actions have direct implications for the practices of health care professionals, who may feel unprepared to deal with the realities of FASD or may feel as though these actions fall beyond their scope of practice (Regulated Health Professions Act [RHPA], 1991).

Furthermore, the complex realities of FASD require that successful prevention (and management) strategies be created and addressed within the larger social determinants of health (Badry, 2009; Jonsson et al., 2014; Public Health Agency of Canada, 2005a). Jonsson et al. (2014) have called for policies that are related to the social determinants of health to overtly

address FASD, as well as the lifespan implications for the individual, the family, and society. It has also been argued that the prevention of FASD should be given a larger role in the development of alcohol policies (Jonsson et al., 2014). However, this is also a problematic issue, as Ontario does not currently have any provincial policy for responsible alcohol use (Centre for Addiction and Mental Health, 2013; Centre for Addiction and Mental Health Promotion Resource Centre & Ontario Agency for Health Protection and Promotion, 2013; Giesbrecht & Wettlaufer, 2013; Rempel, 2012; Office of the Premier, 2015). While Ontario may be perceived to be lagging, some regions of Canada have well-developed, comprehensive strategic provincial plans to address FASD (e.g., Government of Alberta, 2008, 2011, 2013; Government of British Columbia, 2003, 2008;).

Most importantly, because of a demonstrated lack of understanding amongst the general population and professional population, the Public Health Agency of Canada (2005a) created Fetal Alcohol Spectrum Disorder: A Framework for Action. Of their five broad goals, the first goal of the framework is to increase public and professional understanding of FASD and the impact of alcohol use during pregnancy (Public Health Agency of Canada, 2005a). This guideline is important, as professionals have different thoughts about their directives to patients and their personal thoughts about alcohol consumption during pregnancy. A lack of follow-up research about how to improve professional knowledge and awareness of FASD and a lack of implementation of recommendations have contributed to a lack of policy to combat FASD. The official position of the Public Health Agency of Canada is that “there is no safe amount, and no safe time, to drink alcohol during pregnancy” (Public Health Agency of Canada, 2014, ¶5).

In 2010, the Journal of Obstetrics and Gynaecology of Canada, in conjunction with the Canadian Association of Midwives, the Association of Obstetricians, the College of Family

Physicians of Canada, and the Society of Rural Physicians of Canada, published the Alcohol Use and Pregnancy Consensus Guidelines (The Society of Obstetricians and Gynaecologists of Canada, 2010). The Society of Obstetricians and Gynaecologists of Canada (SOGC) refer to themselves as the ‘official voice of reproductive health care in Canada’ (SOGC, 2010, p.1). In the clinical guidelines, the SOGC determined that there is evidence that alcohol consumption during pregnancy can cause fetal harm. However, the SOGC concluded that there is insufficient evidence regarding fetal safety or harm at low levels of alcohol consumption during pregnancy (SOGC, 2010). As defined by the SOGC (2010), low-risk drinking in these guidelines was in line with Canada’s Low Risk Drinking Guidelines and included: “no more than 2 standard drinks on any one day; no more than 9 standard drinks a week for women; and no more than 14 standard drinks a week for men” (p. S4). However, these guidelines were also cited as not applying to women who were pregnant, trying to get pregnant, or breastfeeding. While the SOGC does recommend that abstinence is the cautious choice for a woman who is or might become pregnant, considerable debate still exists regarding low levels of alcohol consumption during pregnancy, which leads to confusion between research evidence and suggested practices. As of 2017, these SOGC guidelines were reaffirmed for another five years (Cook, 2017).

Additionally, the authors of the recently updated Canadian guidelines for diagnosis also acknowledge that the current evidence to support a recommendation of safe levels of prenatal alcohol exposure does not exist (Cook et al., 2015, Appendix). It is also important to note that units of alcohol, including definitions of standard drinks, differ across studies and countries, making it difficult to establish a ‘safe’ threshold of alcohol use (Cook et al., 2015, Appendix). Currently, seven standard drinks a week has been cautiously suggested as a possible threshold for prenatal alcohol exposure (Cook et al., 2015, Appendix) as researchers have noted that

adverse neurodevelopmental outcomes have not *yet* been shown to occur with exposure below seven standard drinks a week (Jacobson & Jacobson, 1994).

The Canadian Paediatric Society also has a position statement on FAS (First Nations and Inuit Health Committee & The Canadian Paediatric Society, 2002), which recommends that more research is required in order to develop a better understanding of the most effective FASD prevention and intervention strategies for individuals across the lifespan. They concluded that paediatricians need to continue to advocate for improved services for Canada's most disadvantaged children (First Nations and Inuit Health Committee & The Canadian Paediatric Society, 2002). The Registered Nurses' Association of Ontario (RNAO) has also recently brought attention to FASD with their submission to the Select Committee on Developmental Services, where they highlight that a provincial strategy to address FASD is required (RNAO, 2014), indicating that they are aware of the issues and challenges related to FASD.

The Province of Ontario is still set to unveil the specifics of their first provincial strategy to address FASD (Ontario Ministry of Children and Youth Services, 2015), which has been developed by the Ontario Ministry of Children and Youth Services in conjunction with round table meetings with expert researchers in the field (Cobb, 2016; Ontario Ministry of Children and Youth Services, 2016). It was expected that the provincial strategy would focus on awareness and prevention, screening, assessment, and diagnosis, programs and services, support for families and caregivers, and decreasing the stigma associated with FASD and alcohol use during pregnancy (Cobb, 2016; Ontario Ministry of Children and Youth Services, 2015). As of early April 2017, the Ontario government had vowed to have a funded, multi-ministerial strategy in place before the end of their current mandate (Cobb, 2017). On April 27, 2017, the Ontario government announced their FASD Strategy preventing FASD and supporting those affected by

FASD, including an investment of \$26 million over four years. The Ontario government will support six initiatives that will: provide funding for 56 FASD workers to support approximately 25,000 Ontarians with FASD; support parent support networks; increase access to FASD initiatives developed by Indigenous partners; establish a consultation group to provide advice and feedback to inform implementation planning and prioritization of efforts; and create a research fund and invest in knowledge mobilization (Fetal Alcohol Resource Program, 2017; Liberal Caucus Service Bureau, 2017; Ministry of Finance, 2017; Neal, 2017).

Policy makers should be particularly interested in addressing policy related to FASD due to the substantial financial burden of FASD on families, communities, and government. A recent study examining the cost of children (0-18) in care with FASD estimated the total cost in Ontario to be between \$15,929,201 and \$54,545,446 and the total cost in Canada to be between \$57,917,032 and \$198,321,958 (Popova, Lange, Burd, & Rehm, 2014). Additionally, given their secondary disabilities, including a propensity for substance use, individuals with FASD constitute a special population that may place an added burden on the health care system. In 2010-2011, the cost of specialized addiction treatment services for individuals with FASD in Canada, extrapolated from data in Ontario, was estimated to range from \$1.65 million to \$3.59 million based on 5,526 outpatient visits and 9,529 resident days (Popova, Lange, Burd, Urbanoski, & Rehm, 2013). In addition to the cost to society, FASD also results in a substantial personal and individual impact, particularly for parents, caregivers, and siblings of individuals with FASD (see Belanger, 2017; Coons, Watson, Yantzi, et al., 2016; Hughes, 2015; Watson, Coons, & Hayes, 2013; Watson, Hayes, Coons, & Radford-Paz, 2013; Watson, Hayes, Radford-Paz, & Coons, 2013). Family members often experience increased stress because of a multitude of factors, including a lack of community support and problematic child behaviours.

Unfortunately for families, these behaviour problems are typically attributed to poor parenting (Caley, Winkelman, & Mariano, 2009), contributing to additional stressors in the family unit and difficulties managing these stressors (Coons, Watson, Yantzi, et al., 2016). Parents, caregivers, and siblings therefore require additional support to adjust and adapt to their family environments.

1.2.3 Cultural, Rural, and Northern Ontario Context

There are a number of biological, psychological, and sociological determinants of health that are important when discussing FASD, including: family violence; poverty; lack of knowledge of strategies for coping with stress; the role of alcohol in society; social pressures to drink alcohol; and poor knowledge about the impact of alcohol (Coons, 2013a). However, another important determinant of health is geography, particularly in relation to rural health (Kulig & Williams, 2012; Loue & Quill, 2001). Findings from Shields and Tremblay's (2002) case-control study, examining estimates at the community (classified into peer groups) level of life expectancy and disability-free life expectancy, demonstrated that individuals living in northern, remote communities were the least healthy of individuals in their study. Smoking, obesity, and alcohol consumption rates in these northern communities were above the Canadian averages, and higher daily smoking and heavy drinking rates were associated with shorter life expectancies. Conversely, individuals living in large metropolitan areas and urban centers had longer life expectancies and disability-free life expectations (Shields & Tremblay, 2002). Compared to their urban counterparts, rural Canadians continue to have poorer health outcomes and shorter life expectancies (Canadian Institute for Health Information, 2006; DesMeules et al., 2012; Kondro, 2006). However, more recent findings from Gauthier, Lariviere, Pong, Snelling, and Young (2012) indicate that geographic location alone may not be the only important determinant in health status, but little is known about individuals with intellectual developmental

disabilities in rural regions (Ouellette-Kuntz, 2012). It is clear that the experience of rural health is complex, and it is unclear if and how these factors influence those living with FASD.

Rural and urban differences may also be relevant in this study because prevalence rates of FAS have been found to be highest in rural and remote communities (Tough, Ediger, Hicks, & Clarke, 2008; Viljoen, Croxford, Gossage, Kodituwakku, & May, 2002). Tough et al. (2008) examined differences between rural and urban health care providers in Canada in relation to their knowledge of, attitudes about, and awareness of FASD and preconception counselling practices. Despite few differences between rural and urban care providers' general knowledge and diagnostic knowledge of FASD, rural providers were in fact more prepared to access resources for women with addiction issues and were more likely to care for patients with a FASD (Tough et al., 2008). This reported preparedness is likely due to the fact that rural providers have more exposure to individuals with FASD attributable to the higher prevalence rates, as well as the fact they see more patients with FASD than their urban counterparts. Another reason may also be that rural providers have more training in the area of FASD, as they are expected to have more generalized practices and the lack of paediatric specialists could mean that they must treat patients with FASD in their daily practice. Tough et al. (2008) also found that rural providers were significantly more likely to report caring for patients with FAS and to have referred a patient for diagnosis. Despite this demonstrated knowledge of FASD of providers among rural and remote communities across Canada, the level of knowledge of FASD within Ontario remains unclear.

Northern Ontario also encompasses 106 First Nations (Ministry of Northern Development, Mines and Forestry, 2010) and has an Aboriginal population of 309,845, comprising approximately 2.4% of Ontario's total population (Statistics Canada, 2016). Ontario

has the largest Aboriginal population of any province or territory in Canada (Rural Ontario Institute, 2013) and from 2006 and 2011, the First Nations population in Ontario increased by 32%, while the Metis population and the Inuit population rose by 17% and 65% respectively (Statistics Canada, 2016). Demographic trends in Northern Ontario also demonstrate that the Aboriginal population is growing compared to the general population, as well as Francophone and immigrant populations, both in number and in share of the total population (Moazzami, 2015). These demographic trends are important, as Northern Ontario encompasses nearly 90% of the land mass of Ontario, but holds only 7.4% of the total population of the province, which has major implications for accessing health care (Ministry of Northern Development, Mines and Forestry, 2010; Spotton, 2006).

While half of the Aboriginal population aged 12 and older in Ontario rated their health as excellent or very good in 2012 (Statistics Canada, 2016), Aboriginal individuals continue to bear a disproportionate burden of illness compared to those in the general population and are at a greater risk for a range of health and social problems (Eggertson, 2015; Greenwood, de Leeuw, Lindsay, & Reading, 2015; MacMillan, MacMillan, Offord, & Dingle, 1996; Spotton, 2006; Tookenay, 1996; Waldram, Herring, & Young, 2007). Though early Canadian discourse perpetuated the stereotype that FASD was an ‘Aboriginal problem’ (McKenzie, Dell, & Fornssler, 2016), Aboriginal women continue to be more likely to drink heavily (e.g., binge drink) compared to the general population as a result of a variety of social determinants of health, such as poverty, experience of violence or abuse, and intergenerational trauma associated with colonization (McKenzie et al., 2016). Despite more recent knowledge that prevalence rates of FASD are similar between Aboriginal and non-Aboriginal communities (Ospina & Dennett, 2013), FASD is still commonly believed to be an Aboriginal problem in Northern Ontario.

Specific regions of Northern Ontario, such as the Sioux Lookout District, have identified FASD as a growing challenge in their communities. In 2004, the Sioux Lookout District Education Planning Committee examined the special education needs of youth living in the catchment area of the Sioux Lookout District and determined that 23% of students in grades one, three, five, and seven had a profile consistent with FASD (The Provincial Centre of Excellence for Child and Youth Mental Health at CHEO, 2011). This finding is not surprising, given recent trends in substance use during pregnancy in Northwestern Ontario (Kelly et al., 2011). For example, Kelly et al. (2014) conducted a three year prospective cohort study examining pregnancy trends in Northwestern Ontario over three years (2010-2013). While the focus of their study was the incidence of narcotic use during pregnancy, which reached 28.6% in 2013, the authors also found that women were significantly more likely to take narcotic drugs during pregnancy if they also drank and smoked. Of the 1,206 births that were prospectively studied, 225 (18.7%) were exposed to alcohol.

Because families of children with FASD in Ontario frequently report feeling under-supported by those from whom they expect help, including doctors and nurses (Coons, Watson, Yantzi, et al., 2016), it is essential to understand what these various professionals know about FASD and how self-efficacious they perceive themselves to be in relation to FASD. It is especially relevant to focus on under researched populations, such as nurse practitioner and midwifery students, and those from regions of extremely underestimated numbers of FASD, such as Northern Ontario.

1.3 Purpose

1.3.1 Research Questions

The primary research question of this dissertation was: What are Northern Ontario health care students' (medical, midwifery, and nurse practitioner students) knowledge, attitudes, beliefs, and self-efficacy in relation to FASD? This dissertation aimed to address three specific areas:

(1) What do health care students know about FASD (e.g., prevalence of alcohol-related disabilities, consequences of prenatal alcohol exposure, secondary disabilities, and recommendations regarding drinking during pregnancy)? Where do they obtain their information about FASD and how does this information influence their attitudes about drinking during pregnancy? Are they aware of current Canadian guidelines for managing FASD (e.g., Public Health Agency of Canada guidelines, Canadian Low Risk Drinking Guidelines)?

(2) What are health care students' beliefs and attitudes towards individuals with FASD, their families, and women who drink during pregnancy? Do they hold different attitudes towards women who drink knowingly compared to women who drink before they realize they are pregnant?

(3) What are health care students' self-efficacy beliefs about their ability to work with individuals with FASD, their families, and pregnant women? Do health care students feel efficacious in working with individuals with FASD, based on their personal experiences and professional experiences (i.e., schooling)?

This research employed a two-phase, sequential explanatory mixed methods approach (Creswell, 2014), informed by social constructionism as a guiding theoretical underpinning. Social constructionism is the view that all knowledge, and therefore meaningful reality, is reliant upon

our connections and interactions with others around us and the world (Crotty, 1998). As a researcher, my own constructed reality may differ from that of my participants, and it is therefore critical to be self-aware of my own perspectives and biases as they relate to the areas of interest in this dissertation. Given that in qualitative research the investigator is the main research instrument, it is important to acknowledge how my own knowledge and attitudes are generated and how a diversity of meanings may be present in this work. What follows is a reflexivity section, describing my own attitudes and biases as they pertain to this dissertation and the research questions I have sought to answer. Please refer to the conclusion chapter for a thorough discussion of methodological rigour (section 5.3) and the strategies employed in this dissertation.

1.3.2 Reflexivity

The value of qualitative research is increasingly acknowledged in the health literature and consequently there is a need to employ rigorous strategies, such as a researcher reflexivity, to ensure the rigour and quality of the research (Berger, 2013; Darawsheh, 2014). As Berger (2013) highlights, questions about reflexivity are part of a larger debate about knowledge, and researchers need to focus on self-knowledge and sensitivity to better understand their role in the creation of knowledge, as well as the impact of their own biases, beliefs, and personal experiences on their research.

A central purpose of writing a reflexivity section is to understand how the researcher's positionality may impact the research process and outcomes (Berger, 2013; Bradbury-Jones, 2007; Guillemin & Gillam, 2004; Stronach, Garratt, Pearce, & Piper, 2007); the researcher's lens may influence the setting and the people being studied, the questions being asked, the data being collected, and the interpretation of the data. The purpose of this reflexivity is to make explicit my stance as a researcher and my involvement as the main research tool (Holloway & Galvin, 2017;

Pezalla, Pettigrew, & Miller-Day, 2012) as it is impossible to ever be a ‘disembodied researcher’ (Giltrow, Gooding, Durgoyne, & Sawatsky, 2014). In this reflexivity, I highlight two significant areas that have influenced my doctoral research: my previous experience working with families raising children with FASD in Ontario, as well as my own personal attitudes towards women who make an “informed choice” about their pregnancies and willingly continue to consume alcohol. Please refer to my Masters thesis reflexivity for additional background and context regarding how I first became involved in the field of FASD (Coons, 2013b).

In my Masters research, I worked with 56 families raising children with FASD in Ontario, 27 of whom I personally visited and interviewed across the province. While the focus of my Masters work centered on understanding family adaptation and family resilience when raising a child with FASD, it was impossible to ignore the additional family stressors that remain external to the family unit (e.g., accessing educated health care providers). My work included a wide variety of family types, such as biological, adoptive, and foster parents, as well as grandparents, great-grandparents, step-parents, and other biological relatives (e.g., an aunt). A common thread that arose across all interviews, regardless of family type, was a lamentation about the preventable nature of FASD. The stories I was told by two caregivers, in particular, have stuck with me, and have in fact been two of the stories I have integrated within my vignettes. One of the most powerful stories comes from a biological grandmother, who was raising four grandchildren with FASD. As Adrianna (pseudonym) stated:

Both my [biological daughters] have fetal alcohol [syndrome]. I listened to what the doctor said. I never drank [before I was pregnant], the doctor said ‘have a drink each night, it’ll help the baby sleep and you’ll get a better sleep.’ So I produced two fetal alcohol children. Those two have produced eleven fetal alcohol children.

To me, this quote remains the most overwhelming and the most compelling of all the interviews I conducted and analyzed during my Masters work. This quote not only highlights the devastation that can occur because of drinking during pregnancy, especially for someone who never drank before she was pregnant, but also very clearly displays the intergenerational impacts of FASD that may occur as a direct consequence of a lack of knowledge, both from caregivers and from health care providers.

The other impactful story came from a young biological mother raising a son with FASD. As Whitney (pseudonym) discussed: “Well [my son] was a surprise. I was 20 when I got pregnant and based on some kind of biological happenings I was told that that was never going to happen. So I was very shocked and quite happy.... Most of the time I’m still happy that he’s here.” Whitney went on to describe her experiences getting her son diagnosed, which included acknowledging that she had consumed alcohol early in her pregnancy.

[The woman working with us] started asking me questions ... like ‘well when did you find out you were pregnant?’ And ‘what was your life like before you found out you were pregnant?’ And I said ‘well...you know, I found out relatively early.’ I was only six weeks along when I found out I was pregnant and I had said, you know, ‘oh my gosh! I did...I did drink.’ And so we talked about how much and what that might look like and it hadn’t been that much, that was the thing that surprised me.

Both of these stories were heart-wrenching to hear and are two illustrative examples of the struggles parents raising children with FASD face. Parents frequently told me that they felt like their health care provider “just didn’t get it” and parents had informed me that they even considered moving out of the province to try to access better supports and services. While this was very clearly the lived experiences of families across the province, it remained unclear to me

whether or not health care providers did in fact hold any knowledge about FASD and alcohol use during pregnancy, and if they experienced challenges translating their knowledge into clinical practice.

However, based on my previous experiences and the frustration and empathy I shared with families in Ontario, it is likely that I approached my doctoral work with the assumption that health care students and providers would not be knowledgeable about FASD and may condone some alcohol use during pregnancy. The experiences of parents also influenced the participant groups I was interested in looking at, as parents reported experiences with physicians and midwives who told them it was “okay” to drink. While some parents reflected that “doctors and nurses” needed to be educated about FASD, many parents did not have specific examples of experiences with nurses or nurse practitioners in regards to FASD. Although I understand that the knowledge of health care students and providers may be different from the perceptions that parents hold of these providers, I also share the same desire as the families I have worked with to improve the level of knowledge of FASD held by health care professionals in the Province of Ontario.

As an FASD researcher, and someone with an interest in alcohol use in general, there is one question I am also asked on a regular basis: “Is it *okay* to drink alcohol during pregnancy?” Without fail, I always give my spiel that we don’t know how much alcohol is safe, that a “safe” amount of alcohol during pregnancy is likely different for every woman (e.g., because of timing of exposure, amount and pattern of consumption, maternal nutrition, genetic differences in alcohol metabolism, ethnic differences), and for that reason the official recommendation is no alcohol during pregnancy. However, I then inevitably receive an influx of additional questions and comments that convey people’s absolute disbelief that alcohol consumption during

pregnancy is a significant risk: “But what about an occasional glass of wine?” or “But what about a sip of wine? Surely that can’t impact my baby.”

The question I pose in return, sometimes aloud and sometimes to myself, is *why* do you need that alcohol? Why do you feel the need to drink, even that one glass of wine? Why do you feel the need to have that one sip of alcohol? What does alcohol mean to you? What is fueling you to *want* to drink that alcohol in your pregnancy, despite evidence-based recommendations? Engaging in this research project, as well as some of my own personal reading beyond the scope of this project (such as Ann Dowsett Johnston’s book *Drink: The Intimate Relationship Between Women and Alcohol*), has made me think long and hard about normalized alcohol use in society, as well as in my own life. Interestingly, “light”, “low”, and “moderate” drinking has become such a tricky area and such a touchy subject, and one that seems to have become almost a women’s rights issue. For example, look no further than any of the following instances to understand how women have taken back their right to drink during pregnancy: Michelle Ruiz’s article in *Cosmopolitan* entitled *Why I Drank While I Was Pregnant: More educated thirty something women, myself included, are drinking moderation during pregnancy. Why do we do it?* (Ruiz, 2014); Emily Oster’s article in *Time Magazine* about her book (*Expecting Better: Why the Conventional Pregnancy Wisdom is Wrong – and What You Really Need to Know*) in which she refers to the ‘no alcohol’ recommendation as “just another shame battle in the mommy wars” (Oster, 2015); or Jo Piazza’s post on *Redbook* comparing drinking while pregnant to a “badge of honor” (Piazza, 2017). As an individual with generally liberal and pro-choice attitudes and beliefs, it has been significant for me to reflect that while I am certainly pro-choice in other areas of women’s health (e.g., abortion), I am much less pro-choice when it comes to alcohol

consumption during pregnancy for women who willingly and proudly choose to consume alcohol.

As a researcher, I am also constantly aware of the many reasons why women continue to consume alcohol during their pregnancy. However, unlike the women who struggle with substance misuse, who come from disadvantaged backgrounds, who live in poverty, or who may be experiencing partner violence, I must acknowledge my frustration with the women, such as those cited above, who argue that they have made an “informed choice” about their pregnancy and who continue to consume alcohol regardless of the scientific evidence. It is upsetting for me to discuss the issue of FASD with women who continue to drink casually or lightly throughout their pregnancies, and who hold an attitude of arrogance that “this won’t happen to me”. These women, many of whom I have interacted with in my own personal life, are like Shannon in the vignette scenario included in this study, and remain opposed to the belief that alcohol, in light or moderate doses, can cause any harm to their child. It is my own belief that this resistant attitude reflects the ingrained social drinking in Canadian culture and the normalization of alcohol use in general (e.g., to cope with stress, to relax, to have fun). While alcohol (ethanol) is a drug, it is not perceived as one in society, and while women are stating that they are drinking in moderation, it remains uncertain *how* much alcohol they may actually be consuming.

Similar to the students in my study, I also recognize that a tiered system of care may exist for women who consume alcohol during pregnancy (e.g., those who are perceived to be ‘high-risk’ compared to those who are perceived to be more educated, middle class women). However, I hold the opposite belief of my participants that FASD is not strictly associated with high risk populations and I do not condone light drinking during pregnancy. Given recent trends in the FASD literature, it continues to be clear to me that these women likely need increased support

during their pregnancies and may in fact be drinking beyond recommended low risk drinking guidelines.

To that end, I identify that my own reactions, moods, and interests may have impacted the present study. Understanding how my own reactions to students' responses (e.g., "no alcohol is recommended, *but...*"), my personal mood on the day of the interview, during the interview, and following the interview, as well as my interest in FASD prevention, were integral when it came to the interpretation of students' responses and understanding their attributed meanings from their educational, personal, and clinical experiences. While I have my own attitudes and constructed reality regarding FASD and FASD prevention, it was important for me to let myself be open to the students' responses and experiences in order to construct their meaning and understand their attitudes related to FASD. As the research tool, I acknowledge my role in the decision of what quotations to use, and subsequently not use, from the interviews that follow, as well as the determination of which quotations best represented each theme. I also recognize my own personal attitudes and interests in approaching my data, and concede that my personal experiences may have influenced my interpretations of students' experiences and attitudes, reflecting both the voice of the participant and the voice of the researcher. I also acknowledge that my own fascination with the area of light and moderate alcohol consumption influenced my desire to predominantly address research question two, and shaped my decision-making in determining what data to present and turn into manuscripts in this document. I also accept that the relationships I have developed with the families in Ontario raising children with FASD, as well as with the student participants in the present study, drive me to ensure that this study produces meaningful findings and provides a return for the participants who invested their own personal time and information.

1.4 Research Design

1.4.1 Theoretical Underpinning: Social Constructionism

According to the social constructionism perspective, truth, or meaning, comes into existence in and out of our encounters with the actualities of the world. Our meaning of the world is not discovered, but rather constructed based on our dealings with society (Crotty, 1998; Merriam, 2009). Of particular importance to the social constructionism perspective is that different people may construct meaning in different ways, even in relation to the same phenomenon. In contrast to those who work from the positivist lens, social constructionists also believe that there is no one right answer to the questions we pose. Rather, social constructionists believe that there are useful interpretations, but no one true or valid interpretation. Social constructionists also acknowledge that at different times, and in different places, there have been (and will be) very opposing interpretations of the same phenomenon.

These opposing viewpoints are certainly relevant and salient in the realm of disability, and specifically for FASD, as different individuals hold varying perspectives about alcohol consumption in general, alcohol consumption during pregnancy, and attitudes regarding assigned blame and responsibility of biological mothers. Furthermore, when examining the perspectives of health care students, it is important to acknowledge that many students may have attitudes that stem from a biological or medical model of disability (Imrie, 2004), which have significant implications for the ways in which they think about disability in general and how health care professionals practice. These beliefs may be based on previous learning experiences (e.g., schooling) as well as personal experiences (e.g., interactions with individuals with disabilities). However, it is also important to acknowledge that these viewpoints and attitudes are not static;

attitudes may change (either positively or negatively) depending on accumulated experiences counselling pregnant women and interacting with individuals with FASD and their families.

1.4.2 Conceptual Definitions: Knowledge, Attitudes, and Self-Efficacy

Our approach to understanding society and the human world is grounded in assumptions that we as researchers bring to our methodology of choice. Because individuals are continually engaging with their world and making sense of their experiences, constructed meaning may change over time and thus be informed by a variety of concepts and influences, such as knowledge, attitudes, and self-efficacy. These concepts are considered in the present dissertation and are discussed here.

Generally speaking, knowledge refers to information, understanding, or skill that is obtained from experience or education. In line with social constructionism, knowledge can be discovered, made known, reinforced, or changed by our interaction with society. For the purposes of this study, knowledge of FASD was defined as recognition of the prevalence of alcohol-related disabilities (e.g., disabilities on the spectrum), awareness of consequences of prenatal alcohol exposure, understanding of secondary disabilities, and mindfulness that the best recommendation regarding alcohol consumption during pregnancy is to consume no alcohol (e.g., recognition of the prevention of FASD). Knowledge was considered in relation to current recommendations (e.g., Canada's Low Risk Drinking Guidelines, seven core competencies for FASD). These criteria were chosen given their relevance to the research question.

Furthermore, no operational definition of knowledge of FASD exists in literature; however, some studies have broadly investigated similar components as a criterion of knowledge (Gahagan et al., 2006; Public Health Agency of Canada, 2005b; Wedding et al., 2007). Students'

knowledge of FASD is likely to be influenced by their own personal experiences (e.g., volunteer work with individuals with disabilities), as well as their education, fitting well with the perspective of social constructionism. While no overall ‘score’ for knowledge will be generated and responses will not necessarily be analyzed as either right or wrong, responses to individual items on the quantitative measures described below may provide insight into socially constructed knowledge that can be triangulated with the qualitative findings.

Attitudes represent individuals’ feelings of favour or disfavour towards a person, place, or thing. In this study, attitudes refer to health care students’ personal and professional views regarding alcohol use in general (e.g., definition of ‘moderate’ alcohol consumption), alcohol use during pregnancy, and women who drink during pregnancy, individuals with developmental disabilities in general, and individuals with FASD. Historically, society has demonstrated negative attitudes towards individuals with disabilities. Some of these negative attitudes may stem from the medical model of disability (Imrie, 2004), which perceives disability as something that is ‘broken’ and needs to be ‘fixed.’ Health care students’ attitudes towards caring for people with developmental disabilities and FASD specifically are likely to be influenced by their personal experiences, as well as their beliefs about their preparedness and competency to care for these individuals. Students’ attitudes can be understood through their socially constructed meanings about alcohol use in general, alcohol use during pregnancy, and FASD. Similar to students’ knowledge, responses to individual items on the quantitative measures may provide insight into socially constructed attitudes towards care for individuals with developmental disabilities in general, as well as FASD specifically, that can be triangulated with the qualitative findings from both vignettes and semistructured interviews.

Self-efficacy indicates “people’s beliefs about their capabilities to produce designated levels of performance that exercise influence over events that affect their lives” (Bandura, 1994). Self-efficacy is the understanding that one can master a situation and produce positive outcomes. Self-efficacy in this research also referred to the judgments made by health care students about how effective they are in a given situation (e.g., when counselling a woman of childbearing age or a pregnant woman about alcohol use during pregnancy). Feelings of self-efficacy are important because they determine our choices of activities and the amount of interest and effort we expend (Bandura, 1993, 1995). Performance experiences are particularly relevant in the context of health care students working with individuals with FASD, their families, and pregnant women, because success and failure experiences have a huge impact on a persons’ belief to master a situation and produce positive outcomes (Bandura, 1994). An important implication for practice is that because self-efficacy influences behaviour, people tend to seek out and apply themselves in situations or tasks in which they feel efficacious, while they tend to avoid situations which they perceive as exceeding their ability (Bandura, 1977). However, with easy successes, people come to expect quick results and are easily discouraged by failure. Therefore, building a resilient sense of self-efficacy requires experience in overcoming obstacles through perseverant effort. For example, if they do not feel efficacious in their care of individuals with FASD or pregnant women, health care students may avoid providing care to individuals with FASD and their families (e.g., defer care, perceive care to be outside of their scope of practice) or may not provide effective FASD prevention (e.g., may not feel comfortable discussing alcohol use during pregnancy and consequently may avoid doing so with pregnant women or women of childbearing age). In this dissertation, self-efficacy will be examined based on responses to

individual items on the quantitative measures, as well as by responses to both the vignettes and semistructured interviews.

1.4.3 Methodology: Mixed Methods and Basic Interpretive Inquiry

This research incorporated a sequential explanatory mixed methods approach (Tashakkori & Teddlie, 2010). In line with a social constructionism perspective, mixed methods research comes from a pragmatic stance (i.e., draws on many approaches and diverse methods, values objective and subjective knowledge; Creswell & Plano Clark, 2007). This pragmatic approach focuses on the research questions and allows for multiple methods to address those questions or problems (Creswell & Plano Clark, 2007), meaning that multiple paradigms or approaches can be used in the same study. Tashakkori and Teddlie (2010) argue that both quantitative and qualitative methods may be used in a single study, and that a practical and applied research philosophy should guide the methodological choices.

Previous research in the area of FASD has neglected the use of qualitative research, leading to an overuse of quantitative measures to evaluate “knowledge” of FASD. Mixed methods studies allow participants to tell their stories, providing a well-rounded understanding of health care students’ knowledge, attitudes, and self-efficacy in Northern Ontario. Mixed methods studies also allow for narratives to add meaning to numbers generated by quantitative research. Additionally, this type of research can assist in answering a broader and more complete range of research questions, because the research is not restricted to one approach (Johnson & Onwuegbuzie, 2004). Following the guidelines for mixed methods research, this study incorporated qualitative research informed by basic interpretive inquiry (Merriam, 2002, 2009), collected in the form of a semistructured interview and a scenario-based vignette, and quantitative research, as measured by two questionnaires, described below.

For the current research, the researcher was interested in understanding the meaning a phenomenon has for those involved; more specifically, understanding how health care students understand their experiences, how they construct their worlds, and what meaning they may ascribe to their encounters with pregnant women, as well as individuals with FASD and their families. A central characteristic of this type of inquiry is that individuals construct reality in their interactions with the social worlds, and Merriam (2002) contends that constructionism underlies interpretive inquiry. Thus, the best methodological fit is basic interpretive inquiry (Merriam, 2002, 2009), informed by symbolic interactionism, which also focuses on interpretation, but within the context of larger society (e.g., meaning of an experience is created by an individual's interactions with society; Merriam, 2002).

Informed by the theoretical and methodological underpinnings discussed above, this study sought to address Northern Ontario health care students' knowledge, awareness, and self-efficacy in relation to FASD and alcohol use during pregnancy in two phases. The first phase, which employed quantitative methods, included a survey of health care students' knowledge, attitudes, and beliefs concerning FASD, as well as a survey regarding developmental disabilities in general.¹ These questionnaires were employed to understand students' socially constructed knowledge of FASD, as well as their self-perceptions regarding their ability to care for individuals with FASD and pregnant women. The second phase consisted of individual, semistructured interviews with a sub-set of the students who participated in the first phase, as

¹ While not strictly focused on FASD, it is critical to understand health care students' knowledge of developmental disabilities in general as a benchmark for determining their exposure to disabilities. Previous research has indicated that health care students tend to have poor knowledge of specific developmental disabilities, requiring data analyses to collapse the specific disabilities into a broad category of "developmental disabilities". This dissertation is also part of a larger study examining health care students' knowledge and awareness of developmental disabilities, so while all questions on this questionnaire may not be pertinent to this study, they are included so that other students may analyze and interpret this data in relation to their own research questions.

well as the discussion of scenario-based narrative vignettes. These qualitative methods allowed for an understanding of students' socially constructed attitudes about developmental disabilities, FASD, and alcohol use during pregnancy, as well as their meaning-making processes that may influence their knowledge, self-efficacy, and personal attitudes (e.g., positively or negatively). The design, procedures, and measures that follow were selected based on their ability to provide a more nuanced, wide-ranging, and enhanced understanding of Northern Ontario health care students' knowledge and self-efficacy in relation to FASD.

1.5 Methods

1.5.1 Phase I

Phase I of the research study was exploratory in nature. The purpose of phase I was to evaluate the level of knowledge and understanding of FASD by health care students ($n=45$) in Northern Ontario, Canada (see Table 1 for participant demographics). After receiving ethics approval from the Laurentian University Research Ethics Board, students in this study were accessed through the Northern Ontario School of Medicine (NOSM), as well as the Midwifery and Primary Care Nurse Practitioner Programs at Laurentian University in Sudbury, Ontario, Canada. Respondent-driven, purposive convenience sampling was used, whereby individuals known to the researchers (e.g., program coordinators, professors, colleagues) were contacted in the hopes of reaching students who would be willing to participate. All eligible students were contacted and were sent an e-mail, including a description of the study and information about how to participate, from their program's administrative assistant. Students were also accessed through various social media sites, including Facebook and Twitter. Students were directed to an online survey link in REDCap (Research Electronic Data Capture; Harris et al., 2009) hosted at Laurentian University if they were interested in participating in the study. Participants were

obtained from three programs: third and fourth year students at NOSM ($n=22$), at both the Laurentian University and Lakehead University sites, first and second year students from the nurse practitioner program at Laurentian University ($n=11$), and third and fourth year students from the Midwifery program at Laurentian University ($n=12$). Informed consent was given prior to filling out the online questionnaires (see appendices for a copy of the REB approval letter).

Table 1. Participant demographic characteristics.

Demographic characteristics	
Characteristics of health care students (n)	45
Medical students	22
Lower Year (3)	12
Upper Year (4)	10
Mean Age (SD)	27.95 (5.03)
% Female	63.6%
Ever pregnant (n)	2
Currently Pregnant (n)	0
Response rate (%)	17.2%
Midwifery students	12
Lower Year (3)	5
Upper Year (4)	7
Mean Age (SD)	25.75 (3.08)
% Female	91.7%
Ever pregnant (n)	5
Currently Pregnant (n)	1
Response rate (%)	22.6%
Nurse Practitioner students	11
Lower Year (1)	6
Upper Year (2)	5
Mean Age (SD)	30.00 (8.88)
% Female	90.9%
Ever pregnant (n)	4
Currently Pregnant (n)	1
Response rate (%)	35.5%

Participants completed two questionnaires: an adapted version of the Healthcare Student Questionnaire (Isaacs, Minnes, Burbidge, Loh, & Versnel, 2012; Minnes, Isaacs, Burbidge, Loh,

& Versnel, 2012), which has previously been adapted from the McGill Inclusive Education Questionnaire (Daniel, 2011; Daniel & Cornish, 2006), and the Fetal Alcohol Spectrum Disorder Survey for Healthcare Students, adapted from the Fetal Alcohol Syndrome Survey for Health Professionals (Clarke et al., 2005; Tough, Clarke, & Cook, 2007; Tough et al., 2005a; Tough, Clarke, Hicks, & Cook, 2006; Tough et al., 2008; Tough, Hicks, Davey, & Clarke, 2008; refer to the appendices for a copy of both questionnaires). Permission was sought from the original investigators to use and adapt their tools in the present study.

The Healthcare Student Questionnaire was utilized to understand students' perceived levels of knowledge and experiences regarding individuals with developmental disabilities in general, as well as individuals with FASD. Students were also asked about their experiences and beliefs about learning (e.g., interprofessional education and collaborative care, educational resources, etc.). Students were then asked to complete the Fetal Alcohol Spectrum Disorder Survey for Health Care Students, which sought to determine their knowledge and awareness of FASD in several areas including: general knowledge and attitudes (e.g., definition of FASD, sources of knowledge, opinions regarding the safety of alcohol consumption during pregnancy, perceived scope of practice, and alcohol use in general); prevention issues (e.g., for non-pregnant and pregnant women); and diagnostic issues (e.g., characteristics of FAS, secondary disabilities). Data collection for this phase was conducted in the Fall of 2015 over a four-month period (September to December). A question was included at the end of the survey asking whether or not the participant was interested in being contacted regarding phase II. Participants who were interested in completing phase II were sent a second consent form prior to the interview.

All students who participated in Phase I of the research study were entered into a draw to win a Microsoft Surface Pro 3. Prepaid incentives are theorized to affect response rates by

influencing how the respondent views survey participation (Porter & Whitcomb, 2003). Given the decline in survey responses in both student and professional populations, incentives, such as lotteries, are traditionally used to encourage student participation.

The need for more training of health care students in relation to developmental disabilities in general has recently been highlighted as an area of need (Burge, Ouellette-Kuntz, Isaacs, & Lunsky, 2008; Minnes et al., 2012). Therefore, it was important to know not only health care students' awareness of FASD, but also their awareness and perceived self-efficacy regarding developmental disabilities as a foundation of their knowledge (i.e., The Healthcare Student Questionnaire). In regard to FASD, while the tool has some limitations (e.g., outdated terminology, predominantly nominal data), the Fetal Alcohol Syndrome Survey for Health Professionals, and similar tools, have been extensively used in the literature to study knowledge of FASD. The adapted version of this questionnaire in this study allowed the researcher to descriptively examine health care students' knowledge and attitudes regarding FASD, while providing the opportunity to compare these findings with the larger body of literature. Additionally, specific items on both questionnaires were examined and related to the conceptual definitions used in this study (e.g., knowledge, attitudes, self-efficacy).

1.5.2 Phase II

All students who participated in Phase I were provided with the opportunity to participate in Phase II. The purpose of phase II was to qualitatively understand health care students' attitudes about alcohol consumption during pregnancy, knowledge of FASD and the potential consequences of alcohol consumption during pregnancy, as well as their perceived self-efficacy beliefs about their competency to work with individuals with FASD, their families, and pregnant women. Two qualitative data collection methods were employed; a scenario-based vignette about

alcohol consumption during pregnancy, based on findings from my previous Masters research (Coons, Watson, Schinke, et al., 2016; Coons, Watson, Yantzi, et al., 2016), and a semistructured interview.

Interviews were conducted between October 2015 and March 2016, depending on the class schedules of the participants, their clinical placements, and their individual availability. Interviews were conducted at the students' convenience and took place at a safe location suitable for both of us (e.g., on campus, local coffee shop, etc.). Interviews were also conducted over the phone or via Skype based on participants' choice. Interviews lasted between 25 and 90 minutes. See table 2 for a summary of participant demographics for Phase II. All participants in this study are referred to by pseudonyms to protect their identities.

Table 2. Participant demographic characteristics.

Demographic characteristics	
Characteristics of health care students (<i>n</i>)	21
Medical students	7
Lower Year (3)	2
Upper Year (4)	5
Mean Age (SD)	28.71 (6.05)
% Female	57.1%
% Currently Pregnant	0%
Midwifery students	8
Lower Year (3)	2
Upper Year (4)	6
Mean Age (SD)	26.63 (2.83)
% Female	87.5%
% Currently Pregnant	0%
Nurse Practitioner students	6
Lower Year (1)	3
Upper Year (2)	3
Mean Age (SD)	33.33 (11.15)
% Female	83.3%
% Currently Pregnant	0%

1.5.3. Vignettes

At the beginning of the qualitative phase, students completed one of three different scenario-based vignettes addressing their *perceived* knowledge and self-efficacy regarding FASD and alcohol consumption during pregnancy (see appendices for a copy of the three vignettes). These scenarios were rotated between interviews and each participant completed one vignette. The vignettes were modeled after vignettes created by Reiss and colleagues (Reiss, Levitan, & Szyszko, 1982; Reiss & Szyszko, 1983) and were informed by societal issues (e.g., public examples discussing alcohol use during pregnancy, such as Michelle Ruiz’s article in *Cosmopolitan*, *Why I Drank While I Was Pregnant*, and Emily Oster’s book, *Expecting Better: Why Conventional Pregnancy Wisdom Is Wrong – and What you Really Need to Know*), and were primarily derived from parental experiences raising children with FASD (Coons, Watson, Schinke, et al., 2016; Coons, Watson, Yantzi, et al., 2016). The vignettes were written and revised several times and were pilot tested with a second year medical student. Parents of children with FASD who had participated in previous research (Coons, Watson, Schinke, et al., 2016; Coons, Watson, Yantzi, et al., 2016), and whose stories informed the written scenarios, also reviewed the vignettes and approved their content and realism. Students were instructed to read the vignette and were then asked prompting discussion questions including: “What are your first impressions of this vignette?”, “As a health care professional, what advice would you give at this stage of her pregnancy?”, “Do you think what Shannon/Kimberly/Jessica is doing during her pregnancy poses any risks to her unborn child? Why or why not?”, and “How comfortable do you feel addressing this situation?”

1.5.4 Qualitative Interviews

Following the narrative vignette, students participated in a semistructured interview. Informed by social constructionism, and more specifically as it relates to FASD knowledge, attitudes, and self-efficacy, the primary researcher developed 10 open-ended questions, with follow-up prompts if needed (see appendices for a copy of the interview guide). All interviews were digitally recorded and transcribed verbatim by me. Follow-up questions were asked using e-mail and telephone conversations, and participants also had the opportunity to review their interview transcript to provide further clarification. Both the vignettes and semistructured interviews are described in greater detail in the manuscripts that follow in this dissertation.

1.5.5 Analysis of Interviews

Both the narrative vignettes and the semistructured interviews were analyzed using Braun and Clarke's (2006) thematic analysis approach, which is congruent with social constructionism. As Braun and Clarke (2006) highlight, this approach to data analysis is extremely flexible and can be applied across a range of theoretical and epistemological perspectives. All vignettes and semistructured interviews were digitally recorded and transcribed word for word. After transcription, interview transcripts were continually read and re-read to familiarize myself with the content of the transcripts, noting initial ideas and comments (e.g., individual words, phrases, full paragraphs). These initial ideas and comments were further coded in a systematic fashion, collating data into relevant codes. Repeated close and detailed readings of the transcripts allowed me as the researcher to ensure that future interpretations of the data remained grounded within the participants' original accounts. Coded data were then used to generate potential themes by establishing connections in potentially emerging themes, which were further reviewed and refined into more clear and explanatory themes. Each theme was given a descriptive label taken

directly from the words of participants that communicated the nature of the theme. Once themes emerged, inferences were made and the data were summarized. A summary table with illustrative quotes was produced to show each superordinate theme with comprising subthemes, which are included as appendices in this document for chapters three and four.

A member check was conducted during the data analysis phase to ensure the themes generated were representative of the participants' experiences (Shenton, 2004). Participants were provided with a summary table of themes to ensure the accuracy of my interpretations. Participants were also invited to review their interview transcripts and provide additional feedback. A chart outlining the steps of Braun and Clarke's (2006) thematic analysis can be found in the appendices. During the data analysis process, an audit trail was also kept maintaining a list of detailed notations regarding my thoughts and comments of the content of the vignettes and interviews, my coding method, my inclusion and exclusion criteria for themes, and examples of illustrative quotes for each determined theme.

1.6 Conclusion and Overview of Subsequent Chapters

As part of a larger project examining health care students' and health care providers' knowledge, self-efficacy, and experiences in regard to developmental disabilities, this paper-based thesis examines providers' and students' reported levels of knowledge about FASD, as well as their attitudes and recommendations about alcohol consumption during pregnancy. This paper-based thesis focuses predominantly on health care professionals' attitudes, particularly in regard to varying levels of alcohol exposure during pregnancy, and does not address the whole spectrum of FASD prevention, diagnosis, or intervention. Using a sequential, explanatory mixed methods approach, a social constructionism perspective was applied to two quantitative questionnaires, as well as qualitative, semistructured interviews and vignettes that were analyzed

using thematic analysis to encapsulate the story of health care students' knowledge and attitudes about FASD and alcohol use during pregnancy. Incorporating both quantitative and qualitative data allowed for a rich, thick description of the experience of health care students. However, despite the use of mixed methods for the larger project, two of the three papers that follow employ a qualitative approach only. While both the quantitative and qualitative data provided valuable information overall, the use of qualitative approaches only were the most appropriate in answering the research questions I chose to focus on (i.e., health care students' attitudes about alcohol use during pregnancy). Some of the quantitative findings from the two questionnaires are included in the final discussion chapter, as they relate to the overall project and the results presented in the papers that follow in this dissertation.

The first paper included is a secondary data analysis of the Public Health Agency of Canada's study employing the Fetal Alcohol Syndrome Survey for Health Professionals. Originally based on a class assignment where we were instructed to answer our research questions from a different perspective, this paper provides a rationale for the need to conduct more research in the Province of Ontario. While the knowledge and attitudes of health care providers across Canada, and across the Western provinces specifically, has been explored, little research has examined the knowledge and attitudes of providers in Ontario. Additionally, given the age of the data, the results of this study provide a baseline for comparison with more recent studies that have attempted to determine health care professionals' or students' knowledge regarding FASD. The results suggest that while almost all professionals were aware of FASD, many providers may still need increased education about the risks of alcohol consumption during pregnancy. 1 in 10 providers reported giving a recommendation other than complete abstinence from alcohol consumption during pregnancy. Using Chi-squared comparisons, results also

demonstrated that rural providers may feel more prepared than their urban counterparts to screen for alcohol use during pregnancy and to work with biological mothers in the area of alcohol use. This paper has been accepted for publication and is currently in press in the *Journal on Developmental Disabilities*.

The second paper included is a qualitative study that presents findings from part I of a two-part paper. This paper explores health care students' attitudes about alcohol consumption during pregnancy, and identifies that despite knowledge that no alcohol consumption during pregnancy is the safest recommendation, many students identify that this advice is not always conveyed to their pregnant patients or to women of childbearing age. Based on results from the three vignette scenarios, students discussed their attitudes regarding the amount of alcohol exposure and timing of exposure (e.g., drinking before pregnancy identification, binge drinking), their obligation to provide evidence-based recommendations as health care providers despite a perceived lack of clear evidence (e.g., professional responsibilities, knowledge of potential risks), and the issue of personal choice. This paper was recently published in *Global Qualitative Nursing Research*.

Finally, the third paper included is also a qualitative study that presents findings from the vignette scenarios and the semistructured interview. This paper presents the continuation of findings from part I, and focuses on the students' attitudes, beliefs, and perceptions as they pertain to the recommendations provided to pregnant women about alcohol consumption during pregnancy. Students identified presenting divergent recommendations to different women, depending on their perceptions of their level of education, culture and ethnicity, and ability to stop drinking. Additionally, students highlighted how an understanding of the broader social determinants of health, including the normalization of women's alcohol use and the potential for

partner violence, may influence the way in which they provide care to their pregnant patients.

This paper is currently under review in *Global Qualitative Nursing Research*.

Following the three papers, a final chapter summarizes the three studies and provides concluding remarks about the larger project and research questions contained herein.

Limitations, future research, and practical and clinical implications are discussed.

**Are Rural and Urban Ontario Health Care Professionals Aware of
Fetal Alcohol Spectrum Disorder?**

A Secondary Data Analysis of the Fetal Alcohol Syndrome Survey for Health Professionals

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Conflict of Interest:

None

Abstract

Health care professionals can play a critical role in the prevention of FASD, particularly through providing counselling about alcohol use and alcohol consumption during pregnancy, yet researchers have demonstrated that many professionals remain under-educated about FASD. In addition, awareness of Ontario health care professionals about FASD remains unexplored. A secondary data analysis was conducted using data obtained from the 2001-2002 Fetal Alcohol Syndrome (FAS) Survey for Health Professionals. Ontario-specific data ($N = 834$) were used to examine the awareness of FASD held by various health care professionals in both rural and urban settings. Nearly all (99.5%) of the health care professionals surveyed had previously heard of FASD; however, only 73.2% reported discussing the risks of alcohol during pregnancy, 62.4% agreed with the practice of telling patients to drink in moderation, and only 87.9% recommended that pregnant women completely abstain from alcohol for the duration of their pregnancy. Using chi-squared comparisons, results also showed that rural providers were more likely than urban providers to ask pregnant women if they were currently drinking alcohol ($p = .007$) and felt more prepared to care for biological mothers in the area of alcohol use or dependency ($p = .011$). Health care professionals' counselling and recommendations for pregnant women about alcohol use, as well as FASD prevention, are discussed.

Keywords: fetal alcohol spectrum disorder, fetal alcohol syndrome, health care professionals, secondary data analysis, rural

**Are Rural and Urban Health Care Professionals in Ontario Aware of
Fetal Alcohol Spectrum Disorder?**

A Secondary Data Analysis of the Fetal Alcohol Syndrome Survey for Health Professionals

Fetal alcohol spectrum disorder (FASD) is an umbrella term that refers to a continuum of effects associated with prenatal exposure to alcohol. Prior to the introduction of new Canadian guidelines for the diagnosis of FASD (Cook et al., 2015), the term was used to describe a range of conditions on the spectrum including fetal alcohol syndrome (FAS), fetal alcohol effects (FAE), partial FAS (p-FAS), and alcohol related neurodevelopmental disorder (ARND; Streissguth et al., 2004). These terms are now antiquated given the new updated guidelines; however, the terms FAS and FAE are used throughout this paper as this was the terminology employed in the original questionnaire, prior to the development of clear diagnostic guidelines.

Estimates for the prevalence of FASDs are relatively undetermined due to challenges with the diagnostic process. A number of “diagnostic dilemmas” influence reported FASD prevalence rates, including challenges with changing diagnostic criteria and changing facial characteristics (e.g., less pronounced facial characteristics over time), inconsistencies in the level of understanding of the disability, as well as the perceived stigmatization of the label of FASD for both families and children (Chandrasena, Mukherjee, & Turk, 2009). However, researchers who have estimated the prevalence of FASD have reported an approximate rate of 1 to 6 per 1,000 live births in the general population (Stade, Stevens, Ungar, Beyene, & Koren, 2006), with some estimates as high as 9.1 per 1,000 live births in both Canada and the United States (Alberta Alcohol and Drug Abuse Commission, 2004; Chudley et al., 2005). A recent study examining the prevalence and characteristics of FASD among first grade students in a representative Midwestern United States community found that as many as 1 in 20 children may have an

FASD, indicating that FASDs may be much more prevalent than previously predicted (May et al., 2014).

Researchers have demonstrated that parents frequently perceive health care professionals and service providers to be unaware of the signs and symptoms associated with FASD (Brown & Bednar, 2004; Caley, Winkelman, & Mariano, 2009; Salmon, 2008) and consequently parents often feel unsupported by medical and health care professionals (Mukherjee, Wray, Commers, Hollins, & Curfs, 2013; Ryan, Bonnett, & Gass, 2006; Salmon, 2008; Sanders & Buck, 2010; Watson, Hayes, Coons, & Radford-Paz, 2013). Current research involving families of children with FASD in Ontario reveals that while a minority of families reported that accessing formal support from professionals such as psychiatrists, paediatricians, and family physicians, was helpful, the majority of families felt that doctors lacked knowledge of FASD and were therefore not effective (Coons, Watson, Schinke, & Yantzi, 2016). Despite a relatively large body of literature examining knowledge, attitudes, and awareness of FASD in Canada in general, the United States, and Australia, limited research has examined the level of awareness of FASD held by Ontario health care professionals.

Lack of Knowledge, Awareness, and Understanding of FASD

Health care professionals play a critical role in the prevention of FASD, particularly through guidance regarding alcohol consumption during pregnancy. National survey results suggest that Canadian health care providers require further training and education regarding both individuals at risk for having a child with FASD and for individuals with FASD, as well as their families (Clarke, Tough, Hicks, & Clarren, 2005; Tough, Clarke, Hicks, & Clarren, 2005a, 2005b). In particular, findings indicate that health care professionals need assistance in making valid diagnoses and referrals (Clarke et al., 2005; Public Health Agency of Canada [PHAC],

2005a). Only 60% of health care providers surveyed in two studies accurately recognized the most correct information concerning a diagnosis of Fetal Alcohol Syndrome (FAS) according to the diagnostic systems in place at the time (e.g., a combination of growth, brain, and facial abnormalities; Clark, Lutke, Minnes, & Ouellette-Kuntz, 2004; Clarke et al., 2005).

In addition to Canadian findings, international studies in the United States and Australia have identified similar deficits in health care professionals' knowledge of FASD (e.g., Anderson et al., 2010; Elliott, Payne, Morris, Haan, & Bower, 2008; Payne et al., 2005; Payne et al., 2011a; Payne et al., 2011b; Payne et al., 2014). For example, a study of 1,143 Western Australian health professionals identified that only 67% of general practitioners routinely ask about alcohol use during pregnancy, with 24% indicating that they "sometimes" ask (Payne et al., 2005). Payne et al. (2011b) conducted a follow up study of paediatricians in Western Australia and found that only 27.1% of their sample routinely asked about alcohol use when taking a pregnancy history and few physicians (10.1%) routinely provided information to their patients about the consequences of alcohol use during pregnancy. Few general practitioners said they routinely gave information regarding the consequences of alcohol on the fetus and 17% said they did not provide this information at all to their patients (Payne et al. 2005).

Elliott et al. (2008) also found that 23.3% of paediatricians in Australia did not routinely ask about alcohol use when taking a pregnancy history. Unfortunately, Payne et al.'s (2011b) study also found that few paediatricians reported feeling very prepared to deal with FAS (e.g., ~6%) and more than two thirds (67.1%) believed that giving a formal diagnosis of FAS was stigmatizing to the individual with FASD and their family. Findings from Anderson et al. (2010) also demonstrate breakdowns in the continuity of care for individuals with FASD. Specifically, less than half of obstetricians and gynaecologists in their United States study responded that they

always communicate information about alcohol use during pregnancy to the newborn's paediatrician.

Compared to all other professional groups, midwives demonstrate significantly better knowledge of FASD and pregnancy counselling. For example, in a Western Australian study, Payne et al. (2014) found that 93.2% of midwives asked pregnant women about their alcohol consumption and 99.4% provided pregnant women with advice about alcohol consumption during pregnancy (e.g., not drinking in pregnancy is the safest option). However, almost half of midwives thought that asking every pregnant woman about their alcohol consumption during pregnancy could distress or anger their patient, could cause anxiety and guilt, could lead to feelings of judgment, and could uncover complex problems that are difficult for midwives to address. Additionally, 32.1% of midwives believed that infrequent consumption of a standard drink of alcohol during pregnancy is not harmful to the fetus or the mother (Payne et al., 2014). Similar results have also been demonstrated with other professional populations, such as family physicians, general practitioners, and obstetricians or gynaecologists, who indicate that one or more drinks per week or per occasion are likely safe for a pregnant woman (e.g., Anderson et al., 2010). These findings indicate that while different provider groups all have some level of knowledge regarding FASD, misconceptions and stereotypes also exist.

Rural and urban differences may also be relevant because suggested prevalence rates of FAS have been found to be highest in rural and remote communities (Tough, Ediger, Hicks, & Clarke, 2008; Viljoen, Croxford, Gossage, Kodituwakku, & May, 2002). Tough and colleagues (2008) examined differences between rural and urban health care providers in Canada with regard to their knowledge of, attitudes about, and awareness of FASD and preconception counselling practices. Despite few differences between rural and urban care providers' general

knowledge and diagnostic knowledge of FASD, rural providers were in fact more prepared to access resources for women with addiction issues and were more likely to care for patients with an FASD (Tough et al., 2008). Tough et al. (2008) also found that rural providers were significantly more likely to report caring for patients with FAS and to have referred a patient for diagnosis. Despite this demonstrated knowledge of FASD among rural and remote communities across Canada, the level of knowledge of FASD within Ontario remains unclear.

Given that families of children with FASD in Ontario frequently report feeling under-supported by those from whom they expect help (Coons, Watson, Schinke, et al., 2016), it is essential to understand what these various professionals know about FASD. While researchers have addressed the level of knowledge of FASD held by health care professionals in Australia, the United States, and Canada as a whole, to the authors' knowledge, no study has examined the level of knowledge held by Ontario health care providers. It is especially relevant to focus on under-researched populations, such as midwives, and those from regions of extremely underestimated numbers of FASDs, such as Northern Ontario.

A secondary analysis of the Ontario-specific data collected as part of the 2001-2002 Fetal Alcohol Syndrome (FAS) Survey for Health Professionals will provide insight into the awareness and comprehension of FASD held by Ontario health care professionals in the early 2000s. Though the data are 15 years old, creating limitations in the understanding of health care professionals' current level of knowledge and awareness concerning FASD, the analysis of this information is timely and relevant as it provides an insight into the historical attitudes and knowledge of health care providers prior to established diagnostic guidelines. By examining historical knowledge, we are better able to understand whether or not updated guidelines and training conducted over the past decade have been effective in increasing awareness of FASD,

and in understanding the context of service delivery in Ontario. This analysis will assist in determining the previous level of knowledge surrounding FASD, as well as health care providers' common practices and recommendations, held prior to the release of national guidelines addressing FASD, which were first established in 2005 (Chudley et al., 2005) and recently updated in 2015 (Cook et al., 2015). By better understanding how, and to what extent, knowledge has evolved over time, the creation of new policies regarding best practices, as well as education and training plans, will be better informed.

Methods

The Fetal Alcohol Syndrome (FAS) Survey for Health Professionals (Clarke et al., 2005; PHAC, 2005a; Tough, Clarke, Hicks, & Clarren, 2004; Tough, Clarke, Hicks, & Clarren, 2005a, 2005b) is a questionnaire designed for Canadian health care professionals, including paediatricians, psychiatrists, midwives, family physicians, and obstetricians/gynaecologists. The questionnaire consists of four parts: general knowledge; prevention issues; diagnostic issues; and background information. The primary study was undertaken to obtain national information from physicians and midwives across Canada regarding their levels of knowledge, attitudes, and beliefs about FAS and related conditions. The questionnaire was available in English and French, and participants had the option to complete the survey as either a web-based version or in a paper format.

Data for the original national study were collected between March 2001 and October 2002. A random representative sample of 5,361 health care professionals were selected from membership lists, including the Canadian Paediatric Society, the National Association of Midwives, the College of Family Physicians of Canada, and the Society for Obstetricians and Gynaecologists of Canada. The overall participation rate for the national study was 41.3%

(PHAC, 2005a), resulting in a sample size of 2,216 health care professionals. For the purposes of this study, only the Ontario specific data were examined. Ethics approval was sought from the principal investigators of the original study and permission was given to access the de-identified, Ontario specific data from the national study. In addition, ethical approval for this study was obtained from the Laurentian University Ethics Board, Ontario, Canada, which follows the Canadian Tri-Council Recommendations for Research with Human Participants.

A total of 884 participants from Ontario completed the FAS Survey for Health Professionals. After screening the data, health care professionals who did not indicate their medical specialty or specify whether they considered their practice to be urban or rural were removed from the analyses. Participants who included multiple answers, entering that they perceived their practice to be both rural and urban, were also removed from the analyses. In total, fifty participants were removed, leaving a final sample of 834 participants. Information outlining participant areas of specialty and demographics can be found in Table 1.

Data were analyzed using Statistical Package for the Social Sciences (SPSS)/PC Version 20.0. Descriptive analyses and chi-square tests were performed to better understand this sample of health care professionals, as well as their knowledge, attitudes, and practices related to FASD. Data were pooled for analyses and individual responses were not identifiable. Participant responses to open-ended questions were also examined and analyzed using a thematic analysis approach (Braun & Clarke, 2006) to identify patterns and themes from participant comments.

Table 1

Participant Demographic Characteristics

Demographic Characteristics	
Health care provider (<i>n</i>)	834
Paediatrician (%)	276 (33.1)
Psychiatrist (%)	168 (20.1)
Midwife (%)	56 (6.7)
Family Physician (%)	278 (33.3)
Obstetrician/Gynaecologist (%)	56 (6.7)
Average age (<i>SD</i>)	46.2 (10.6)
Urban (<i>Rural</i>) (%)	84.2 (15.8)
Southern (<i>Northern</i> ^a) (%)	94.0 (6.0)
Male (<i>Female</i>) (%)	52.0 (48.0)
English (<i>French</i>) (%)	99.4 (0.6)
Percentage of Practice ^b (%)	
Aboriginal	6.0
Women (16+)	43.9
Children (≤15)	43.8

Note: ^a provider practicing in Northern Ontario defined as any region north of Parry Sound ^b = Percentage does not equal 100, as providers could indicate that their practice covers more than one area

Results

The results presented in this paper focus on the Province of Ontario, given the recent emphasis from families of children with FASD who report being unsatisfied with health care providers' knowledge of FASD (Coons, Watson, Schinke, et al., 2016; Coons, Watson, Yantzi, & Schinke, 2016). Results for the national sample have been presented elsewhere (see PHAC, 2005a).

Health Care Provider Knowledge and Awareness

When asked whether they had previously heard of FAS, nearly all (99.5%) of survey respondents replied "yes". In addition, the vast majority of professionals (98.4%) reported first learning about FAS more than four years ago. When considering their own personal practice

within the past five years, professionals were asked if, in their practice, they had ever diagnosed a patient as having FAS, cared for a patient with FAS, suspected, but did not diagnose, a patient as having FAS, or referred a patient to confirm a diagnosis of FAS. About 40.4% of individuals indicated that they had cared for patients affected by FAS and 30.2% confirmed that they had personally diagnosed patients with FAS in their professional practice.

Participants were also asked about their perceptions of barriers to the diagnosis of FAS (see Table 2). Over a quarter of professionals indicated that diagnosing FAS was outside of their role. Interestingly, while the majority of professionals indicated that diagnosing FAS was within their scope of practice, 16% of paediatricians (compared to 15.1% of paediatricians nationally; PHAC, 2005a) and 24.5% of family physicians (compared to 23% of family physicians nationally; PHAC, 2005a) indicated that making a diagnosis of FAS was beyond their professional responsibilities, two populations that would likely be involved in the decision to diagnose a child with FAS. It is possible that family physicians may initially suspect an FASD, but may make a referral to a specialist to confirm the diagnosis, particularly in certain cases. Obstetricians and gynaecologists did not indicate that diagnosing FAS was outside of their role as practitioners, but disagreed that any of the listed factors were barriers to diagnosing. Not surprisingly, most midwives (64.3%) indicated that diagnosing FAS was separate from their range of care, given that the focus of their work does not include long term follow up with the mother or the child.

Table 2

Barriers to Diagnosis of FAS by Professional Group

	Is making a diagnosis of FAS beyond the scope of your practice?		Lack of time needed to make a diagnosis		Lack of specific training to make a diagnosis		Belief that making the diagnosis will not make a difference to the individual		Other reasons	
	Yes (%)	No (%)	Yes (%)	No (%)	Yes (%)	No (%)	Yes (%)	No (%)	Yes (%)	No (%)
Paediatrician	16.3	83.7	20.9	79.1	67.6	32.4	13.4	86.6	11.6	88.4
Psychiatrist	39.9	60.1	9.9	90.1	47.9	52.1	13.6	86.4	8.0	92.0
Midwife	64.3	35.7	3.9	96.1	23.5	76.5	3.9	96.1	2.0	98.0
Family Physician	24.5	75.5	24.2	75.8	70.4	29.6	11.9	88.1	4.0	96.0
Ob/Gyn	0.0	100.0	0.0	100.0	0.0	100.0	0.0	100.0	0.0	100.0
All Groups	27.7	72.3	17.3	82.7	57.2	42.8	11.4	88.6	6.9	93.1

Nearly three-quarters of family physicians (70.4%) agreed that a lack of specific training was a barrier to the diagnosis of FAS, compared to 23.5% of midwives. However, only 11.4% of interviewed professionals believed that making the diagnosis would not make a difference for the individual with FASD. Several health care professionals listed other reasons that may impede the diagnosis of FAS including: social stigma; the diagnosis is difficult and unreliable; the facial characteristics and physical features can be ambiguous; a lack of truthful or accurate history of maternal drinking; a fear of over-diagnosing a condition; full syndrome FAS compared to Fetal Alcohol Effects (FAE) is not common in community practice; do not see patients with FAS/FAE or do not see enough patients with FAS/FAE; and parental resistance, denial, and anger to

receiving the diagnosis. Some professionals also noted their own lack of experience and lack of knowledge of FASD.

When professionals were asked from what sources they have gained knowledge about FAS and FAE, 63.8% of health care providers reported obtaining knowledge of FASD from either medical school, a residency, or a fellowship; however, this proportion dropped to 51.8% and 25% respectively for psychiatrists and midwives. Other sources from which professionals obtained their knowledge of FASD included medical journals and books (78.9%), mass media (44.2%), colleagues (41.0%), and parents/patients (19.8%). However, when considering rural health care providers specifically, a greater proportion of these individuals gained information from more informal sources, such as mass media (53.0%), colleagues (50.0%), and parents/patients (27.3%).

What Advice Do Providers Give?

Approximately 3 out of 4 (73.2%) surveyed health care providers responded that they discuss the risks of alcohol consumption during pregnancy with female patients of childbearing age. Only 5% of health care providers believed that discussing alcohol use during pregnancy will frighten or anger patients. In addition, although 93.7% of those surveyed agreed that they asked all pregnant women in their care whether they were currently drinking alcohol, only 87.9% of respondents recommended complete abstinence from alcohol during pregnancy, indicating that 12.1% of respondents still condoned or recommended some level of alcohol consumption during pregnancy. Furthermore, while 87.9% of respondents agreed with the statement that “no alcohol is recommended”, differences in the interpretation of the question potentially account for other recommendations or suggestions to patients (e.g., no alcohol is recommended, but occasional consumption may not pose any risks). Also troubling is the finding that not all participants

agreed (92.2%) that prenatal alcohol exposure poses a significant risk for permanent brain damage.

Nearly 1 in 10 health care professionals provided counsel other than abstaining from alcohol during pregnancy, including “a glass of beer or wine in moderation was okay” (8.8% of respondents), or offered no specific suggestions in regards to prenatal alcohol consumption. Furthermore, only 80.5% of participants acknowledged that they discuss what their patients think “in moderation” means (e.g., a range of 3 to 13 drinks per week). While many participants condoned moderate alcohol consumption, they struggled to provide a consistent definition of what “moderation” meant.

“I do not use the term ‘in moderation’”: Defining Moderate Alcohol Consumption

Of the professionals who completed the survey, only 62.4% agreed with the practice of telling patients (both male and female) to drink in “moderation”. However, little consistency existed for the definition of “moderation”. One-way ANOVAs were performed in order to determine differences between health care professionals’ specialties and their definition of “moderate alcohol consumption” in terms of both the reported number of drinks per occasion and the reported number of drinking occasions per week for non-pregnant women. No significant differences were found between professional specialties in terms of drinks per occasion (although significance was approached – $p = .062$); however, family physicians ($M = 3.44$, $SD = 2.32$) reported a significantly higher number of drinking occasions per week as “moderate alcohol consumption” when compared to paediatricians ($M = 2.31$, $SD = 1.90$) and midwives ($M = 2.51$, $SD = 2.36$) ($F_{(4, 787)} = 9.42$, $p < .001$, see Figure 1). Bonferroni post-hoc testing revealed that no other differences existed between professional specialties.

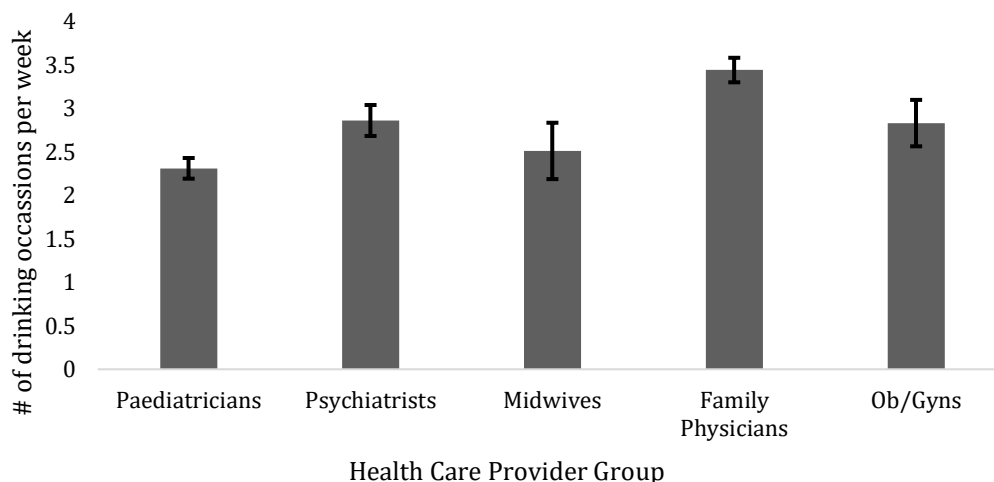


Figure 1. Mean difference values representing differences between providers regarding the number of drinks per occasion that are considered to be associated with a moderate level of alcohol consumption. Standard errors are represented in the figure by the error bars attached to each column.

Participant responses to open-ended questions also indicated confusion for a definition of “moderate” alcohol consumption. Some participants indicated that “we do not know what a moderate level is” and that they were “uncertain if any level is ‘safe’ at any time of pregnancy.” However, other participants indicated that “*occasional* alcohol use” or alcohol consumption “one to two times per week” was a moderate level of consumption. In addition to discrepancies in professionals’ definitions of moderate alcohol consumption for non-pregnant women, professionals reported many exceptions and situation-specific recommendations concerning best practices and guidelines for pregnant women regarding alcohol use during pregnancy.

“One or three, depends on the patient”: Inconsistent Recommendations

Participants were provided with five choices and asked which statement best describes the advice they give pregnant women regarding alcohol use during pregnancy. 12.2% of health care professionals indicated providing a recommendation other than abstinence from alcohol consumption during pregnancy. Health care professionals specified many instances that they perceived to be acceptable (or unacceptable), including existing stereotypes of FASD (e.g., FAS

only occurs in patients who have alcohol use problems), occasional drinking across different trimesters, differing amounts of alcohol consumption (e.g., low dose exposure), and drinking on special occasions.

“If no history of alcohol abuse, I say OK in moderation”: FASD stereotypes. Several participants prescribed to the stereotypical belief that FAS and FASD are particularly problematic only for women with alcohol use issues. One participant noted that “an occasional glass of wine or beer is okay. Unless [the] person is truly an alcoholic, then I recommend none,” demonstrating that some professionals may condone occasional drinking during pregnancy for women who they perceive to not be alcoholics. In the open-ended responses, participants also discussed that binge drinking was particularly dangerous, especially for women who were high risk.

“Occasional drink is fine only after first trimester”: Perceived differences across trimesters and timing of exposure. While some health care professionals acknowledged that binge drinking is “never okay” and is “dangerous” at all times during pregnancy, when asked to provide open-ended responses, numerous professionals reported that occasional or moderate drinking was “fine only after [the] first trimester.” One professional noted that their definition of moderation was “abstinence in [the] first trimester.” Several professionals echoed these remarks, stating that alcohol should be avoided during the first trimester, but that “occasional use throughout (i.e., one drink per occasion) will not harm mom or baby” and that “once passed first trimester, patient can have occasional drink, 1 drink per week or so.” One family physician indicated that “up to 1-2 drinks, 1-2 times a week throughout all trimesters is OK.”

Some professionals also identified challenges regarding addressing alcohol consumption before pregnancy identification. One physician noted that they “try to assure women who report

occasional alcohol use in first weeks of pregnancy before knowing about pregnancy” in an effort to prevent feelings of panic or guilt. However, several professionals believed that “limited or moderate exposure before pregnancy diagnosed [is] not supported as high risk” and “a few drinks before know[ing] about pregnancy is okay.”

“But no harm shown for occasional consumption”: Amount of alcohol consumption.

Closely tied to the discrepancy regarding the timing of exposure is the debate regarding the acceptable amount of alcohol exposure during pregnancy. Many physicians who did condone alcohol consumption during pregnancy indicated that drinking should be “occasional”, “rare”, and should only include “very limited alcohol”, “one drink”, or a “half glass”. However, no statements included a definition of what “one drink” entailed and no professionals identified that “one drink” should be a standard drink. Professionals also provided varying responses regarding the amount of alcohol that should be consumed during a week or during the duration of pregnancy. For example, professionals’ diverse responses included “2 drinks per week”, “1-2 glasses of wine during pregnancy”, “maximum one drink per week”, “half glass maximum per week”, “half only per day”, and “1 drink, 3-4 times per week”.

“Occasional drink for special occasion only”: Perceived exceptions. When asked which recommendation best describes the advice that professionals give to pregnant women regarding alcohol use during pregnancy, the most common “other” response that professionals gave was that alcohol consumption was acceptable for special occasions only. Birthdays, anniversaries, and Christmas were some of the notable special occasions included. Again, responses varied regarding how much should be consumed on these special occasions. Responses included: “1 glass of beer or wine for special occasion and not more than 1 drink per week”, “occasional drink”, “a sip of wine or beer”, “one half glass of champagne or wine for a celebration, not more

than once a week”, and “one glass on wedding anniversary.” While some professionals did indicate that “there is no safe quantity of alcohol determined for pregnant women”, and in order to “err on the side of caution, no alcohol should be consumed”, these responses were rather limited in the open-ended responses ($n = 12$).

Health Care Provider Differences

Chi-squared analyses were performed to determine whether health care providers felt that managing problems in the area of alcohol use was either the responsibility of the physician or the midwife (see Figure 2). Physicians and midwives were asked to what degree (e.g., strongly agree, agree, disagree, strongly disagree) they perceived it to be the physician’s role or the midwife’s role to manage problems in the area of alcohol use. Significant differences existed between the responses of health care providers when asked whether it was the responsibility of the physician to manage patients’ problems in the area of alcohol use [$\chi^2 (8, n = 826) = 19.28, p = .013$]. Most family physicians (88.1%) agreed with the statement, whereas only 69.2% of midwives agreed with this statement. Also of note was that 5.3% of respondents were undecided as to whether it was the responsibility of the physician or not.

When considering whether midwives were responsible for managing problems in the area of alcohol use, significant differences were also found [$\chi^2 (8, n = 822) = 16.63, p = .034$]. Interestingly, a large number of physicians (72.5%) also agreed that it was the midwives’ responsibility, and once again, fewer midwives endorsed the same statement (56.6%). In this case, 9.0% of those who completed the survey were unsure as to whether or not it was the responsibility of the midwife to deal with patients’ alcohol use problems.

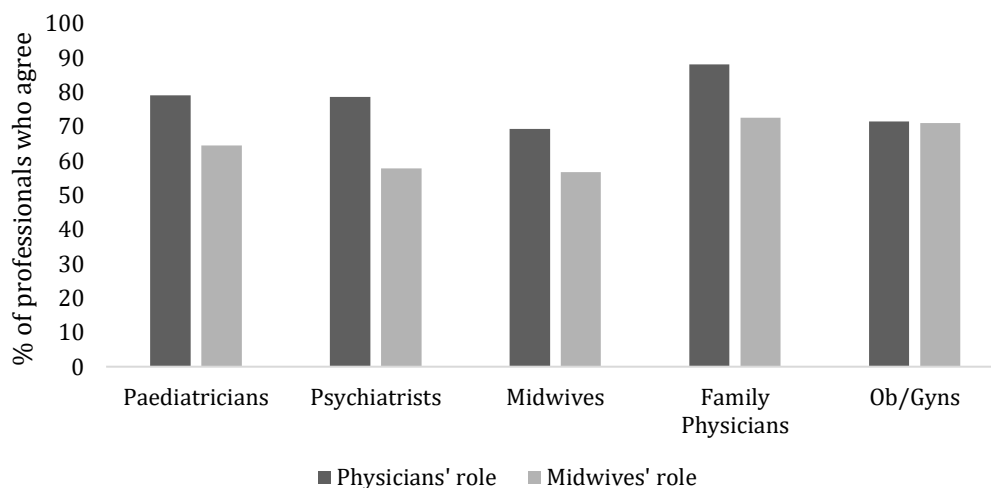


Figure 2. Percentage of providers who agree that it is the role of a physician or a midwife to manage problems in the area of alcohol use.

Rural and Urban Provider Differences

Location of practice, whether in a rural or urban setting, and its influence on whether professionals asked all pregnant patients about their drinking habits (i.e., if currently drinking alcohol) was determined using chi-squared analyses. The results indicated that a significantly greater proportion of rural health care providers (99.1%) asked their pregnant patients about their alcohol use when compared to urban providers (91.6%) [$\chi^2 (1, n = 382) = 7.34, p = .007$].

Chi-squared analyses were also performed to determine differences between rural and urban health care providers in terms of diagnosing FAS in patients as well as caring for patients affected by FAS as part of their practice. Results suggested that the proportion of rural and urban professionals who reported diagnosing FAS in patients was not significantly different. In contrast, a significantly greater proportion of rural providers (49.6%) reported caring for patients affected by FAS in their practice compared to their urban counterparts (38.8%) [$\chi^2 (1, n = 769) = 4.78, p = .029$].

Additional analyses indicated that more rural professionals (61.9%) felt prepared to care

for birth mothers in the area of alcohol use or dependency than those practicing in urban settings (48.7%) [$\chi^2 (1, n = 620) = 6.47, p = .011$] (See Figure 3). Individuals within the following professional groups in rural settings, including obstetricians/gynaecologists (83.3%) and family physicians (65.3%), indicated feeling more prepared to care for birth mothers, compared to psychiatrists (42.9%), paediatricians (42.9%), and midwives (30.8%). However, no significant differences were found between rural and urban health care providers' preparedness to care for pregnant women (rural: 58.4%, urban: 49.6%) or individuals affected by FAS in the area of alcohol use or dependency (rural: 50.4%, urban: 47.1%).

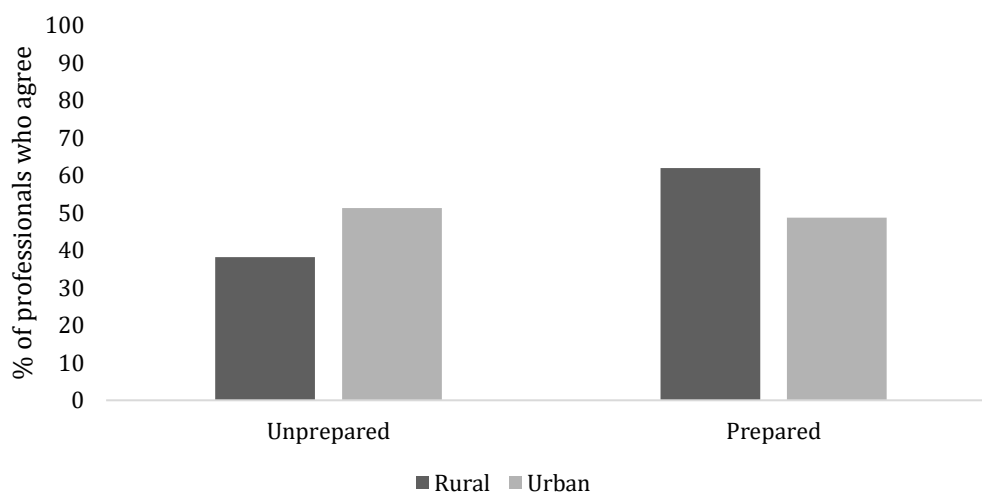


Figure 3. Percentage of rural and urban providers who feel prepared or unprepared to care for biological mothers in the area of alcohol abuse or dependency. Rural providers are more likely to report feeling prepared when it comes to caring for biological mothers in the area of alcohol abuse or dependency ($p = .011$).

Discussion

The authors of this secondary data analysis found that, in general, health care professionals in Ontario were aware of FASD. However, some professionals did not believe that alcohol exposure during pregnancy is a significant risk for brain damage and did not agree that abstinence from alcohol during pregnancy is the best recommendation for women. The authors also found that some confusion existed regarding scope of practice in addressing and diagnosing

FASD. For example, one quarter of participants indicated that diagnosing FAS was beyond their professional responsibility and over half of participants indicated that lack of specific training was a critical barrier to diagnosis and knowledge of FAS and FASD. Participants also identified various sources from which they obtained their information regarding FAS and FAE, including from the mass media and from parents and individuals with FASD, which have implications for the quality and accuracy of information that they receive about FASD.

The finding that not all health care providers recommended complete abstinence during pregnancy is the most disconcerting result from this secondary data analysis. While 87.9% of surveyed Ontario health care professionals agreed with the statement that no alcohol is recommended during pregnancy, compared to 87.5% of professionals who responded to the national survey (PHAC, 2005a), more than 1 in 10 providers did not agree with this statement and cited exceptions to this recommendation (e.g., occasional or light drinking is likely not dangerous, drinking during pregnancy is only problematic for women with alcohol use problems). Also of concern is that several providers who did agree with the recommendation that no alcohol is recommended gave open-ended responses indicating that there are sometimes exceptions or circumstances where occasional or moderate drinking is acceptable (e.g., drinking on special occasions). These findings suggest that professionals may not be providing consistent and clear recommendations to all pregnant women or women of childbearing age.

Women of childbearing age, whether planning on becoming pregnant or not, should be informed of the risks of alcohol consumption during pregnancy. However, challenges exist if health care providers are unaware of, or do not apply, recommended clinical practice guidelines. For example, the Public Health Agency of Canada (2005b) recommends a better implementation strategy of the existing clinical practice guidelines advocating that no alcohol be consumed

during pregnancy. These suggestions mirror the recommendations of the Canadian Centre on Substance Abuse (Finnegan, 2013) for *Canada's Low Risk Drinking Guidelines*. Unfortunately, inconsistent public health policy and varying standards can create confusion as to which recommendations professionals should follow. It is also important to note that these data were collected before these strategies were established.

In 2010, the Journal of Obstetrics and Gynaecology of Canada, in conjunction with the Canadian Association of Midwives, the Association of Obstetricians, the College of Family Physicians of Canada, and the Society of Rural Physicians of Canada, published the *Alcohol Use and Pregnancy Consensus Guidelines* (The Society of Obstetricians and Gynaecologists of Canada [SOGC], 2010). The SOGC refer to themselves as the 'official voice of reproductive health care in Canada' (SOGC, 2010). In the clinical guidelines, the SOGC determined that there is evidence that alcohol consumption during pregnancy can cause fetal harm. However, the SOGC concluded that there is insufficient evidence regarding fetal safety or harm at low levels of alcohol consumption during pregnancy (SOGC, 2010). In rat models, Goodlett, Marcussen, and West (1990) demonstrated that a single exposure to alcohol in late pregnancy could cause a severe loss of brain cells. More recently, findings from a longitudinal study of 607 individuals prenatally exposed to alcohol demonstrated that alcohol exposure at each trimester predicted increased behaviour problems. The authors conclude "there is no safe level or safe time during pregnancy for women to drink" (Day, Helsel, Sonon, & Goldschmidt, 2013, p. 1). While the SOGC does recommend that abstinence is the cautious choice for a woman who is or might become pregnant, considerable debate still exists regarding low levels of alcohol consumption during pregnancy. Inconsistent messaging can lead to confusion between research evidence and suggested practices, and may partly explain the participants' mixed responses in this study.

Despite an identified need to address alcohol consumption during pregnancy and FASD, Canadian findings suggest that less than half of family physicians discussed the risks of alcohol use, drug use, or smoking during pregnancy with women of childbearing age (PHAC, 2005a; Tough et al., 2005a). Only 73.2% of health care professionals in this study reported that they discussed the risks of alcohol consumption during pregnancy with female patients of childbearing age; however, this proportion is nearly twice the national frequency of 40.1% (PHAC, 2005a). These findings suggest that improvements in information exchange between health care professionals and patients on key health issues may be warranted, in particular clarifying the definition of moderate alcohol consumption and the repercussions of alcohol and drug use during the prenatal period and/or pregnancy. Less than half of health care professionals in Canada reported frequently discussing these issues with women of childbearing age (Tough et al., 2005a).

Providing clear and consistent information to women is also critical (Raymond, Beer, Glazebrook, & Sayal, 2009), as a “faulty information delivery system” (Anderson, Hure, Kay-Lambkin, & Loxton, 2014, p. 5) between the provider and the patient can lead to varying perceptions and interpretations about ‘safe levels’ of alcohol consumption during pregnancy. Anderson et al. (2014) found that when women received various and conflicting information regarding alcohol use during pregnancy, they created a hierarchy of information, often relying on health care providers to explain these discrepancies. Women not only view their health care provider as a reliable source of information, but also believe they hold *expert* knowledge (Anderson et al., 2014). Therefore, if health care professionals are ill-informed about the risks of prenatal alcohol exposure or do not provide their patients with valid information (e.g., if they condone moderate or light drinking or indicate that alcohol is only dangerous during the first

trimester), professionals are potentially increasing their patients' risks of having a child with a FASD.

It is also important to understand where professionals are obtaining their information regarding FASD. Almost half (44.2%) of health care professionals in general, and over half (53%) of rural professionals specifically, in this study identified that they received their information about FASD from the mass media. Trusting potentially unreliable sources can be problematic, given the recent social movement towards encouraging mild to moderate alcohol use during pregnancy. For example, economist Emily Oster's book, *Expecting Better: Why Conventional Pregnancy Wisdom Is Wrong – and What you Really Need to Know*, created considerable controversy in 2013 when she concluded that current research shows that it is harmless to drink a limited amount of alcohol during pregnancy. Michelle Ruiz also generated debate with her *Cosmopolitan* article in October of 2014 entitled *“Why I Drank While I Was Pregnant.”* Both media sources cite highly criticized research and conclude that light to moderate drinking during pregnancy poses no risk to the fetus.

This movement is concerning, given research trends that demonstrate that health care professionals are increasingly accessing their information about FASD from mass media sources, as also demonstrated by the results of this study. For example, Payne et al. (2011a) noted that obstetricians and gynaecologists, in particular, cite the media as one of their main sources of information. Additional research has also shown that an increasing proportion of paediatricians report being informed about alcohol use during pregnancy by the media (Payne et al., 2011b). While the majority of health care professionals continue to gain knowledge about FAS and FASD from journals and books (Payne et al., 2011a), fewer professionals, compared to an earlier study of the same population, reported gaining their knowledge of FASD from scientific, peer-

reviewed journals and books (Payne et al., 2011b). These findings indicate a need to disseminate accurate information, in a useful format, through the media.

Importantly, some health care professionals in this study also indicated accessing information regarding FASD from parents and patients with FASD, but the percentages of professionals who did so were rather low, with only 19.8% of professionals in general and 27.3% of professionals practicing in rural communities indicating that they obtained information in this way (compared to 24.1% of respondents in the national survey results; PHAC, 2005a). These percentages may speak to the challenges reported by families of children with FASD who express their frustrations at not being heard by their child's health care provider and frequently cite these professionals as being unsupportive (Coons, Watson, Schinke, et al., 2016; Watson et al., 2013).

Health care professionals in this study also identified that there was confusion and overlap surrounding whose role it is to manage FASD. Because FASD crosses many sectors of society (e.g., health, education, social services), and individuals with FASD and their families access many different health care providers, these varying perspectives may be, in part, related to challenges determining whose scope of practice it is to primarily address FASD. These varying perspectives are also likely due to the fact that, depending on the patient's circumstances (e.g. pre-partum or postpartum), diverse providers may play the primary role. For example, midwives and obstetricians or gynaecologists play an important role in the primary prevention of FASD and are responsible for a woman's health during pregnancy and immediately afterwards. Different timings of responsibility may account for the finding that a smaller proportion of midwives agreed that it was their responsibility (56.6%) than those who agreed it was the physician's responsibility (69.2%). However, a large proportion of midwives still agreed that it

was their role, indicating that some professionals may feel that it is not the sole responsibility of any individual health care provider to manage FASD. The importance of role clarity is crucial as a clear understanding surrounding one another's roles and responsibilities promotes successful interprofessional collaborations between physicians and midwives (Munro, Kornelsen, & Grzybowski, 2013). Contrastingly, Munro and colleagues (2013) found that a lack of understanding between physicians and midwives regarding each other's scope of practice could lead to challenges in providing interdisciplinary care to pregnant women, especially in rural communities.

Furthermore, paediatricians and family physicians may also play a more central position in directly managing the individual with FASD, as opposed to a woman of childbearing age or a pregnant woman. Research has demonstrated that paediatricians are often called on to provide a medical home for children with FASD, and therefore are responsible for coordinating mental health services, providing consultations to special education programs, and managing medications for attention deficit hyperactivity disorder or other comorbid mental health disorders (Gahagan et al., 2006).

Findings from this study also demonstrated some variability in health care professionals' experiences in diagnosing FAS. Many professionals indicated that diagnosing FAS was beyond their scope of practice, and cited a number of barriers that can impede their ability to diagnose FAS. Research findings from Gahagan et al. (2006) showed that paediatricians may specifically express a reluctance to concentrate their efforts on diagnosing FASD, as they perceive it to be an untreatable condition. Future medical education should include known benefits of early diagnosis and intervention for children with FAS and FASD, such as the potential for preventing secondary disabilities.

Finally, findings from this study also indicated that rural health care professionals asked more of their pregnant patients about their alcohol use, cared for more patients with FAS in their practice, and felt more prepared in particular situations (e.g., to care for birth mothers), compared to their urban counterparts. The scarcity of paediatric specialists in rural areas could lead to other health care providers treating patients with FASD in their daily practice. In other practice settings, such as larger urban centres, professionals may be more likely to refer their patients to see a specialist (e.g., geneticist, developmental-behavioural paediatrician, or neurologist) for additional evaluation or assessment if necessary (Gahagan et al., 2006). Rural professionals may also have more training and more experience in the area of FASD, as they are expected to have more generalized practices and generally see more patients. This preparedness is likely due to rural providers having more exposure to individuals with FASD (attributable to the higher prevalence rates in rural areas), as well as rural providers seeing more patients with FASD than their urban counterparts (Tough et al., 2008).

Limitations and Future Directions

Although this study was the first study to address the level of knowledge of FASD held by rural and urban Ontario health care professionals, a number of limitations presented, predominantly the age of the data used for the secondary data analysis. These data are 15 years old, and as such may not reflect the current level of knowledge held by practicing health care professionals today. This study should be updated, utilizing the original data as a baseline for comparisons, and additional research should be conducted to determine the level of knowledge of FASD held by health care professionals in Ontario today. Additional research should also examine the level of knowledge of FASD held by future health care professionals to determine if students are adequately educated about FASD during their medical training. Future research

should also address health care students' and health care professionals' feelings of self-efficacy in working with women of childbearing age, pregnant women, and individuals with FASD.

Because of the age of the original data collected, there are also differences in the terminology used (e.g., FAS, FAE). The term FASD is now used as a diagnostic label, with the differentiation of FASD with and without sentinel facial features (Cook et al., 2015). The new diagnostic guidelines also include an at risk category for neurodevelopmental disorder and FASD associated with prenatal alcohol exposure (Cook et al., 2015). Health care professionals today may have a different level of knowledge of FASD, given the changing terminology of the disabilities included under the spectrum. However, research has shown that health care professionals do tend to have better knowledge of FAS compared to other disabilities on the fetal alcohol spectrum, which may be influenced by a focus on FAS specifically in medical education or the overshadowing of FASD as a topic in medical education (Nanson, Bolaria, Snyder, Morse, & Weiner, 1995). Additionally, because of the changing terminology, some of the issues identified in this study (e.g., changing diagnostic criteria) have likely been lessened since the time the original study was published. The role of professional counselling in primary prevention of FASD should continue to be stressed in medical education curricula, so that future generations of providers will incorporate these principles into their practice (Zoorob, Aliyu, & Hayes, 2010).

In addition to the age of the data, the original study did not include an operational definition of rural. Health care professionals were asked to indicate whether or not they perceived their practice to be rural or urban. This self-perception created some confusion, as a number of providers indicated their practice was both rural and urban. In line with recent rural health research, future research with this population should include an operational definition of rural, as different definitions generate a different number of rural people or professionals.

Despite its limitations, this study used a large sample size and a very thorough survey to demonstrate the level of knowledge held by health care professionals in Ontario.

Conclusion

FASD is a preventable disability and health care professionals play a key role in its prevention; however, results from this secondary data analysis indicate that many physicians, midwives, and other health care professionals may have inconsistent knowledge regarding the impact of prenatal alcohol exposure. Consequently, women of childbearing age may be receiving mixed messages from health care professionals, resulting in confusion and potentially harmful behaviours. Clear, consistent recommendations regarding alcohol use during pregnancy are required in order to prevent FASD and its potentially devastating effects. By understanding the knowledge deficits of health care professionals, these gaps can be targeted and subsequently addressed in health care education and training.

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Key Messages From This Article

People with disabilities: You should have access to educated health care professionals who are aware and understand your disability. You should also feel confident and comfortable with the level of care provided by the doctors that you see.

Professionals: FASD is a preventable disability that you have a critical role in preventing. Professionals need to be educated about FASD and provide accurate advice to pregnant women. Professionals need to be wary of the information they obtain from the mass media; information regarding FASD should be obtained from more scientific sources.

Policy makers: FASD is a preventable disability. Ontario needs a provincial strategy to address and prevent FASD. This strategy should include educating health care professionals about FASD as a major priority.

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“No Alcohol is Recommended, but...”:

Health Care Students’ Attitudes About Alcohol Consumption during Pregnancy

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Conflict of Interest:

None

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Abstract

Canadian findings suggest that health care providers require further training and education to support their work preventing Fetal Alcohol Spectrum Disorder (FASD). However, the knowledge and training of health care students in relation to FASD remains largely unexplored. The purpose of this study was to understand the attitudes and beliefs of health care students about alcohol use during pregnancy. Twenty-one health care students participated in a scenario-based vignette about alcohol consumption during pregnancy. Although almost all students recognized that no alcohol consumption during pregnancy is the safest recommendation, many students recounted that this advice is not always conveyed during encounters with their pregnant patients. Three primary themes related to students' attitudes concerning alcohol use during pregnancy were identified. Health care professionals in training need further education about the risks of alcohol consumption during pregnancy and the potential health outcomes associated with prenatal alcohol exposure.

Keywords: alcohol/alcoholism; disability, developmental; education, professional; health behavior; health care; pregnancy; relationships, health care; self-efficacy; women's health

“No Alcohol is Recommended, but...”:

Health Care Students’ Attitudes About Alcohol Consumption during Pregnancy

Introduction

Fetal alcohol spectrum disorder (FASD) is a broad term used to describe the range of presentations and impairments resulting from prenatal alcohol exposure, including physical, behavioral, emotional, adaptive, and neurocognitive disabilities (Cook et al., 2015; Pei, Tremblay, McNeil, Poole, & McFarlane, 2017). FASD has been identified as a major public health concern in Canada, and consequently there is a need for accurate information about the potential consequences of alcohol use during pregnancy. According to the Public Health Agency of Canada, “there is no safe amount, and no safe time, to drink alcohol during pregnancy” (Public Health Agency of Canada, 2014). In 2010, the *Journal of Obstetrics and Gynaecology of Canada*, in conjunction with the Canadian Association of Midwives, the Association of Obstetricians, the College of Family Physicians of Canada, and the Society of Rural Physicians of Canada, published the Alcohol Use and Pregnancy Consensus Guidelines (The Society of Obstetricians and Gynaecologists of Canada, 2010). In the clinical guidelines, the Society of Obstetricians and Gynaecologists of Canada (SOGC) determined that there is evidence that alcohol consumption during pregnancy can cause fetal harm. However, the SOGC concluded that there is insufficient evidence regarding fetal safety or harm at low levels (i.e., low-risk drinking), defined as no more than 2 standard drinks on any one day and no more than 9 standard drinks a week for women, of alcohol consumption during pregnancy. The SOGC recommends that abstinence is the cautious choice for a woman who is or might become pregnant (SOGC, 2010), a recommendation that was recently reiterated in the updated Canadian guidelines for FASD diagnosis (Cook et al., 2015). However, considerable debate still exists regarding low levels of

alcohol consumption during pregnancy (Nathanson, Jayesinghe, & Roycroft, 2007; O'Brien, 2007), which may lead to confusion between research evidence and suggested practices, and even confusion between recommended clinical guidelines from various regulatory bodies.

Subsequently, health care professionals may have different attitudes about 'safe' levels of alcohol use during pregnancy and may provide different recommendations to their patients. Health care professionals play a critical role in the prevention of FASD, particularly through guidance about alcohol use and consumption during pregnancy. However, Canadian results suggest that less than half of family physicians discuss the risks of alcohol use, drug use, or smoking during pregnancy with women of childbearing age (Tough, Clarke, Hicks, & Clarren, 2005). Providing clear and consistent information to women is also critical (Raymond, Beer, Glazebrook, & Sayal, 2009), as a "faulty information delivery system" (Anderson, Hure, Kay-Lambkin, & Loxton, 2014) between the provider and the patient can lead to varying perceptions and interpretations about 'safe levels' of alcohol consumption during pregnancy. Anderson and colleagues (2014) found that when women received multiple and conflicting information regarding alcohol use during pregnancy, they created a hierarchy of information, placing health care providers at the top of their hierarchy, and often relying on health care providers to explain these discrepancies. Women not only view their health care provider as a reliable source of information, but also believe they hold *expert* knowledge (Anderson et al., 2014).

The lack of knowledge regarding consequences of prenatal alcohol exposure, and conflicting information about potential fetal harm, demonstrated by practicing health care professionals may reflect shortcomings in medical training about alcohol use during pregnancy, and more specifically related to the patterns of mental and physical defects caused by in utero exposure to alcohol (Vagnarelli et al., 2011). Consequently, there is a need to investigate

students' knowledge and training in this area, so future health care providers are confidently transitioning into clinical practice. However, health care students' attitudes about alcohol use during pregnancy remains largely unexplored. To the authors' knowledge, few studies exist examining medical students' knowledge, awareness, and self-efficacy in relation to FASD (Arnold et al., 2013; Walter & Kerr, 2011), and very limited studies include nurses, nurse practitioners, and nursing students (Brimacombe, Nayeem, Adubato, DeJoseph, & Zimmerman-Bier, 2008; Caley, 2006), or licensed midwives (Crawford-Williams, Steen, Esterman, Fielder, & Mikocka-Walus, 2015a, 2015b; Jones et al., 2011; Payne et al., 2014). Furthermore, to our knowledge, no studies exist that include midwifery students. The purpose of this study was to understand the attitudes and beliefs of health care students about alcohol use during pregnancy, particularly regarding their views on 'safe levels' of alcohol use. Please refer to our companion article (Coons, Watson, Yantzi, Lightfoot, & Larocque, 2017) for a more indepth discussion of health care students' attitudes, beliefs, and perceptions as they pertain to the divergent recommendations given to different groups of women.

Methods

This study is part of a sequential, explanatory mixed methods project examining health care students' knowledge, attitudes, and self-efficacy regarding FASD. The study included two phases; all students who participated in Phase I of the study (two quantitative questionnaires) were invited to take part in Phase II (semistructured qualitative interviews and scenario-based vignettes). Phase II of the study was informed by social constructionism, understanding that our meaning of the world is not discovered, but rather is constructed based on our dealings with society (Crotty, 1998; Merriam, 2009). Of particular importance to the social constructionism perspective is that different people may construct meaning in different ways, even in relation to

the same phenomenon. Students worked through the vignettes, which were designed to address the primary issue of students' attitudes towards alcohol consumption during pregnancy. This article presents the results from the qualitative vignettes.

Participants

After receiving ethics approval from the Laurentian University Research Ethics Board, students in this study were accessed through the Northern Ontario School of Medicine (NOSM), as well as the Midwifery and Primary Care Nurse Practitioner Programs at Laurentian University in Sudbury, Ontario, Canada. Respondent-driven, purposive convenience sampling was used, whereby individuals known to the researchers (e.g., program coordinators, professors, colleagues) were contacted in the hopes of reaching students who would be willing to participate. Students were also accessed through various social media sites, including Facebook and Twitter. Students were directed to an online survey link in REDCap (Research Electronic Data Capture; Harris et al., 2009) hosted at Laurentian University if they were interested in participating in the study. Of the 45 participants who participated in Phase I (the quantitative questionnaires), 21 students indicated their willingness to participate in Phase II. Students who participated in this phase of the study received a \$10 Tim Horton's gift card to thank them for their time. Participants included seven undergraduate medicine students, eight midwifery students, and six nurse practitioner students. Further information outlining participant demographics can be found in Table 1. For confidentiality purposes, all participants in this study will be referred to by pseudonyms to protect their identities. Furthermore, in addition to participants' names, any identifying information (e.g., location of practice) has been changed or omitted to maintain participant anonymity.

Table 1. Participant demographic characteristics.

Demographic characteristics	
Characteristics of health care students (<i>n</i>)	21
Medical students	7
Lower Year (3)	2
Upper Year (4)	5
Age (SD)	28.71 (6.05)
% Female	57.1%
% Currently Pregnant	0%
Midwifery students	8
Lower Year (3)	2
Upper Year (4)	6
Age (SD)	26.63 (2.83)
% Female	87.5%
% Currently Pregnant	0%
Nurse Practitioner students	6
Lower Year (1)	3
Upper Year (2)	3
Age (SD)	33.33 (11.15)
% Female	83.3%
% Currently Pregnant	0%

Vignettes

Participants completed one of three different scenario-based vignettes addressing their *perceived* knowledge and self-efficacy regarding FASD and alcohol consumption during pregnancy, where scenarios were rotated between interviews and each participant completed one vignette. Each of the three vignettes is included as an appendix at the end of this article.

The vignettes were designed to be as open-ended as possible, with semistructured prompting questions as needed, to elicit thoughtful responses and perceptions about students' attitudes about alcohol use during pregnancy. The vignettes and semistructured interview were conducted at the same time, with students being asked to respond to the vignette prior to the

interview questions. Responses to the vignettes lasted between 8 and 15 minutes. Interviews were conducted by the lead researcher and were scheduled at the convenience of participants. All interviews took place at locations agreed upon by both the participant and the interviewer, such as local coffee shops or at the university, or virtually over the phone or via Skype based on participants' choice. Students were e-mailed a copy of the vignette prior to the scheduled interview time (e.g., if the interview was conducted over the phone/via Skype), or were provided with a hard copy of the vignette (e.g., in-person interview), and were asked to read (or listen to the first author read) the vignette at the beginning of the interview. After reviewing the vignette (either scenario one, two, or three), students were asked to provide their first impressions. Additional prompting questions were used to obtain further responses about health care students' attitudes about alcohol use during pregnancy, their comfort in working with these hypothetical women, and their recommendations for the women in each scenario.

The use of vignettes allowed students to demonstrate their perceived level of knowledge through a clinical application exercise and was instrumental in understanding health care students' existing beliefs and prejudices about FASD, as well as their perceived self-efficacy and ability in applying their knowledge to practical situations. The vignettes were modeled after vignettes created by Reiss and colleagues (Reiss, Levitan, & Szyszko, 1982; Reiss & Szyszko, 1983) and were informed by societal issues (e.g., public examples discussing alcohol use during pregnancy, such as Michelle Ruiz's article in *Cosmopolitan*, *Why I Drank While I Was Pregnant*, and Emily Oster's book, *Expecting Better: Why Conventional Pregnancy Wisdom Is Wrong – and What you Really Need to Know*), and were primarily derived from parental experiences raising children with FASD (Coons, Watson, Schinke, & Yantzi, 2016; Coons, Watson, Yantzi, & Schinke, 2016). The vignettes allowed the researchers to collect information regarding how

students would behave in potential “real life” situations, based on the manipulation of variables that would not necessarily be possible in other types of research studies, such as observational research. The vignettes were written and revised several times by the first two authors and were member checked with parents of children with FASD who had participated in previous research (Coons, Watson, Schinke, et al., 2016; Coons, Watson, Yantzi, et al., 2016) and whose stories informed the written scenarios. Nine parents and caregivers raising children with FASD in Ontario, including biological, adoptive, and foster parents, reviewed the vignettes and approved their content and realism, indicating that the stories presented in the vignettes are an accurate representation of parents’ feelings and experiences regarding FASD and alcohol use during pregnancy. In addition to the member check, a pilot test of the vignettes was also conducted with a second year medical student to ensure the clarity of the scenarios, as well as determine how long the discussion of each vignette may take. No changes were made to the vignettes following the pilot test.

Data Analysis

Braun and Clarke’s (2006) thematic analysis approach was used to identify, analyze, and report patterns within the data. This analysis approach is congruent with social constructionism. Interview transcripts were transcribed verbatim and transcripts were read and reread to familiarize the primary researcher with the content of the vignettes, noting initial ideas and comments (e.g., individual words, phrases, and full paragraphs). These initial notes were then used to further code the data in a systematic fashion, organizing data into relevant codes. Coded data were then used to generate potential themes, which were further reviewed and refined into clear themes, where each theme was given a descriptive label taken directly from the words of participants. Member checking was also conducted during the data analysis phase to ensure the

themes generated were representative of the participants' experiences (Shenton, 2004).

Participants were provided with a summary table of themes to ensure the accuracy of the researchers' interpretations. Participants were also invited to review their interview transcripts and provide additional feedback.

Results

Although almost all students in this study recognized that no alcohol consumption during pregnancy is the safest clinical recommendation, many students recounted that this advice is not always conveyed during encounters with their pregnant patients. Students in all three groups expressed differing attitudes towards alcohol consumption during pregnancy. Using thematic analysis, three primary themes related to students' attitudes concerning alcohol use during pregnancy were identified: attitudes regarding amount of alcohol consumption and timing of exposure, a professional obligation to inform patients that no alcohol is the safest recommendation, despite no conclusive evidence, and personal choice.

Attitudes Regarding Amount of Alcohol and Timing of Exposure

“So many clients ask if they have ‘ruined their babies’”: Alcohol exposure before pregnancy identification. Although students, particularly in the midwifery program, emphatically believed that women should not drink alcohol during the first trimester, they were less concerned about alcohol exposure during the second and third trimesters. Sally, a fourth year midwifery student, and Simon, a fourth year medical student, both discussed the commonly held belief that women should not consume alcohol during the first trimester. As Simon stated: “Obviously the first trimester is ... the most sensitive time for the developing fetus.” While some students went on to discuss that alcohol exposure can potentially have teratogenic effects at any point in the

pregnancy, several students were most concerned about the first trimester and stated that if there was ever a time in pregnancy to abstain it would be during the early months of a pregnancy.

Despite receiving different vignettes with varying amounts of alcohol consumption, students' responses regarding alcohol consumption during pregnancy were relatively similar for drinking during early pregnancy. Many students also emphasized the risk of drinking before you know you are pregnant, but challenged the idea that a one-time, binge exposure, such as the one presented in vignette two, could potentially cause damage. For example, Eva, a fourth year midwifery student, argued in response to Kimberly's ten drink binge episode in vignette two that:

My first impression is that a lot of people drink before they realize that they are pregnant and often times what we say to people is there's this lovely all or nothing effect...I wouldn't be concerned about that one incident of drinking and would talk to her about how we encourage...officially no alcohol...but not to hold on to worries about that one night.

Students noted the delicate balance between advising patients about recommended guidelines and contending with patients' fears that they had "ruined their babies" by drinking before they knew they were pregnant. Students spoke of the need to weigh the risk of anxiety during pregnancy with the potential risks to the baby, and often expressed concern for the stress level of the mother if she knew she had drunk before pregnancy recognition. For example, Reece, a fourth year midwifery student, discussed the importance of supporting moms-to-be who may have consumed alcohol before they knew they were pregnant, such as vignette two: "In the grand scheme of things it wasn't a huge amount of alcohol, she didn't know, and so...just keep doing what she's doing and abstaining from alcohol.... Tell her she's doing a good job doing what

she's doing [now]." Regina, a fourth year medical student, shared a similar remark and noted that "this is not the first pregnancy that someone might have had drinks during...and most of the time we deliver healthy babies."

While some students focused on the perceived risks of alcohol exposure at different times during pregnancy, other students subscribed to a completely abstinence-based approach that started prior to conception. Rebecca, a fourth year medical student, and Charlotte, a second year nurse practitioner student, both specified that if trying to get pregnant or if a pregnancy could be occurring at any time, then women "shouldn't be drinking alcohol." For patients who may have already been consuming alcohol, such as in the vignettes, Charlotte went on to say that she "would have advised her, as soon as she would start trying to become pregnant...to act as if she was", which included avoiding certain medications, alcohol, smoking, and recreational drug use. Unfortunately, almost all students commonly encountered patients who had consumed alcohol before knowing they were pregnant during their health care training and spoke to the need to acquire more training in this area to be able to confidently discuss the potential risks with their patients.

"At this point, from what she's disclosed, I wouldn't say I'm too worried": Amount of alcohol exposure. Despite identifying the potential negative consequences of alcohol exposure during pregnancy, many students reflected that the amount of alcohol exposure presented in the vignettes was not a cause for concern. Participants often used the phrase that "officially" no alcohol was recommended by the Public Health Agency of Canada and their preceptors, but thought that "some" was likely okay. Students also identified their perception that alcohol exposure likely had a cumulative effect over the duration of the pregnancy and expressed a desire for an established threshold that they could use to discuss alcohol use with their pregnant

patients. Consequently, they had a hard time “definitively” saying that any amount of alcohol would be dangerous during a pregnancy.

Participants were aware that binge drinking is never recommended, but were much more uncertain of the potential effects when it came to “light” or “moderate” levels of alcohol exposure, or one-time binge exposures. For example, Eva, a fourth year midwifery student, identified that the binge exposure in vignette two, which included ten drinks on one occasion early in the first trimester, would “not [be] enough that I’d really be red flagging it.” Similarly, Reece, also a fourth year midwifery student, believed that the amount of alcohol consumption presented in the same vignette was not substantial enough to potentially cause FASD: “I don’t know that that amount of alcohol consumption... I don’t think we would even talk about FASD and monitoring for that as the child grows up.” Layla, a third year medical student, also shared her uncertainty regarding the potential outcomes associated with alcohol use in her response to vignette three, which included occasional exposure to alcohol: “My understanding is that there may be some consequences to her baby when it’s born. It could have issues related to FASD, whether they’re cognitive or behavioral, social, physical issues, they’re all possible. But just because she did drink, that doesn’t necessarily mean that that’s going to happen.”

Interestingly, students who received the vignette in which the family doctor advised a pregnant patient to consume alcohol were outright shocked and expressed anger at such a recommendation. For example, Jacqueline, a fourth year midwifery student, argued that the doctor’s guidance was “horrible advice” and that she didn’t know “where the doctor is getting that advice from.” Other students, such as Rebecca, a fourth year medical student, believed that this doctor should “lose their medical licence” because they were not “giving appropriate medical advice” and Mindy, a first year nurse practitioner student, even believed that the doctor

“could be charged for malpractice.” These attitudes were in stark contrast to students’ viewpoints and recommendations that surrounded “light” or “moderate” drinking.

Obligation, But No Conclusive Evidence

“Obligation to inform that no alcohol is best”: *Responsibility to talk to patients*. In regard to alcohol consumption, participants stressed that they are duty-bound by their professional obligations (e.g., responsibility to their regulatory bodies) to inform their patients that no alcohol is the best and safest recommendation, but it can be difficult for health care providers to relay a clear directive to their patients if there is no well-defined consensus about the message and the available research findings.

While the first theme demonstrates that students may have specific deficits in certain areas (e.g., knowledge of the impact of exposure during different trimesters; lack of awareness of the outcomes associated with varying amounts of alcohol consumption), this theme demonstrates that students are significantly more resistant to outright stating that small amounts of alcohol exposure can cause fetal damage. Many students expressed their disbelief regarding the necessity of total abstinence during pregnancy, and referred to alcohol use as a “technical” or “theoretical” risk. For example, Alina, a second year nurse practitioner student, elaborated that the woman presented in vignette one was “right that there are no... technical studies, [that] you drink this much alcohol, your baby will turn out this way.” Almost every student voiced their belief that there is a lack of “clear”, “conclusive”, or “concrete” evidence regarding varying levels of alcohol consumption during pregnancy and identified that the women in the vignettes were “right in the fact that there is no conclusive evidence”.

Despite agreement regarding the lack of existing academic consensus, participants were divided regarding their attitudes and recommendations towards “light” drinking, with some students arguing that some alcohol use was likely okay, and other students maintaining that abstinence was the more prudent choice. For example, Braden stated: “She made a comment that there’s no...evidence that light drinking during pregnancy will harm her baby. That’s maybe a little bit of a tough thing to argue but there’s certainly no conclusive evidence that there is any safe level to it and so I think that it’s important to emphasize that there is not any sort of established safe level...there’s always that risk that what she’s doing is harming the child.” Other students, such as Rebecca, a fourth year medical student, and Josh, a second year nurse practitioner student, took a firmer stance and maintained that their pregnant patients should “100% [abstain]” and “absolutely refrain from drinking alcohol” because “no amount of alcohol is ever safe for a woman when she is drinking during her pregnancy.” Students emphasized their anxiety and apprehension about maintaining their professional responsibilities (e.g., obligation to counsel around alcohol abstinence) and their individual attitudes about alcohol use during pregnancy.

“If we don’t know what the risks are, people aren’t making informed choices”: Knowledge of potential risks. Because of their disbelief that small amounts of alcohol consumption during pregnancy may cause FASD, some students, such as Phillip, a fourth year medical student, also contended that a threshold level may not exist, because “fetal alcohol effects are not an all or nothing thing where there’s some threshold level you go over.” Despite their professional obligations, students discussed their bewilderment in regards to counselling patients if they themselves were not accurately informed about the potential risks. Students noted the uncertain nature of the existing body of literature, indicating that “the impacts aren’t fully known, so it’s

better to just stay on the safe side and not drink” because the effects are likely different for each individual woman. Furthermore, students expressed confusion over what the terms “occasional” or “lightly” meant and Grace, a fourth year midwifery student, for example, noted the importance of having a discussion and clarifying with patients “how many drinks she has and how big the beer is and how big the glass of wine is to see how much, in the measurement form, she is in-taking.” Grace further remarked that “excessive” alcohol use during pregnancy “is bad, but what does excessive mean”, indicating the importance of quantifying and precisely measuring how much alcohol their patients may be consuming.

As a consequence of this confusion, students expressed difficulty in judging the potential risks of alcohol consumption during pregnancy, especially regarding social drinking, occasional drinking, or a one occasion episode of drinking (e.g., multiple drinks in one sitting). As Braden stated: “We’re not gonna pass a law that says moms aren’t allowed to drink alcohol, but we can give them information about the risks. But the trouble is we’re giving them vague information about risks.” He further elaborated that problems can arise if health care providers are not informed about the potential risks because they are not presenting their patients with the information required to make “informed choices” about their pregnancy.

Therefore, participants noted the importance of obtaining credible information to support their patients in making an informed decision about their pregnancy, as well as in accurately determining the potential risks to their patients and their babies. Sally, a fourth year midwifery student, recommended offering patients with the best evidence possible, including recommendations from the Public Health Agency of Canada: “I would first of all always preface with the Health Canada recommendation which is that there’s no safe time in pregnancy to drink alcohol and that there’s no amount of alcohol that is considered safe.” Other students, such as

Mackenzie, a fourth year midwifery student, stressed the importance of accessing “good research” to inform their health care practices, as well as provide accurate information for patients. As she elaborated: “I actually don’t know if there is a Cochrane review, I’m sure there is. Things like that, studies and reviews of other studies.” Therefore, students highlighted the need to obtain trustworthy information to address their confusion regarding alcohol consumption during pregnancy.

Personal Choice

“As long as she’s informed ...she can make her own choice”: *Respecting the mother*. A common thread throughout both main themes previously presented was the belief that, ultimately, the decision to consume alcohol during pregnancy was the sole personal and individual choice of the pregnant woman. This attitude was most notably present in midwifery students, compared to the medical and nurse practitioner students. Only one second year nurse practitioner student, Alina, discussed the personal choice aspect, noting that “it’s up to [the pregnant woman]. It’s her decision ultimately.”

Almost every single midwifery student elaborated on their unique approach to care, accentuating that midwives are present to directly support the mother. Several midwifery students, such as Sally, Mackenzie, and Grace, discussed their approach to care and stressed that individual choice is a critical part of their professional role. The discussion of choice was exceptionally important when it came to students’ conflicting attitudes surrounding light drinking during pregnancy. As Sally elaborated: “If you preface with public health information you can pretty much say ‘as a health care provider, I’m required to say X-Y-Z’...Especially from the midwifery angle, talk about choice. So here is the guideline and of course your pregnancy is your choice. Your lifestyle, your choice.” Mackenzie, who responded to vignette one,

highlighting occasional and light alcohol use during pregnancy, also again called to attention the lack of clear research about a safe level of alcohol consumption during pregnancy and how this influenced her attitudes about individual choice during pregnancy: “She’s right that there’s not...a ton of conclusive research about how much alcohol is safe or unsafe and I feel that it’s her decision to make so...I feel pretty comfortable about the situation overall.”

Many midwifery students emphasized that the ultimate decision about how much alcohol to consume lay with the pregnant woman because it was up to her to establish how much alcohol is “acceptable.” Because of the perceived “unknown impacts” that alcohol can have, the midwifery students outlined that they would “respect” a woman’s choice when it came to light drinking and would always finish off their professional counselling by stating that it is always the woman’s decision in terms of how much alcohol she wants to consume and what is tolerable to her during her pregnancy.

Discussion

The authors of this qualitative study found that, when presented with scenario-based vignettes, health care students express conflicting attitudes about the safety associated with alcohol use during pregnancy. Previous qualitative interviews with health care professionals indicate that providers have varying perceptions of harm, depending on timing of exposure and quantity of alcohol consumed (Crawford-Williams et al., 2015a). All participants in this study believed that small amounts of alcohol, such as an occasional glass of wine, were unlikely to cause harm. Some participants in this study also indicated that alcohol consumed later in pregnancy was less likely to cause harm than if consumed in the first trimester. Despite demonstrated knowledge that abstinence from alcohol during pregnancy is the most prudent and safest choice, some health care students were unwilling to recommend complete abstinence

based on the perceived lack of clear evidence associated with light or moderate drinking. This finding is not surprising, given the ongoing debate in the literature regarding a potential threshold effect, below which there is no harm to a developing fetus, and the question of adequate evidence to conclude a safe level of alcohol consumption (O'Leary & Bower, 2012). Research findings regarding the levels of alcohol consumption that cause harm have been limited and conflicting (Henderson, Gray, & Brocklehurst, 2007). While overall research findings have suggested that there is no strong evidence implicating low levels of prenatal alcohol exposure with fetal harm (O'Leary & Bower, 2012), recent studies have demonstrated an increased risk (e.g., aOR 2.24 of increased anxiety/depression; higher risks for mental health problems, particularly hyperactivity and inattention) of neurodevelopmental challenges (O'Leary et al., 2010; Sayal et al., 2009) and preterm birth (O'Leary, Nassar, Kurinczuk, & Bower, 2009) following in utero exposure to lower doses of alcohol. However, it is essential to note that a lack of clear evidence does not equate to a confirmation of safety (Jones, Chambers, Hill, Hull, & Riley, 2006) and the sensitivity of the fetus to alcohol may vary depending on a number of factors including the dose, pattern, and timing of exposure, making it impossible to estimate the overall risk of any potential effects. This critical point needs to be reiterated to health care students in training and practicing health professionals. It is important that providers are informing women and their partners that there is no safe level of alcohol use during pregnancy, as advice allowing for one or two drinks on special occasions, or accepting infrequent alcohol use, can lead to confusing and conflicting messages for pregnant women.

Students expressed significant anger and resentment to the vignette in which a health care provider directly recommended alcohol use during pregnancy as a coping mechanism for stress. Students' reactions to this particular vignette differed significantly from students who were

presented with the other two vignettes, who were more accepting of alcohol use during pregnancy, especially in lower amounts or in infrequent binges. This finding may indicate a level of cognitive dissonance between students' beliefs regarding safe levels of alcohol exposure, at different times and amounts during pregnancy, compared to an outright recommendation to drink. However, the differing attitudes across groups noted in this study are similar to current research conclusions indicating that some health care provider groups, such as midwives, may still recommend that alcohol can be used to relieve stress for the mother (Crawford-Williams et al., 2015b). Additionally, research findings suggest that midwives may also hold the belief that this perceived stress relief may outweigh any risk of harm to the baby and may actually have positive benefits (Crawford-Williams et al., 2015b). Women who are feeling anxious and stressed need to be clearly informed of the potential risks that alcohol may pose to the fetus and mothers-to-be need to be provided with adequate support to help them cope with their pregnancies. Abstinence messages should be balanced, non-judgmental, and should present the argument of 'do no harm' to help avoid the initiation of further apprehension and strain in the pregnant mother. As the students in this study identified, women need to be provided with alternative strategies to manage any worry and tension regarding their pregnancy.

There is also a need for health care providers to deliver supportive care to women who may have consumed alcohol before knowing they were pregnant. Providing strictly abstinence-based advice during patient interactions may cause pregnant women to develop feelings of guilt or anxiety when unintentionally having consumed alcohol while pregnant (France et al., 2010; van der Wulp, Hoving, & de Vries, 2013). The reality is that many pregnancies are exposed to alcohol prior to pregnancy identification and, for some, the level of exposure may be very high (O'Leary & Bower, 2012), as was presented in vignette two. Women often continue their usual

pattern of alcohol consumption into the early weeks of an unplanned pregnancy (Jones et al., 2006). Worldwide, the rate of unintended pregnancies is approximately 44% (Sedgh, Singh, & Hussain, 2014). However, this rate is significantly higher in Canada and the United States, with 51% of pregnancies being unintended (Sedgh et al., 2014). Canadian statistics reveal that the rate of heavy drinking in women is on the rise across the country. Previously defined as consuming five or more drinks per occasion at least 12 times a year, rates of heavy drinking in women have increased from 9.6% in 2008 (Statistics Canada, 2011a), to 9.9% in 2009 (Statistics Canada, 2011b), to 10.1% in 2010 (Statistics Canada, 2011c). Canadian statistics from 2013, which included a definition change to describe heavy drinking as consuming four or more drinks per occasion, now place heavy drinking in women at 13.4% (Statistics Canada, 2015). Among women who may become pregnant, the Centers for Disease Control and Prevention (CDC) revealed that 52.4% of women said they wanted to become pregnant, 54.9% reported using alcohol, and 12.4% reported binge drinking (CDC, 2004, 2009). It is essential for health care providers to be knowledgeable that FASD can, and does, occur in children born to any woman who drinks alcohol during pregnancy (Jones et al., 2006) and women should be informed about these risks prior to conception. Pregnant women and their partners do have a desire to receive information on the consequences of alcohol use for the fetus, on safe amounts of alcohol in pregnancy, and the mechanisms of harm because of prenatal alcohol use (van der Wulp et al., 2013). However, health care students do not feel adequately prepared to provide this information. Consequently, students are not providing proactive advice, but rather reactive and spontaneous advice, when patients admit to alcohol consumption during pregnancy.

Health care students in this study, particularly the midwifery students, also highlighted the significance of personal choice when it comes to alcohol use during pregnancy. Students

discussed that the pregnant woman is responsible for her individual choices during pregnancy, which includes an evaluation of the potential risks (Crawford-Williams et al., 2015b) and an ‘informed choice’ to consume alcohol. There is an important level of trust and responsibility at play between the health care provider and their patient; women must be trusted to make their own decisions, but at the same time are accountable for the outcomes of their own decisions. However, this discrepancy presents a unique moral and ethical dilemma, given that it is not the pregnant woman who bears the long-term implications of drinking during pregnancy, but rather the child who experiences the potential consequences. As Crawford-Williams and colleagues (2015b) discuss, the perception that it can be a truly personal choice conflicts with the consequences, as it is the developing baby who is the most affected by the decision to drink, and is an individual who has no say in the decision to do so. This unique ethical dilemma presents a contentious point of discussion, especially for the midwifery participants, given the scope of their practice and emphasis on providing care for the pregnant mother.

There is also considerable discussion in the literature regarding the presentation of the message to pregnant women about alcohol use during pregnancy (France et al., 2013; France et al., 2010; France et al., 2014). In one study, women knew that abstinence from alcohol was recommended during pregnancy, but were skeptical about the risk associated with low to moderate amounts (France et al., 2013). Research findings indicate that if the message is delivered in a way that is perceived to be honest, factual, and supportive of women making informed choices about their behaviors during pregnancy, the message is likely to be accepted and persuasive (France et al., 2013; France et al., 2014). Women may accept the message as being more credible if health care providers are honest about the ambiguity of the research evidence, and present a clear rationale for their recommendations. Therefore, the message

presented to women should be delivered in a way that is perceived to be realistic and supportive, providing a clear justification for why health care providers are recommending alcohol abstinence during pregnancy. It is possible that the health care students in this study are not fully informed about the reasoning behind the existing Canadian guidelines, or, similar to other studies, they may not realize that the potential risks may be distinctive for different women (Crawford-Williams et al., 2015a).

Similar to the findings of other studies focusing on FASD prevention and health care professionals' attitudes about alcohol use (France et al., 2010; Mengel, Searight, & Cook, 2006; Tough, Tofflemire, Clarke, & Newburn-Cook, 2006; Tsai, Floyd, Green, & Boyle, 2007), the results of this study indicate that prevention efforts would be enriched by health care professionals routinely asking all women of childbearing age about their alcohol use, both before and during pregnancy (McDonald et al., 2014; Poole, Schmidt, Green, & Hemsing, 2016). Students should be encouraged to provide clear and consistent recommendations to all pregnant women and women of childbearing age about the risks associated with prenatal exposure to alcohol. Students should also engage in critical self-reflection, as they may not realize the extent to which their own personal attitudes and beliefs influence their clinical practices. Students need to be actively mindful of how their own opinions and viewpoints may affect their recommendations to patients, and the manner in which they speak about various topics, including alcohol use during pregnancy. It is important that students are cognizant of how they present the existing evidence to their patients, as their own interpretations of the potential risks may bias patients and their partners, and could hinder patients from making informed choices about their pregnancies (Crawford-Williams et al., 2015a).

Strengths and Limitations

Although this study addressed health care students' attitudes towards alcohol use during pregnancy, research findings may be affected by some limitations, including a potential for response bias to the vignettes. While vignettes were rotated between interviews and between health care student groups, it was impossible to eliminate any potential biases or skewed responses based on the content of each individual vignette. Given the topic and the considerable debate regarding safe levels of alcohol consumption, it is also possible that students felt the need to respond in a socially desirable way. However, students were encouraged to divulge their own personal feelings and attitudes in an atmosphere of acceptance and non-judgmental listening. Students were prompted to provide honest and true responses in an environment that was supportive of differing viewpoints regarding the safety of alcohol use during pregnancy. Based on the range of responses and differing attitudes revealed by students, it is unlikely that this was a significant issue in this study.

Furthermore, vignettes are an effective technique for exploring people's perceptions, beliefs, and meanings about a particular situation (Spalding & Phillips, 2007). The use of vignettes in this study provided a unique approach to data collection and supplied an opportunity for knowledge mobilization to occur immediately, as students reflected on the various situations, FASD, and their formal education, while they responded to the case-based scenarios. The use of vignettes also provides a novel opportunity for curricula changes based on the findings of this study as the vignettes can be updated and integrated into the program curricula. Vignettes are typically used in conjunction with other research techniques; while the results of this phase of the study focus on the vignettes alone, the results can and should be compared with results from the larger study (e.g., interview findings, questionnaire findings) and other research projects in this

field. However, the use of vignettes in this study provides a unique and novel approach to data collection around FASD and alcohol use during pregnancy.

It is also important to note that the participant-selecting bias presented in qualitative research means that the students in this study were the most interested and concerned about FASD in clinical practice. While their statements show confusion and apprehension, it is likely that there are other students with even less certainty about their practice.

Conclusion

The findings of this study demonstrate a need for improving the quality and consistency of information provided to pregnant women about alcohol consumption, as well as improving communication between women and their future health care providers. The findings of this study also establish a need to provide students with further information and education regarding the risks of alcohol consumption during pregnancy, and the potential implications of prenatal alcohol exposure (i.e., FASD).

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Appendix

Vignette #1

Shannon is a 32-year-old, married woman who is pregnant with her first child. Shannon has a bachelor's degree in Labor Studies and Communications from an Ontario university and works as a marketing consultant at a top marketing firm in Toronto, Ontario. Shannon has a very active social life, and has a weekly dinner date after work with five of her closest female friends.

Shannon is currently seven months pregnant. While Shannon did not drink at all during her first trimester, she drank occasionally and lightly throughout her second and third trimesters. Shannon has never binged drank or gotten drunk, and has never had any hard liquor during her pregnancy. She says that she often has a glass or two of wine or a couple beers per week. Shannon's friends frequently reassure her that having a few drinks during her pregnancy does not pose any risk to her baby.

While Shannon claims that she could go the nine months without drinking any alcohol, she believes there is no conclusive evidence that light drinking during pregnancy will harm her baby. Shannon feels as though keeping as much of her normal, non-pregnant life as possible is benefiting her physically and mentally, including consuming a few drinks with her friends at dinner or when celebrating important events.

Questions:

- What are your first impressions of this vignette?
- As a health care professional, what advice would you give to Shannon at this stage of her pregnancy (third trimester)? What advice would you have given to Shannon at the beginning of her pregnancy?
- Do you think what Shannon is doing during her pregnancy poses any risks to her unborn child? Why or why not?
- How comfortable do you feel addressing this situation?

Vignette #2

Kimberly is a 23-year-old, unmarried woman who is pregnant for the first time. Kimberly lives in a small, rural community in northern Ontario that is two hours from the closest urban center. Kimberly owns her own car, but commuting is often problematic due to her erratic work hours and weather in the wintertime.

Kimberly is currently five months pregnant. Kimberly found out she was pregnant at eight weeks. Even though Kimberly rarely drinks, she stopped drinking completely upon finding out she was pregnant. However, Kimberly attended a friend's birthday party before she discovered she was pregnant and recalls drinking about ten drinks on that occasion, during her third week of pregnancy.

Kimberly has a strong social support network around her, particularly from her friends and her mother who still lives in the same community. However, Kimberly's partner and the father of her child continues to drink in front of her, even though Kimberly has requested that he not drink. In

certain social situations, her partner has urged her to have a couple drinks to help her relax and have fun. In these instances, Kimberly has chosen to drink a non-alcoholic cocktail or a non-alcoholic glass of wine instead of an alcoholic beverage.

Questions:

- What are your first impressions of this vignette?
- As a health care professional, what advice would you give to Kimberly at this stage of her pregnancy (second trimester)? What advice would you have given to Kimberly before she became pregnant?
- Do you think what Kimberly did at the beginning of her pregnancy poses any risks to her unborn child? Why or why not?
- How comfortable do you feel addressing this situation?

Vignette #3

Jessica is a 30-year-old, married woman who is pregnant for the first time. Jessica obtained a Bachelor of Arts degree in English and a Bachelor of Education from a southern Ontario university. While Jessica has lived in a major urban center for several years, she has recently moved back to her home community in a small, rural town in southern Ontario to accept a teaching position.

Jessica is currently three months pregnant. When Jessica made an appointment to see her family doctor, she expressed some concern and anxiety about her pregnancy. Because this is Jessica's first pregnancy, she is worried and uncertain about what to expect. Her doctor reassured her that everything was fine and that if she was really worried she should have a few drinks to help her relax and to get a better sleep. Although Jessica never drinks alcohol, she accepted the doctor's advice.

Questions:

- What are your first impressions of this vignette?
- As a health care professional, what advice would you give to Jessica at this stage of her pregnancy (first trimester)? What advice would you have given to Jessica before she became pregnant?
- Do you think the advice the family doctor gave Jessica poses any risks to her unborn child? Why or why not?
- How comfortable do you feel addressing this situation?

“Recommendations that are Selectively Made to Selective Types of People”:

Health Care Students’ Attitudes About Alcohol Consumption during Pregnancy

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None

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Abstract

This paper explores health care students' attitudes and beliefs about women who may continue to consume alcohol throughout their pregnancies. Twenty-one health care students responded to a scenario-based vignette addressing alcohol consumption during pregnancy, as well as a semistructured interview, which were analyzed using Braun and Clarke's thematic analysis approach. Two primary themes related to students' attitudes concerning alcohol use during pregnancy were identified: 1) divergent recommendations for different women, based on perceptions of their level of education, culture/ethnicity, and ability to stop drinking; and 2) understanding the social determinants of health, including the normalization of women's alcohol use and potential partner violence. Health care professionals in training need further education about the risks of alcohol consumption during pregnancy and FASD. Additionally, health care students need training in how to engage in reflective practice to identify their own stereotypical beliefs and attitudes and how these attitudes may impact their practice.

Keywords: alcohol/alcoholism; disability, developmental; education, professional; health behavior; health care; pregnancy; relationships, health care; self-efficacy; women's health

**“Recommendations that are Selectively Made to Selective Types of People”:
Health Care Students’ Attitudes About Alcohol Consumption during Pregnancy**

Introduction

Despite public health knowledge that alcohol consumption during pregnancy can lead to negative outcomes such as Fetal Alcohol Spectrum Disorder (FASD), one in ten pregnant women in Canada consume alcohol during pregnancy (Chalmers, Dzakpasu, Heaman, & Kaczorowski, 2008; Lange, Quere, Shield, Rehm, & Popova, 2015; Public Health Agency of Canada, 2009). Among Canadian women who reported consuming alcohol during pregnancy, 28.5% reported consuming alcohol at least once a month or more at some point in their pregnancy (Lange et al., 2015). Additional studies from Canada (McDonald et al., 2014) and Australia (Peadon et al., 2011) demonstrate that almost half of women report drinking alcohol during pregnancy, with many women continuing to drink at low to moderate levels (McDonald et al., 2014) or reporting binge drinking (Peadon et al., 2011), signifying an increase in binge, risky, and hazardous alcohol consumption, as well as potentially alcohol exposed pregnancies. One recent systematic review estimated that one in every 67 women who consumed alcohol during pregnancy would give birth to a child with Fetal Alcohol Syndrome (Popova, Lange, Probst, & Rehm, 2017).

Health care professionals play a pivotal role in the prevention of FASD through their counselling and recommendations regarding alcohol use during pregnancy. However, despite international recognition that no alcohol during pregnancy is the safest course of action (e.g., pregnancy guidelines in countries such as Canada, the United States, the United Kingdom, Austria, China, Denmark, France, Germany, and Australia; see International Alliance for Responsible Drinking, 2016), recent findings indicate that the message that there is no safe level

of alcohol consumption during pregnancy is still not always disseminated by health care students or professionals (Coons, Watson, Yantzi, Lightfoot, & Larocque, 2017; Inoue, Entwistle, Wolf-Branigin, & Wolf-Branigin, 2017). It is unclear why some health care professionals, particularly physicians and midwives, are inconsistent in their recommendations regarding alcohol consumption during pregnancy. However, it remains possible that personal attitudes regarding the safety of low levels of alcohol consumption during pregnancy and challenging the no alcohol is safest recommendation (Kelly et al., 2013; Lundsberg, Illuzzi, Belanger, Triche, & Bracken, 2015), as well as stereotypical beliefs about the women in their care, may be contributing factors. This paper explores health care students' attitudes and beliefs about women who may continue to consume alcohol throughout their pregnancies.

Risk Factors for Alcohol Consumption during Pregnancy

There are a number of reasons why women may drink during pregnancy. For example, women may be unaware that they are pregnant or are uninformed about the extent alcohol can damage the developing fetus (Floyd, Decoufle, & Hungerford, 1999; Sedgh, Singh, & Hussain, 2014; Toutain, 2010). Anecdotally, women report knowing other women who drank during their pregnancies and whose children appear healthy (Raymond, Beer, Glazebrook, & Sayal, 2009; Toutain, 2010) and may also report being encouraged or pressured to drink by close family and friends (Crawford-Williams, Steen, Esterman, Fielder, & Mikocka-Walus, 2015). Alcohol use may also be the norm in some social groups, as Canadian data show that 70 to 80% of women of childbearing age consume alcohol (Health Canada, 2014; Tough, Tofflemire, Clarke, & Newburn-Cook, 2006). Women may also use alcohol to cope with other determinants of health such as violence, depression, poverty, and isolation, or may have an alcohol addiction (Coons, 2013; Public Health Agency of Canada, 2005). However, it is critical to note that many diverse

groups of women are likely to consume alcohol during pregnancy, regardless of socioeconomic status or ethnicity (Peadon et al., 2011).

A systematic review of predictors of *any* drinking during pregnancy identified two consistent factors: previous exposure to abuse or violence and pre-pregnancy alcohol consumption (Skagerstrom, Chang, & Nilsen, 2011). Other risk factors for alcohol consumption during pregnancy identified over the past three decades include increased maternal age, higher maternal education levels, and maternal smoking (Bobo, Klepinger, & Dong, 2006; Chambers et al., 2005; Day, Cottreau, & Richardson, 1993; Floyd et al., 1999; Lepper et al., 2016; Peadon et al., 2011). Research conducted by Peadon and colleagues (2011) revealed that women who consume alcohol frequently (e.g., drinking on five or more days per week) and women who drink large amounts of alcohol per occasion (e.g., seven or more drinks a day) were more likely to intend to drink alcohol in a future pregnancy. Women who lacked key knowledge, such as an awareness of life-long disabilities in the child, were also at an increased risk to intend to drink if pregnant. Women with a bachelor's degree or higher were also significantly more likely to drink at least one day per week (Peadon et al., 2011). In an American study, women who were older and those with higher levels of education more commonly reduced their alcohol consumption during pregnancy, as opposed to quitting outright (Kitsantas, Gaffney, Wu, & Kastello, 2014).

These risk factors demonstrate a need for health care professionals to understand the potential influences on women's alcohol consumption during pregnancy and to identify women who may be at a higher risk and require targeted interventions. However, it is also important to understand how health care professionals' attitudes and beliefs may influence their perceptions about who is at risk of having a child with FASD, and consequently who they may identify as a higher risk. Despite clinical evidence that a variety of women are at risk to consume alcohol

during pregnancy, health care professionals may hold certain biases, stereotypes, and attitudes regarding who they perceive as likely to drink during pregnancy.

Conceptual Definitions

Attitudes represent individuals' feelings of favor or disfavor towards a person, place, or thing, and are a concept in psychology used to characterize an object (Perloff, 2017). In this study, attitudes refer to health care students' personal and professional views regarding alcohol use in general (e.g., definition of 'moderate' alcohol consumption), alcohol use during pregnancy, and women who drink during pregnancy in terms of their behaviours and motivations. In this study, attitudes further refer to their personal and professional views regarding individuals with developmental disabilities in general, and individuals with FASD. Historically, society has demonstrated negative attitudes towards individuals with disabilities (Ferguson, 2002; Imrie, 2004; Kudlick, 2003; Munyi, 2012). Some of these negative attitudes may stem from the medical model of disability, which perceives disability as something that is 'broken' and needs to be 'fixed' (Imrie, 2004). Health care students' attitudes towards caring for people with developmental disabilities and FASD specifically, as well as pregnant women who consume alcohol during their pregnancies, are likely to be influenced by their personal experiences, as well as their beliefs about their preparedness and competency to care for these individuals. The purpose of this study was to investigate Northern Ontario health care students' attitudes, beliefs, and perceptions as they pertain to the recommendations provided to pregnant women about alcohol consumption during pregnancy.

Methods

As part of a larger, ongoing project examining health care professionals' knowledge, attitudes, and self-efficacy regarding FASD and other developmental disabilities, health care students in Northern Ontario, Canada participated in a two-phase, sequential explanatory mixed methods study. Phase I included two quantitative questionnaires regarding developmental disabilities in general and FASD specifically. All students who participated in Phase I ($N=45$) were invited to take part in Phase II ($N=21$). The purpose of phase II was to qualitatively understand health care students' knowledge of FASD and the potential consequences of alcohol consumption during pregnancy, attitudes towards alcohol use throughout pregnancy, as well as their perceived self-efficacy beliefs about their competency to work with individuals with FASD, their families, and pregnant women. Two qualitative data collection methods were employed; a scenario-based vignette about alcohol consumption during pregnancy and a semistructured interview. This paper presents the qualitative findings and focuses on health care students' attitudes about alcohol consumption during pregnancy.

Participants

After receiving ethics approval from the Laurentian University Research Ethics Board, participants in this study were recruited from the Northern Ontario School of Medicine (NOSM), as well as the Midwifery and Primary Care Nurse Practitioner programs at Laurentian University in Northern Ontario, Canada. Respondent-driven, purposive convenience sampling was used, whereby individuals known to the researchers (e.g., colleagues, peers, program coordinators) were contacted in the hopes of identifying students who would be willing to participate. Students were also accessed through various social media sites, including Facebook and Twitter. Students were directed to an online survey link in REDCap (Research Electronic Data Capture; Harris et

al., 2009) hosted at Laurentian University if they expressed interest in participating in the study. Students who participated in the qualitative phase received a \$10 Tim Horton's gift card to thank them for their time. Participants included students in their final two years of school and the total sample ($N=21$) comprised of seven undergraduate medicine students ($M_{\text{age}} = 28.71$, $SD = 6.05$), eight midwifery students ($M_{\text{age}} = 26.63$, $SD = 2.83$), and six nurse practitioner students ($M_{\text{age}} = 33.33$, $SD = 11.15$). Students who took part in the qualitative phase were predominantly female, representing 57.1% of the medical student group, 87.5% of the midwifery student group, and 83.3% of the nurse practitioner group. None of the participants were currently pregnant, but 50% of both the midwifery and nurse practitioner students had been pregnant in the past, which is important to note given the potential influence of personal experience on students' attitudes. All participants in this study will be referred to by pseudonyms to protect their identities.

Vignettes

Participants responded to one of three different scenario-based vignettes (see Appendix A) addressing their perceived knowledge and self-efficacy about alcohol consumption during pregnancy in general, as well as the potential consequences of varying levels of alcohol use during pregnancy (e.g., continuous, moderate drinking throughout pregnancy compared to a one-time, binge occasion). The scenarios were rotated between interviews and each participant responded to one vignette prior to the semistructured interview, which were conducted back to back; students responded to the vignette scenario first, followed immediately by the semistructured interview. Students were instructed to read the vignette and were then asked prompting discussion questions including: "What are your first impressions of this vignette?", "As a health care professional, what advice would you give at this stage of her pregnancy?", "Do you think what Shannon/Kimberly/Jessica is doing during her pregnancy poses any risks to her

unborn child? Why or why not?”, and “How comfortable do you feel addressing this situation?”

The use of vignettes allowed students to demonstrate their perceived level of knowledge through a clinical application exercise and was crucial to interpreting health care students’ existing beliefs and prejudices about FASD, as well as their perceived ability to apply their knowledge in practical situations. The vignettes were modeled after classic research vignettes created by Reiss and colleagues (Reiss, Levitan, & Szyszko, 1982; Reiss & Szyszko, 1983) and were informed by social media discussions about alcohol consumption during pregnancy, as well as previous research regarding parental experiences raising children with FASD in Ontario, Canada (Coons, Watson, Schinke, & Yantzi, 2016; Coons, Watson, Yantzi, & Schinke, 2016). Each vignette was written and revised several times by the first two authors and was pilot tested with a second year medical student. Parents of children with FASD who had participated in previous research (Coons, Watson, Schinke, et al., 2016; Coons, Watson, Yantzi, et al., 2016) and whose stories informed the written scenarios, also reviewed the vignettes and approved their content and realism. Please see Part I (Coons et al., 2017) of this two part paper for a more detailed description of the vignettes.

Semistructured Interviews

Informed by social constructionism as a guiding theoretical framework, and more specifically by theoretical and conceptual perspectives such as knowledge, attitudes, and self-efficacy, the primary researcher developed 10 open-ended questions, with follow-up prompts if needed (see Appendix B). For example, sample questions included: “Where do you obtain your information about FASD? How do these sources impact your perception of FASD?”, “What would you tell a woman who was pregnant about alcohol consumption during pregnancy?”, and “What previous experience, if any, do you have working with people with intellectual or

developmental disabilities? FASD?” These questions were posed to identify students’ personal experiences in counselling women about alcohol consumption during pregnancy, as well as their exposure to individuals with developmental disabilities in general, and with FASD specifically. Participants were asked prompting questions to enrich understanding. For example: “Could you give an example of a situation in which you felt particularly successful in meeting the needs of an individual with an intellectual or developmental disability?” was a prompt for the question: “How have these previous experiences influenced your perceived self-efficacy to care for individuals with intellectual or developmental disabilities? FASD? Their families? Pregnant women?”

Interviews were conducted by the lead researcher, who has several years of experience conducting qualitative research. Semistructured interviews were scheduled at the convenience of participants and took place at locations agreed upon by both the participant and the interviewer, such as local coffee shops. Interviews were also conducted over the phone or via Skype based on participants’ choice. Interviews lasted between 25 and 90 minutes. All interviews were digitally recorded and transcribed verbatim. Follow-up questions were asked using e-mail and telephone conversations, and participants also had the opportunity to review their interview transcript to provide further clarification.

Data Analysis

Both the vignette responses and the semistructured interview transcripts were analyzed using Braun and Clarke's thematic analysis approach, which is congruent with social constructionism, given its theoretically flexible nature (Braun & Clarke, 2006), and emphasizes patterns or themes within the data. Because we collected qualitative data in two ways, the vignettes and interviews were initially analyzed separately. Students’ responses to the vignette

scenarios were analyzed first to look for emerging themes pertinent to students' attitudes about alcohol consumption during pregnancy. Following the analysis of the vignettes, the semistructured interviews were analyzed in the same way. Finally, after an individual analysis of both methods, the vignette and interview responses were compared and contrasted between each participant.

Vignette and interview transcripts were read and re-read multiple times to familiarize the lead researcher with the content of the interviews, noting initial ideas and comments (e.g., specific words, phrases, paragraphs), that were further refined in a systematic fashion, and finally assembled into relevant codes. Coded data were used to generate budding themes, which were further reviewed and refined into themes. Each theme was given a descriptive label taken directly from the words of participants to clearly define and organize the themes based on their scope and story. The data analysis process was a recursive one, with movement back and forth between different phases of data analysis to ensure the continued refinement and accuracy of the final themes. A member check was also conducted during the data analysis phase to ensure the themes generated were representative of the participants' experiences. The member check was conducted by providing the participants with a summary table of themes to ensure the accuracy of the lead researcher's interpretations (Shenton, 2004).

Results

Almost all students identified that no alcohol consumption during pregnancy was the safest recommendation for their pregnant patients. However, students conferred that this advice is not always provided, and discussed the realities of providing care to women when strict abstinence may not be possible. While the results of Part I focused on students' attitudes regarding recommendations about alcohol consumption during pregnancy, this paper identifies

the biases, prejudices, and beliefs that students may experience and focuses on students' attitudes and perceptions about who is at-risk to have a child with FASD. Using thematic analysis, two primary themes related to students' attitudes were identified: divergent recommendations for different women and a broader understanding of the social determinants of health. Each of these main themes had sub-themes that show the complexity involved. Please refer to table 1 below for a summary of main themes and sub-themes.

Table 1. Summary of themes.

Theme and subtheme name
1. “The recommendations that are made... often aren’t the same”: Divergent recommendations for different women
1.1 Ability to conduct own research: Perceptions of level of education and decision making skills
1.2 Stereotypical beliefs: Perceptions of culture and ethnicity
1.3 Harm reduction and binge drinking: Perception of the ability to stop drinking
2. “Mom as a total thing, not just a carrier of an unborn fetus”: Understanding the broader social determinants of health
2.1 Complex relationship between women and alcohol
2.2 Partner involvement and recognition of other risk factors

“The Recommendations That Are Made... Often Aren’t The Same”: Divergent Recommendations for Different Women

This theme title describes different levels of care that may occur in practice when health care students appraise the women in their care. As described below, students hold varying

perceptions about women who may consume alcohol during their pregnancy. On the one hand, students tended to believe that women who appear to be more “well-off” or in control of their pregnancies are better informed about the potential risks of alcohol consumption during pregnancy, and were consequently not concerned about low to moderate consumption. However, on the other hand, students also believed that women who come from disadvantaged communities or who are from a group that was stereotypically associated with FASD, such as Indigenous populations, were more at risk of having a child with FASD and therefore reflected on how recommendations and prenatal care may be different for these groups. In these instances, students also elaborated on their perceived abilities when it came to identifying women who may not be able to control their drinking and who may better benefit from harm reduction approaches.

Ability to conduct own research: Perceptions of level of education and decision making skills. A significant point of conversation regarding alcohol consumption during pregnancy stemmed from the belief that women who were “educated”, “professional”, have “a good job”, are “organized”, and “from well-off communities” tend to be “very well informed” and “fairly confident” about the decisions they make regarding their pregnancy, including the decision to drink in low or moderate amounts throughout all three trimesters. Several students alleged that women who were more “educated and stable” were the women who “tend to know more about the effects of alcohol on pregnancy and have more resources to not drink during pregnancy” (Eva, fourth year midwifery student).

Students who responded to the vignette about Shannon, a woman in her early 30’s with an undergraduate degree, a stable job, a group of close female friends, and a decision to only consume a ‘moderate’ amount of alcohol during her second and third trimesters, perceived her to be knowledgeable and informed about the potential risks of alcohol consumption during

pregnancy and noted that it sounded like she had “really done her research”. Students held this belief, even though Shannon’s main source of information on the risks of alcohol consumption during pregnancy were her friends and a blanket statement that she believes there is no conclusive evidence that light drinking during pregnancy will harm her baby. On the contrary, students who responded to the vignette about Kimberly, a woman in her early 20’s who lives in a small, rural community, perceived there to be a greater risk during her pregnancy because of the “pressure to drink” and the situation with her partner. Notably, students went on to discuss that their concern for Kimberly was not necessarily because of a binge exposure early in the first trimester, but rather because of the psychosocial factors at play in her life including her young age, marital status, lack of education, region of the province, and potential partner violence.

Students who responded to Kimberly’s vignette spoke more hesitantly compared to those who responded to Shannon’s scenario, and raised additional concerns about patient trust and safety. Students noted that Kimberly was making positive and responsible choices (e.g., refraining from drinking further alcoholic beverages), but perceived that her statement about abstaining from alcohol might not be entirely truthful. This attitude was also prevalent in the students’ responses to the vignette about Jessica, a 30-year-old woman whose family doctor encouraged her to have a couple of drinks to help ease her anxiety regarding her pregnancy. For example, Ruby, a third year midwifery student, used the phrase “*if* you can trust that she never drinks alcohol” when discussing Jessica’s situation, and went on to reflect that some women in their care may be recovering alcoholics or binge drinkers, without these women knowing or acknowledging it. Students also raised concerns about whether allowing women to have one or two drinks during their pregnancy would encourage women to drink more and wondered if certain women, such as Jessica, could “be able to drink one glass of wine and leave it alone

thereafter.” Interestingly, students did not hold this attitude in Shannon’s situation and did not perceive Shannon to be at-risk.

Rebecca, a fourth year medical student, noted that there is still “a lot of stigmatization around asking moms about whether they’ve had a couple drinks in pregnancy.” She further elaborated that, despite knowledge that it is not “just alcoholics” who may have children with FASD, it is still sometimes “difficult not to fall for [the] stereotype” that women who drink during pregnancy may be those who come from lower income families and have other social comorbidities, such as trouble with the law, struggles with alcohol use, and lack of formal education. Many students held the belief that low to moderate levels of alcohol consumption were not really of concern for either the mom or the baby (see Coons et al., 2017), and likely have little motivation to dissuade their pregnant patients from drinking occasionally if they do not fall into their view of at-risk pregnancies. As a result of these attitudes, students hold different beliefs about which women should, or should not, be allowed to drink during their pregnancies. Ruby, a third year midwifery student, discussed one specific example of where recommendations were different for women who were perceived to be educated, compared to those who were perceived to be a higher risk:

My experience in clinical placements has been a glass of wine with dinner once a week in the second or third trimester and beyond is probably okay. And those are recommendations that are selectively made to selective types of people, depending on their educational level, depending on whether or not we have concerns about alcohol and drug use otherwise in the pregnancy, and if that one drink is gonna tip somebody back into binge drinking.... Often women who have maybe just completed high school or not completed high school and then...it usually feels like one end of the spectrum or the

other where they've gone to university or gone to college.... So the recommendations that are made to women who don't have the higher level of education of university or college or beyond, they often aren't the same recommendations in terms of alcohol use.

When prompted further about why she may hold this particular attitude, Ruby elaborated that this style of recommendation had been passed down to her “not in words but in actions” from her preceptors and identified instances where she picked up on cues of “you said this to this person, but not to this person... and noticing that this population gets this spiel and this population gets this spiel and this must be why”, reflecting that these attitudes may be in part caused by “classist or racist” beliefs.

Stereotypical beliefs: Perceptions of culture and ethnicity. Students in all three program groups reflected that there is often an “underlying judgement” and observation of shame towards mothers of children with FASD, and tended to focus their discussion on women from “marginalized populations”, including mothers who had “an addiction or an illness”, “First Nations” and “Aboriginal populations [with] a high incidence of FASD”, and “more rural areas...that acknowledge they have a higher incidence of...alcohol consumption in pregnancy”. While students acknowledged that FASD “can happen in pregnancies where the mother has just a couple of drinks”, students were more concerned about potentially high risk populations, including mothers who consume “too much alcohol”, drink “excessively”, or have “chronic alcohol use”. Students noted that these groups may need further intensive support to cut down on their drinking. However, it is important to note the word choices used when describing these populations and the ingrained, often unconscious attitudes toward communities and populations that are traditionally associated with FASD. The words “too much”, “excessive”, “chronic”, and

“alcohol abuse” draw attention to the fact that students still associate FASD predominantly with women who binge drink or consume alcohol on a regular basis throughout their pregnancies.

Students in this study were living and working in a variety of communities across Northeastern and Northwestern Ontario, and took note that their individual placement experiences and patient demographics may have influenced their personal attitudes and beliefs about FASD and alcohol consumption during pregnancy. Several midwifery students spoke of their experiences doing community outreach in Indigenous communities and described that issues such as alcohol consumption and FASD are often seen in Northern, rural areas. Other students, such as Layla, a third year medical student, discussed that her educational experiences touched on alcohol consumption and FASD from a “social perspective and how it affects First Nations people.” Layla went on to elaborate that her experiences are directly related to her living in Northern Ontario, because “everybody I’ve ever met who has FASD has been First Nations.” These examples demonstrate that students are making several assumptions beyond their attitudes about the prevalence of FASD in Indigenous communities, including their belief that FASD is a visible disability and that individuals from certain populations or demographic groups may be more or less likely to have a formal diagnosis of FASD. Importantly, while students did hold some stereotypical beliefs, many participants, especially medical students, highlighted the significance of providing culturally sensitive care for these individuals in the North.

Beyond their beliefs about Indigenous and First Nations communities in Northern Ontario, and even while acknowledging that women from many different social backgrounds consume alcohol during pregnancy, participants still tended to speak to already stigmatized populations, perhaps not even aware of their own ingrained perceptions and attitudes. For example, many students ruminated about whether they thought the women in their care were at a

“higher risk” of alcohol use or drug use during pregnancy or came from a “population that seem to have a higher risk of FASD”, and implied that screening for alcohol use was necessary only in instances where they thought women may be vulnerable. However, these decisions tended to be based on personal feelings and perceptions of the women in their care.

Students struggled to identify whether varying levels of ‘moderate’ amounts of alcohol consumption during pregnancy would be considered problematic and whether they would screen further. For example, Grace, a fourth year midwifery student, questioned Shannon’s alcohol consumption during pregnancy in vignette scenario one: “I probably might want to see why she’s drinking, ‘cause she says she could go the nine months without drinking so does she feel any social pressure, is it because of her job? Does she still want to fit in? Are there other social issues attached to this? That would kind of have to be broken down if she’s willing.” When considering Shannon in the first vignette, some students noted that the amount she describes would give them pause and would be considered an “upper limit” before they started to worry, whereas other students were not concerned about the level of exposure. Interestingly, Grace raised an important point when she stated that Shannon *says* she could go the nine months without drinking, but as some students elaborated, even though she says she could go without drinking she still continues to do so, and some students considered that perhaps this would be an instance where they needed to screen further.

Typically, students, such as Sally, a fourth year midwifery student, also noted the “tone” with which FASD and alcohol consumption during pregnancy were discussed compared to other disabilities like Down Syndrome or Autism, and identified that because FASD has a known cause, prevention takes a different mood or feeling because it “is considered likely to be a problem for only mothers who are ‘troubled’ and not being ‘careful enough’ in their pregnancy.

There's an element of shame there." This quote demonstrates the ingrained negative perceptions that are often associated with FASD and mothers who consume alcohol during pregnancy, such as shame, judgment, harm, and the belief that these mothers are bad mothers or bad people.

Kylie, a fourth year midwifery student, was one of only a few participants to elaborate on the issue of alcohol consumption prior to pregnancy and identified the need to understand the woman's pregnancy in the context of her own life. As she questioned, "How many drinks do they normally consume prior to pregnancy? Has this changed since?" Given the significance of the relationship between alcohol consumption prior to pregnancy and continued consumption during pregnancy, students identified a need to know how much alcohol a woman may be drinking prior to conception and if she would need help to cut back or stop drinking during her pregnancy.

Harm reduction and binge drinking: Perception of the ability to stop drinking. Students observed that most women, in their clinical experience, abstain from alcohol or significantly cut down their alcohol use upon discovering they are pregnant. However, students, such as Eva, a fourth year midwifery student, acknowledged the reality of providing more rigorous care to certain patients and discussing: "if she is going to be drinking, how to do that in a...less harmful way...[because] if she felt uncomfortable with the amount she was drinking, unable to stop, I would encourage her to be open with me and we could explore some ways to change the behaviour." As Eva elaborated: "one or two drinks would be a lot less harmful theoretically than eight or ten drinks in one sitting", and many students discussed the importance of harm reduction.

While participants acknowledged that no alcohol consumption during pregnancy was the official recommendation, they also spoke to the reality that conveying this message to all women

may not be effective. Several students from all three programs noted that this blanket statement promoting abstinence from alcohol may make some women feel discouraged or as though they are a “lost cause” if they are not able to abstain from drinking during their pregnancy. Instead, many students discussed that harm reduction was a much more positive and beneficial approach in certain situations. As Mackenzie, another fourth year midwifery student, spoke: “If I had someone who came in and who was having problems with drinking I think I would definitely try to reduce it as opposed to trying to get them to stop completely ‘cause that just doesn’t seem very realistic.” Charlotte, a second year nurse practitioner student, shared a similar belief that it was better not to consume any alcohol at all, but that she would not want the woman in her care to feel judged if she does drink and so she would “try and work with her and see ‘okay, what can we do? Let’s do what’s best for you and your baby. Let’s work with the resources that we have.’ If the person really doesn’t want to stop, I have to do my very best to guide her.” Charlotte’s remark also highlights the importance of building a strong relationship in the patient-health care provider relationship and allowing women to feel supported instead of judged. This sense of trust is incredibly important, as women who do not have faith in their provider may be unlikely to work with them to cut back on their alcohol consumption or may not accurately report how much they are currently drinking. Jacqueline, a fourth year midwifery student, conversed about the need to “start off whenever we can” by supporting women to achieve practical goals, such as to “cut down from 2 glasses a day to 1. Or to switch to something with a lower alcohol content. Or make sure that they are taking it on a full stomach” to ensure a reduction in the amount of alcohol exposure, even if it does not reach an “ideal situation” of complete abstinence.

However, not all students were as positive regarding harm reduction, and some participants were more jaded when it came to discussing women who may struggle with alcohol.

As Sierra, a first year nurse practitioner student, stated: “It’s a sad thing when it can be prevented. But you can’t stop women that drink from getting pregnant. Even though you have them come in and they’re having their second one, you tell...Children’s Aid and they just go back to the home anyways, I’m sorry to say. I’m being negative, from experience.” Harm reduction was a controversial topic, and not all students were in agreement that this approach should be employed with patients.

While Sierra spoke in a tired and frustrated manner about her perception regarding the frequency with which women who struggle with addictions may have multiple children with FASD, Braden, a fourth year medical student, discussed his belief that women need to be thought of “holistically” and care in the context of FASD needs more of a harm reduction approach. Braden also argued for the need to go beyond just employing the harm reduction approach itself to an actual understanding of why this method may be the best solution for some women:

We need to think about why people are drinking so much during pregnancy or before pregnancy...If we don’t address the context in which the alcohol, the drugs, or the smoking are the coping mechanism...then we’re going to disenfranchise the moms to be further and separate them from good care and, frankly, make them feel quite crappy about themselves on top of already probably feeling quite crappy about themselves because they know they’re dependant on alcohol.

Braden highlighted the critical importance of not only acknowledging the need to support women in cutting down on their alcohol consumption, but also in contextualizing the social determinants of health and their contribution to why some women may continue to consume alcohol throughout pregnancy. He went on to emphasize the need to understand the motives behind a woman’s alcohol consumption: “She’s [drinking] for a reason. She’s not doing it just

because there's a cup with a beer in it. There's a whole series of events that get to the place where there's a glass of wine in front of the pregnant mom, whether she knows she's pregnant or not." As Jacqueline, a fourth year midwifery student, also said, "You need to address the whole clinical picture and who she is and what brought her to that situation."

"Mom as a Total Thing, Not Just a Carrier of an Unborn Fetus": Understanding the Broader Social Determinants of Health

This theme title identifies students' understanding of the social determinants of health (Commission on Social Determinants of Health, 2008; Mikkonen & Raphael, 2010), which encompass the "conditions in which people are born, grow, work, live, and age, and the wider set of forces and systems shaping the conditions of daily life" (World Health Organization, 2017, ¶1). As described below, all students were aware of the social and economic factors that influence people's health and their potential interaction in the context of women's health and FASD. Students acknowledged that some women may be at risk of having a child with FASD based on a number of factors including misinformation or lack of access to information, cultural norms and the role of alcohol in society, level of education, family violence, unemployment, homelessness, lack of more appropriate coping strategies, social pressure or isolation, and a lack of access to health care in general. Students tended to describe how important it was to understand the reasons why women may drink during pregnancy.

Complex relationship between women and alcohol. In addition to discussing the realities of their clinical experiences, students spoke to the importance of understanding *why* women drink, both in general and during pregnancy. Several students brought up the perceived culture of normalized drinking during their interviews, and participants conversed about the increasing rates of alcohol consumption and binge drinking among women in Canada. As Eva, a fourth year

midwifery student, stated, “It’s interesting to mesh together that relationship between how people actually consume alcohol versus what the research actually says... There’s a normalizing of alcohol consumption... So I feel like... it doesn’t necessarily reflect the lived realities of people who are drinking during their pregnancies.” In this regard, students often understood that their life circumstances, and perhaps privileged experiences, may often separate them from the women they perceived to be at risk of having a child with FASD. Students also revealed their surprise regarding the current recommended Canadian guidelines, including the Low Risk Drinking Guidelines, given how normalized alcohol consumption has become in Canada. While many students were familiar with the guidelines, several participants noted that many people, including themselves and their own social circles, drink beyond the recommended quantities and that these behaviours were typical of patterns of alcohol consumption. Eva further hinted that sometimes health care providers may have a “saviour complex”, which entails trying to help patients stop their “bad habits”. However, as students reflected, these approaches are not always “grounded in reality” because students may be unable to reconcile their own life situation with those of their clients who may be struggling with alcohol.

Participants acknowledged that personal and institutional barriers (e.g., lack of access to regular health care) contribute to women’s health, including systemic obstacles, political hindrances, social issues or difficult relationships, financial concerns, mental health disparities, and a lack of social support. Despite acknowledging that a multitude of factors can influence women’s health, students did not provide specific examples of how these circumstances may impact women’s health in general or during pregnancy specifically. However, students did elaborate broadly on how these barriers may impact health in general, as well as how they could interact and compound to influence women’s health during pregnancy. Consequently,

participants identified a need to “really access why” a woman may be drinking throughout pregnancy and determine what can be done “to make life healthier, so that the desire to drink is not as strong.” Students were adamant that women who may have an issue with alcohol consumption during pregnancy are often lacking in social support from their families or communities. In particular, students discussed the critical importance of having a supportive social network, which included a positive and sympathetic partner.

Partner involvement and recognition of other risk factors. One important social determinant of health that participants discussed was the issue of partner violence and related social pressure. However, students were only prompted to discuss these issues in a situation that directly mentioned a significant other (i.e., in Kimberly’s vignette), supporting the notion that students focus predominantly on women when counselling about alcohol use during pregnancy and preventing FASD. Despite the critical importance of a partner’s involvement during pregnancy and the significant contribution of domestic abuse to alcohol consumption, the topic of partner alcohol use or partner involvement rarely, if at all, came up and only arose in interviews where students were provided with Kimberly’s vignette. In this vignette, Kimberly’s partner and the father of her child continued to drink in front of her, despite Kimberly’s request that he not drink. Kimberly’s partner also encouraged her to drink in certain situations to ‘help her relax and have fun’.

Every student who was provided with Kimberly’s vignette noted that they were “concerned” or “worried” about her situation. When asked what their first impression was of the scenario, several students first spoke to the partner’s drinking and the need to “flesh that out more” to understand the social context of the relationship. As Eva, a fourth year midwifery student, questioned, “Does he drink every day? Does it bother her? Does she ever feel unsafe

when he's drinking? ...It is a red flag for me that he drinks around her and encourages her to drink as well."

Students in all three programs discussed the notion that working with Kimberly is within their scope of practice, but were uneasy about addressing her partner's alcohol consumption. Charlotte, a second year nurse practitioner student, stated that if Kimberly's partner came to her prenatal visits that she would "reinforce the message that he can have drinks, that's his choice, but I would suggest that Kimberly doesn't, because that's her choice and also because it's for the safety of the fetus." The issue of personal choice was an important, and contentious, point of discussion for many students and has been discussed more in depth in part I of this two part paper (see Coons et al., 2017). Sierra, a first year nurse practitioner student, also emphasized that when providing counselling about alcohol consumption during pregnancy, that she would "tell [patients] if you're thinking about getting pregnant to abstain and [your] partners as well," encouraging spouses to be involved and to also limit their own alcohol use during the pregnancy.

Perhaps most troubling, several students, such as Reece, a fourth year midwifery student, Layla, a third year medical student, and Regina, a fourth year medical student, noted that the situation presented in Kimberly's vignette was "pretty normal almost" and "common" in rural and Northern Ontario. As Regina further reflected:

It sounds like it could be a typical Northern Ontario female. I feel like lots of people might be in this situation... 'cause I know Northern Ontario has a higher rate of alcohol use. Socially...she's single, unmarried, young, first time being pregnant so... that might be difficult for her.

Layla, also a medical student, had similar concerns for Kimberly's social situation and contemplated that her partner is "continuing to drink in front of her and seems like he's pushing it on her, so I'd be worried that she's at risk of drinking during pregnancy." Layla also elaborated that she would be concerned because Kimberly seemed isolated within her community, demonstrating the need to understand women's social contexts within their home communities and personal relationships.

In their interviews, students highlighted the potential limitations in access to care in rural and Northern Ontario, both for individuals diagnosed with FASD and pregnant women at risk of having a child with FASD who may require more intensive interventions. Students noted that the risk of FASD may be elevated in rural, Northern Ontario communities, given increased rates of alcohol consumption in these communities, as well as the lack of access to regular primary health care. Students also discussed barriers to care that may contribute to a patient's isolation, such as travel and transportation, as well as a scarcity of providers who are knowledgeable about substance use in general, substance use during pregnancy, and developmental disabilities or FASD. These attitudes, and students' remarks presented earlier regarding stereotypical beliefs about FASD, may reflect that they have become desensitized or normalized to these issues based on their experiences in rural and Northern Ontario.

Discussion

The authors of this study found that health care students hold a number of biases, prejudices, and beliefs about the safety of alcohol consumption during pregnancy and the populations who may be at-risk to consume alcohol throughout pregnancy. Students discussed providing patients with diverse recommendations, depending on several factors including: perceptions of level of education, culture and ethnicity, and the ability to stop drinking, as well

as the situations in which women in their care lived and drank. Consequently, some students held the perception that certain types of women may be protected from having a child with FASD. This attitude is problematic because it implies that students may not be engaging in effective FASD prevention with all women. In Canada, the Public Health Agency of Canada has a four-part model of prevention (Poole, 2008). FASD prevention is complex and requires different approaches when supporting women, their larger social and community networks, and their children. These four levels of prevention include: Level one prevention, focusing on broad awareness building and health promotion efforts; Level two prevention, concentrating on the discussion of alcohol use and related risks with *all* women of childbearing years; Level three prevention, targeting specialized and holistic support for pregnant women specifically with alcohol misuse and other health or social challenges; and Level four prevention, increasing postpartum support for new mothers and helping them to maintain or initiate changes in their life, as well as to support the development of their children. If health care students are not educated about FASD and the potential risks of alcohol consumption during pregnancy, they may be missing key opportunities to engage in FASD prevention across the four levels (Poole, 2008). The findings of this study also demonstrate a significant gap in students' knowledge regarding women who may be at risk to consume alcohol during pregnancy. Despite research findings that higher educated women are at a higher risk (Kitsantas et al., 2014; Peadon et al., 2011), students' statements in this study indicate that they perceive women with higher levels of education (e.g., Shannon in vignette one) as being the lowest risk.

The view that only certain kinds of women can have a child with FASD was demonstrated by participants' divergent recommendations to women they perceived to be better educated and from a higher social standing compared to those who they believed to be high-risk.

These attitudes were also evident in their responses to the vignettes, as students were not particularly concerned about Shannon's drinking compared to Kimberly and Jessica, in part because of the statement that Shannon was making an 'informed choice' about her pregnancy. Students held this belief, even though Shannon's main source of information on the risks of alcohol consumption during pregnancy were her friends and a vague, uninformed statement that she believes there is no conclusive evidence that light drinking during pregnancy will harm her baby. This finding may demonstrate, in part, the wide and systemic acceptance of this particular belief and the confusion derived from the continued debate about the risks of low to moderate alcohol consumption during pregnancy. Researchers have suggested that this disconnect between knowledge of potential risks and continued alcohol consumption may be related to the perceived lack of evidence regarding harm to the fetus following exposure to low and moderate alcohol consumption in pregnancy (Henderson, Gray, & Brocklehurst, 2007), and women may in turn perceive their risk as low if they choose to consume alcohol (Peadon et al., 2011).

Additionally, students may be experiencing confusion about the best recommendations to provide their pregnant patients, given the mixed messages they report receiving from their formal education compared to their experiences in clinical placements. Students in this study, such as Ruby, a third year midwifery student, indicated receiving nonverbal instructions from their preceptors that drinking was acceptable in certain populations. It is possible that students may be feeling inadequate or ill prepared to question their mentors about their recommendations. Consequently, the power dynamic between students and mentors is likely to influence the information that students accept or disregard, as students may not wish to challenge their mentors about the risks of light or occasional drinking during pregnancy.

For these reasons, there is a pressing need to educate health care providers and women about the risks associated with this pattern of consumption, as many participants indicated that they do not see an issue with low levels of exposure and may have no intention of dissuading their pregnant patients from drinking infrequently or occasionally, if they do not fall into the classic view of an ‘at-risk’ pregnancy. While other approaches, such as harm reduction, may be more appropriate and realistic for certain patients (British Columbia Ministry of Health, 2005; Nathoo et al., 2015; The Society of Obstetricians and Gynaecologists of Canada, 2010), health care providers should make an active effort to discourage alcohol consumption in pregnancies where exposure could be prevented through their recommendations about alcohol use, alcohol screening, and brief interventions or motivational interviewing. Distinct recommendations about alcohol use are extremely important given that qualitative research with pregnant and recently pregnant women demonstrates that women are not clear on the potential risks of light drinking and that the occasional drink during pregnancy is becoming a normalized behaviour (Holland, McCallum, & Walton, 2016).

Furthermore, health care providers should screen all women about their alcohol consumption using validated screening tools. Women often do not feel safe about disclosing their use of alcohol out of fear or judgment by health care professionals, or the potential for child removal by welfare authorities (Poole, Schmidt, Green, & Hemsing, 2016). The belief that only certain types of women can have a child with FASD, as was demonstrated in this study, may perpetuate this fear and stigma as women who may need help to reduce their drinking may be deterred from asking for it, and women who come forward about their alcohol use may be reassured that their drinking is not problematic (e.g., they are not perceived as high-risk). Additionally, as students in this study discussed, providers should feel comfortable and

efficacious having discussions about harm reduction. For women who are pregnant and aware of the risks of alcohol use but struggle to abstain due to a multitude of factors (e.g., social pressure, life circumstances, violence or trauma, or addiction), an approach that focuses solely on promoting abstinence can compound the stigma and shame they may already be experiencing. This stigma may further perpetuate negative life circumstances, including drinking to self-soothe and avoiding accessing appropriate services that may help her and her child (Bell et al., 2016; Choate, 2017; Poole & Isaac, 2001). Research findings indicate that women who have given birth previously, women who currently drink more frequently or have a higher level of alcohol consumption, and women with higher levels of education are more likely to drink during pregnancy (Peadon et al., 2011).

More recent Canadian findings from Lange and colleagues (2015) demonstrated that women who consumed alcohol during pregnancy were more likely to be older (>35 years), white, employed, have post-secondary education, and have a household income of \$80,000 and above. Other studies from developed nations also support a more broad cultural trend that women who consume low to moderate levels of alcohol during pregnancy are likely to be older, more affluent, and generally in good health (Hutchinson, Moore, Breen, Burns, & Mattick, 2013). However, if health care providers are not screening all women for alcohol consumption during pregnancy, some women who may be drinking at higher levels, underreporting their alcohol consumption, or drinking on a regular basis may be missed and a critical opportunity for intervention will have been overlooked. Students in this study believed that the women in the vignettes may be drinking more than they were reporting, but were unsure how to address their potential alcohol misuse.

In addition to the perception that women who are more educated have more control over their pregnancies and their drinking, students also associated FASD and alcohol consumption during pregnancy with Indigenous populations in rural and Northern Ontario. Previous dominant Canadian discourse in the 1980s and 1990s perpetuated the stereotype that FASD was an “Aboriginal problem”, due to the limited scope and methodology of early Canadian studies (McKenzie, Dell, & Fornssler, 2016). Consequently, Indigenous communities and Indigenous women are continuously subjected to stigma, stereotyping, and surveillance (Salmon, 2004; Tait, 2003, 2009). While Indigenous women are less likely to drink alcohol than non-Indigenous women in Canada, they are more likely to drink heavily (i.e., binge drink) and to drink as a result of a variety of social determinants of health (e.g., poverty, experience of violence and abuse, and coping with intergenerational trauma associated with colonization; McKenzie et al., 2016). Despite the stereotype that FASD is a greater issue in Aboriginal populations compared to the general population, emerging data show that there is not a substantial difference in the prevalence of FASD among Indigenous and non-Indigenous people (Ospina & Dennett, 2013). While the prevalence rate of FASD is difficult to establish in large geographical areas, recent data show that FASD may actually be five times higher than previously believed (May, 2017) and early studies have likely underreported the magnitude of the problem in the general population. However, given the demographics of Northern Ontario and the populations that students identified seeing in their clinical placements (i.e., Indigenous communities), it is possible that students associated FASD with these communities based solely on their clinical placements in these specific settings.

Upon discovering they are pregnant, most women who are not alcohol-dependent significantly cut down the amount and/or frequency of alcohol they consume, or they abstain

altogether (Ethen et al., 2009). However, as was highlighted by the students in this study, there is an ingrained cultural acceptance and normalization of frequent alcohol consumption. Canadian data demonstrate that alcohol consumption among women is increasing, as is binge or risky drinking (Drapkin, Eddie, Buffington, & McCrady, 2015; OECD, 2015; Public Health Agency of Canada, 2016; Thomas, 2012). This trend establishes the need for appropriate screening for alcohol-use *before* pregnancy, given the influence of pre-pregnancy behaviours on alcohol consumption at different time points during pregnancy (McDonald et al., 2014).

However, screening and discussion of alcohol use during pregnancy is not currently conducted systematically; typically only women who are perceived to be at high risk are targeted (Poole et al., 2016). Additionally, recent data from the United States indicate a discrepancy between patients and providers; while providers indicated that they frequently screen women for alcohol use, most women reported that their provider did not ask them about their alcohol use (Tan, 2017). Furthermore, only 1 in 3 women were asked if they binge drank, and only 1 in 15 were advised to reduce or quit their drinking (Denny, 2017). If providers are not asking about alcohol consumption during pregnancy, and the amount of alcohol patients may be consuming, they are missing critical opportunities to provide holistic care to women in need. These barriers may be further compounded by issues related to rural and Northern living, as access to treatment may be limited and women may be required to leave their families and children to seek treatment in a larger urban centre (Poole et al., 2016). Students in this study seemed disillusioned and disappointed with health care delivery in their regions of the province and reflected that some of the negative circumstances involved in the vignette scenarios are reflective of issues with access to care and continuity of care in rural and Northern Ontario. Therefore, there is also a need to provide support to health care providers. Health care professionals should feel empowered to

help their patients, which includes being informed about the services and supports available in their region, both for women who need further intervention, as well as for the provider themselves to avoid burnout or depression.

Lastly, as was highlighted by students in this study who were prompted with Kimberly's vignette, there is a clear need for partner involvement when discussing FASD and addressing alcohol consumption during pregnancy. Even though many women report that they believe their partner's behaviour will not influence their own alcohol use during pregnancy (e.g., Peadon et al., 2011), partner drinking habits are likely to impact the drinking habits of pregnant women (May et al., 2005). Partners who continue to drink during a woman's pregnancy may cause her to feel pressured or influence her to continue consuming alcohol (e.g., Bottorff et al., 2014; Elek et al., 2013; Walker, Al-Sahab, Islam, & Tamin, 2011). In previous studies, women have indicated that they would be less likely to drink alcohol during pregnancy if their partners encouraged them to stop or cut back, or if their partner also stopped drinking alcohol during the pregnancy (Peadon et al., 2011). Qualitatively, women have reported that their partners continued to drink around them during their pregnancies, with some women stating that their partner encouraged them to drink (Elek et al., 2013), as was described in Kimberly's vignette. The fact that participants perceived Kimberly's situation as 'normal' or 'typical' of women in Northern Ontario is troubling, and demonstrates the need for students to feel equipped to care for patients in these situations. However, only students who were prompted with Kimberly's vignette spoke in detail about the critical importance of partners, demonstrating that many students may still hold the perception that FASD is a woman's issue. Women do not hold the sole responsibility for their pregnancies and FASD prevention initiatives should address individuals in the mother's larger social sphere.

Limitations and Future Directions

While this study had a number of strengths, including the triangulation of multiple qualitative methods and the unique use of vignettes, a number of limitations were present in the research. First, given the relatively small sample size and specific area of recruitment, it is difficult to know if these same perceptions and attitudes are present across all health care students in these programs or within Northern Ontario specifically. Future research should include a larger sample of health care students in training, as well as practicing health care professionals and preceptors, to establish the extent to which these attitudes and stereotypes may be ingrained within the health care system. Future research should also explore differences across health care professional groups, given the varying perspectives and approaches to care. The midwifery students in this study were a special population that described a number of differences that may be related to their scope of practice and their more explicit focus on care for women, rather than the child, as compared to the medical or nurse practitioner students.

Second, it is possible that students' responses to the vignettes could be different from those they would make in their actual practice, and students may have felt the need to respond in a socially desirable way. However, during the qualitative interviews, students did discuss their limited experiences with FASD and alcohol use during pregnancy and continually referred to the vignettes in their more general discussions regarding alcohol use during pregnancy. We feel that their responses are truthful and accurate and reflect their current levels of comfort in this area. It seems likely that with further education and additional clinical experience, students may feel better equipped to address FASD and discuss alcohol use during pregnancy. Future research should explore the relationship between personal and professional exposures to individuals with developmental disabilities and perceived self-efficacy and identify specific experiences that may

help students feel more efficacious in these areas (e.g., increased exposure to individuals with FASD and their caregivers, clinical placements with addiction treatment centres, etc.).

Conclusion

The findings of this study demonstrate a need for health care students to be provided with further education about FASD and the risk factors for alcohol consumption during pregnancy. Students' responses indicate that FASD is still thought of as a female issue; however, there is a clear need to address FASD as a societal issue, which includes addressing the role of the partner, as well as other individuals in the woman's social circle or community (e.g., friends, family members). Health care professionals should be cognizant of the potential risk factors for alcohol use during pregnancy in order to appropriately screen and counsel *all* women early who may be at risk or those for whom they should be screening about current alcohol use patterns.

On a practical level, the findings of this study establish a need to educate health care students and professionals about critical self-reflection or self-positioning within their health care practice. There is a need to ensure that students can identify what they do not know in order to identify potential areas for continuing professional development. Physicians, midwives, and nurse practitioners are all expected to engage in continuous improvement by identifying their own personal needs and learning from their practice, typically done through a self-assessment (College of Nurses of Ontario, 2015; Davis et al., 2006; Eva & Regehr, 2008; Frank, Snell, & Sherbino, 2015). However, if students are not educated about how to conduct a critical self-assessment, they may be unable to identify areas of need (e.g., developmental disabilities, FASD, alcohol use during pregnancy) and may remain unaware of how their own personal attitudes and stereotypes can influence their clinical practice recommendations. It is critical that health care providers appropriately recognize their unique strengths and weaknesses in specific contexts of

care, rather than in an acontextual or general manner. Concrete skills to help providers engage in rigorous self-assessment should be taught as part of their health care training, and students should also have coaches (Sargeant et al., 2010) or peers (Eva & Regehr, 2013) who can facilitate and guide them in identifying their own needs and goals to develop realistic, individualized plans. Many providers in practice may have never had explicit education, nor relevant experience of effective self-assessment during their training. For those who have had formal education in engaging in critical self-reflection, students may feel that they are unable to apply those skills in their everyday practice. Students should be encouraged to seek out opportunities to learn from practice and to utilize tools that will aid them in engaging in reflective practice (e.g., the College of Nurses of Ontario's Practice Reflection Worksheet; College of Nurses of Ontario, 2015). Fostering these reflective skills, as well as increased exposure to pregnant women and individuals with FASD, will be critical in improving the knowledge, confidence, and self-efficacy of future health care professionals. If students are appropriately informed about FASD and the potential risks associated with alcohol consumption during pregnancy, students will be able to effectively engage in all four levels of FASD prevention (Poole, 2008) when they begin their professional work.

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Appendix A

Vignette #1

Shannon is a 32-year-old, married woman who is pregnant with her first child. Shannon has a bachelor's degree in Labor Studies and Communications from an Ontario university and works as a marketing consultant at a top marketing firm in Toronto, Ontario. Shannon has a very active social life, and has a weekly dinner date after work with five of her closest female friends.

Shannon is currently seven months pregnant. While Shannon did not drink at all during her first trimester, she drank occasionally and lightly throughout her second and third trimesters. Shannon has never binged drank or gotten drunk, and has never had any hard liquor during her pregnancy. She says that she often has a glass or two of wine or a couple beers per week. Shannon's friends frequently reassure her that having a few drinks during her pregnancy does not pose any risk to her baby.

While Shannon claims that she could go the nine months without drinking any alcohol, she believes there is no conclusive evidence that light drinking during pregnancy will harm her baby. Shannon feels as though keeping as much of her normal, non-pregnant life as possible is benefiting her physically and mentally, including consuming a few drinks with her friends at dinner or when celebrating important events.

Questions:

- What are your first impressions of this vignette?
- As a health care professional, what advice would you give to Shannon at this stage of her pregnancy (third trimester)? What advice would you have given to Shannon at the beginning of her pregnancy?
- Do you think what Shannon is doing during her pregnancy poses any risks to her unborn child? Why or why not?
- How comfortable do you feel addressing this situation?

Vignette #2

Kimberly is a 23-year-old, unmarried woman who is pregnant for the first time. Kimberly lives in a small, rural community in northern Ontario that is two hours from the closest urban center. Kimberly owns her own car, but commuting is often problematic due to her erratic work hours and weather in the wintertime.

Kimberly is currently five months pregnant. Kimberly found out she was pregnant at eight weeks. Even though Kimberly rarely drinks, she stopped drinking completely upon finding out she was pregnant. However, Kimberly attended a friend's birthday party before she discovered she was pregnant and recalls drinking about ten drinks on that occasion, during her third week of pregnancy.

Kimberly has a strong social support network around her, particularly from her friends and her mother who still lives in the same community. However, Kimberly's partner and the father of her

child continues to drink in front of her, even though Kimberly has requested that he not drink. In certain social situations, her partner has urged her to have a couple drinks to help her relax and have fun. In these instances, Kimberly has chosen to drink a non-alcoholic cocktail or a non-alcoholic glass of wine instead of an alcoholic beverage.

Questions:

- What are your first impressions of this vignette?
- As a health care professional, what advice would you give to Kimberly at this stage of her pregnancy (second trimester)? What advice would you have given to Kimberly before she became pregnant?
- Do you think what Kimberly did at the beginning of her pregnancy poses any risks to her unborn child? Why or why not?
- How comfortable do you feel addressing this situation?

Vignette #3

Jessica is a 30-year-old, married woman who is pregnant for the first time. Jessica obtained a Bachelor of Arts degree in English and a Bachelor of Education from a southern Ontario university. While Jessica has lived in a major urban center for several years, she has recently moved back to her home community in a small, rural town in southern Ontario to accept a teaching position.

Jessica is currently three months pregnant. When Jessica made an appointment to see her family doctor, she expressed some concern and anxiety about her pregnancy. Because this is Jessica's first pregnancy, she is worried and uncertain about what to expect. Her doctor reassured her that everything was fine and that if she was really worried she should have a few drinks to help her relax and to get a better sleep. Although Jessica never drinks alcohol, she accepted the doctor's advice.

Questions:

- What are your first impressions of this vignette?
- As a health care professional, what advice would you give to Jessica at this stage of her pregnancy (first trimester)? What advice would you have given to Jessica before she became pregnant?
- Do you think the advice the family doctor gave Jessica poses any risks to her unborn child? Why or why not?
- How comfortable do you feel addressing this situation?

Appendix B

Semi-Structured Interview Guide for Health Care Students

1. Tell me about your health care education program that you are currently enrolled in (i.e., medical school, nursing program, midwifery program).
2. Have you ever heard of fetal alcohol spectrum disorder (FASD)? What do you know about FASD?
3. Where do you obtain your information about FASD? How do these sources impact your perception of FASD?
 - *Follow-up:* What is your perception regarding how FASD is currently portrayed and discussed in the media? Greater society?
 - *Follow-up:* Have you been exposed to FASD during your education? How? In what context did you receive this education or training? *Prompt:* Did you learn about FASD in relation to developmental disabilities? Women's health? Prenatal care? Etc.
 - *Follow-up:* How do you feel about interprofessional learning and training? How would this type of education help (or not help) you in learning about intellectual and developmental disabilities? FASD?
4. What previous experience, if any, do you have with people with intellectual or developmental disabilities? FASD? Pregnant women?
 - *Follow-up:* How do you feel about working with people with intellectual or developmental disabilities? FASD? Pregnant women?
5. How have these previous experiences influenced your perceived self-efficacy (*ability*) to care for individuals with intellectual or developmental disabilities? FASD? Their families? Pregnant women?
 - Could you give an example of a situation in which you felt particularly successful in meeting the needs of an individual with an intellectual or developmental disability?
 - Could you give an example of a situation in which you felt that you faced challenges in meeting the needs of an individual with an intellectual or developmental disability?
 - *Follow-up:* If you do not feel prepared, what would help you to feel prepared to work with individuals with intellectual or developmental disabilities? FASD? Their families? Pregnant women?

6. What would you tell a woman who was pregnant about alcohol consumption during pregnancy? What would you tell a woman who was of childbearing age, or planning to become pregnant, about alcohol consumption during pregnancy?
 - *Follow-up*: What do you know about Canadian guidelines to address or manage FASD?
 - *Follow-up*: What do you know about Canada's Low Risk Drinking Guidelines?
7. How do you think your program of study/training is set up to take care of individuals with intellectual or developmental disabilities? FASD?
8. What led you to want to train in Northern Ontario?
9. What do you consider to be required to care for individuals with FASD? What community and health care services do you think must be accessed?
 - *Prompt*: How do you think rural and northern health care issues impact care for people with FASD (or with intellectual or developmental disabilities in general)?
 - *Follow-up*: According to you, when is a community considered a rural community? A Northern community?
10. If you were helping to design a curriculum on fetal alcohol spectrum disorder, what would you include?

Chapter 5: Conclusion

The purpose of this paper-based dissertation was to contribute to the body of knowledge on health care professionals' and health care students' knowledge and awareness of FASD, with a focus on self-efficacy and personal attitudes. In this chapter, findings from the three papers in this thesis are summarized and framed within the larger project of which they form a part. This chapter concludes with a discussion of clinical and practical implications, as well as suggestions for future research. To remind the reader, the research questions in this dissertation were:

- (1) What do health care students know about FASD (e.g., prevalence of alcohol-related disabilities, consequences of prenatal alcohol exposure, secondary disabilities, and recommendations regarding drinking during pregnancy)? Where do they obtain their information about FASD and how does this information influence their attitudes about drinking during pregnancy? Are they aware of current Canadian guidelines for managing FASD (e.g., Public Health Agency of Canada guidelines, Canadian Low Risk Drinking Guidelines)?
- (2) What are health care students' beliefs and attitudes towards individuals with FASD, their families, and women who drink during pregnancy? Do they hold different attitudes towards women who drink knowingly compared to women who drink before they realize they are pregnant?
- (3) What are health care students' self-efficacy beliefs about their ability to work with individuals with FASD, their families, and pregnant women? Do health care students feel efficacious in working with individuals with FASD, based on their personal experiences and professional experiences (i.e., schooling)?

5.1 Discussion of Key Findings and the Larger Project

5.1.1 Professionals' and Students' Diagnosis and Knowledge of FASD and Alcohol Use During Pregnancy

The first article titled “Are rural and urban health care professionals in Ontario aware of fetal alcohol spectrum disorder? A secondary data analysis of the Fetal Alcohol Syndrome Survey for Health Professionals” employed a cross-sectional quantitative analysis approach and used non-parametric tests to examine knowledge and awareness of Ontario health care providers about FASD. While previous research in Canada has broadly examined health care professionals nationally (e.g., Clarke et al., 2005; Public Health Agency of Canada, 2005b; Tough et al., 2008), no previous studies have focused solely on Ontario providers. Parents of children with FASD have previously reported feeling unsupported by health care professionals in Ontario. While it has been suggested that it is a myth that Ontario is trailing compared to other provinces in addressing FASD (Koren, 2012), it is unclear whether health care professionals in Ontario lack key knowledge of FASD compared to those in Western Canada, for example. Recent findings of provider knowledge from research in Australia (e.g., Payne, France, Henley, D’Antoine, Bartu, Mutch, et al., 2011; Payne, France, Henley, D’Antoine, Bartu, O’Leary, et al., 2011; Payne, France, Henley, D’Antoine, Bartu, O’Leary, Elliott, et al., 2011; Payne et al., 2014) have highlighted how health care providers still have relatively poor knowledge of both FASD (e.g., signs and symptoms, diagnosis, secondary disabilities) and the consequences of alcohol consumption during pregnancy. While health care professionals in Ontario were generally aware of FASD, several professionals reported not believing that alcohol exposure during pregnancy was a significant risk factor for brain damage and did not agree that abstinence from alcohol during pregnancy was the best recommendation for women. Although responses to the student

questionnaires were not analyzed and presented in the papers included herein, the individual responses and group differences provide additional interesting context and comparisons with the health care professional findings presented in paper one. For that reason, some of the quantitative findings from the health care student groups are presented and integrated here.

The larger project also examined health care students' perceived knowledge of FASD and developmental disabilities in general. Students completed two questionnaires, the Healthcare Student Questionnaire (Isaacs et al., 2012; Minnes et al., 2012) and the Fetal Alcohol Spectrum Disorder Survey for Health Care Students (Clarke et al., 2005; Tough et al., 2008). Despite the age of the data (e.g., originally collected in 2001-2002) from the Fetal Alcohol Syndrome Survey for Health Professionals presented in the first paper, health care students reported many of the same concerns and hesitations almost 15 years later. In the first study, 92.2% of professionals agreed that prenatal alcohol exposure is a significant risk for permanent brain damage. A similar proportion of student respondents, 92.3%, also agreed with this statement; however, 2.6% of students strongly disagreed and 5.1% reported being unsure (i.e., undecided). Perhaps more troubling, health care students also indicated their confusion regarding the potential consequences of alcohol exposure during pregnancy, with over a third of participants (35.9%) agreeing or strongly agreeing, with the statement that alcohol's effects on fetal development remain unclear. However, it is important to note that these comparisons should be interpreted with caution, given that small convenience sample of students and the broad survey responses of professionals.

Nevertheless, these findings are echoed in their responses to the qualitative vignettes and semistructured interviews discussed in papers two and three, given their expressed confusion about the consequences of "light" drinking during pregnancy and their doubt about the validity

of research findings regarding varying amounts of alcohol consumption during pregnancy. These results are not surprising, given recent research findings demonstrating that health care professionals, particularly family physicians and midwives, still do not always articulate the message that no alcohol is safest during pregnancy (Inoue, Entwistle, Wolf-Branigin, & Wolf-Branigin, 2017).

Almost 1 in 10 practicing professionals in this study indicated that they gave a recommendation other than abstinence from alcohol during pregnancy to their pregnant patients. Health care students reiterated this finding, as many students indicated that “no alcohol is recommended, *but...*”. In addition to their qualitative responses, as presented in the second paper, health care students responded in a similar manner to the quantitative questionnaires; while 84.2% indicated that no alcohol is recommended, 15.8% responded that they provided a different or ‘other’ recommendation. While the sample size of the student population was small, it is noteworthy that a greater percentage of students (15.8%) compared to professionals (10%) indicated their acceptance of certain exceptions about drinking during pregnancy, such as drinking on special occasions, or drinking in the second or third trimester. These responses may again indicate students’ confusion over the risks of light drinking and their acceptance of social alcohol use during pregnancy (Raymond et al., 2009; Reibel, 2011), and may also reflect their need for greater education regarding fetal development. These responses may also suggest differences across professional groups (e.g., midwives compared to other providers).

While most providers and students acknowledged, both quantitatively and qualitatively, that not drinking during the first trimester is safest, both groups were less certain about the impact of alcohol exposure during the second and third trimester, and consequently may hold the belief that the effects of alcohol exposure are less severe after 20 weeks (Payne et al., 2014;

Reibel, 2011). While all professionals and students were convinced of the impact during the first trimester (e.g., influence on organogenesis; potential to cause facial characteristics associated with Fetal Alcohol Syndrome), providers perceived the risks to be minimized during the remainder of the pregnancy. However, a study involving rat models, exposing rats to a condensed exposure restricted to a single day at either 6.6g/kg or 3.3g/kg, demonstrated that a single exposure of alcohol in late pregnancy could cause a severe loss of brain cells, and that even a moderate exposure may result in the loss of vulnerable neurons (Goodlett, Marcussen, & West, 1990). More recently, findings from a longitudinal study of 607 individuals prenatally exposed to alcohol also demonstrated that alcohol exposure in each trimester predicted increased behaviour problems (Day, Helsel, Sonon, & Goldschmidt, 2013). Furthermore, research conducted by May et al. (2013) also concluded that an increased risk for FASD occurs with alcohol exposure during any trimester. Specifically, drinking during the first trimester elevated the likelihood of giving birth to a child with FASD by 12 times, first and second trimester drinking increased the likelihood of giving birth to a child with FASD by 61 times, and drinking in all three trimesters increased the likelihood of giving birth to a child with FASD by 65 times (May et al., 2013). Thus, students and professionals should be aware of the potential for any amount of alcohol exposure to impact fetal development, given that the central nervous system develops throughout the entire nine months of pregnancy.

Health care professionals in paper one also identified their feelings of confusion regarding which profession should be responsible for FASD identification and management. While the majority of professionals indicated that diagnosing FASD would be within their scope of practice, some paediatricians and family physicians, and most midwives indicated that diagnosing FASD was beyond their professional role. This uncertainty also extended beyond

FASD to addressing alcohol use during pregnancy or potential alcohol use problems. In the professional population, most health care providers perceived it to be the responsibility of the physician to manage patient problems in the area of alcohol use, with most family physicians (88.1%) and midwives (69.2%) agreeing with this perspective. To a lesser extent, health care professionals also viewed it as a midwife's responsibility to manage patient problems in the area of alcohol use, with most physicians (72.5%) and midwives (56.6%) agreeing with this perspective. These results may be explained, in part, because of the fact that not all women use a midwife. In Ontario, midwives care for about 12 to 14% of pregnant women, but the Association of Ontario Midwives estimates that 40% of pregnant women in Ontario who seek out midwifery care may be turned away as they cannot meet the demand (George, 2008; Gordon, 2014).

However, physicians in paper one were significantly more likely than midwives to believe it was both the physician's and midwife's responsibility to manage problems in the area of alcohol use. In the student population, responses were much more varied: 56.4% of students agreed or strongly agreed that it is the physician's role; 55.2% agreed or strongly agreed that it is the midwife's role; and 53.9% agreed or strongly agreed that it is the nurse practitioner's role. While these responses indicate that students may have some confusion or apprehension regarding primary care (e.g., only half of students indicated it was the role of various professionals), these findings are promising, as they indicate that health care students likely feel that *all* professions, to some degree, are responsible when it comes to addressing potential alcohol use problems, and that they all feel accountable for engaging in FASD prevention.

It is possible the participants' beliefs in this area stem from their experiences with interdisciplinary or interprofessional education. In recent years, there has been immense interest, both nationally and internationally, in the area of interdisciplinary health education and

interprofessional collaboration in health care. These approaches are needed, in part, because of the increasing complexity of skills and knowledge required to provide comprehensive care and the increasing specialization of care within professions (Hall & Weaver, 2001; Health Canada, 2004; Nancarrow et al., 2013). Supporters of interdisciplinary education argue that interdisciplinary health care teams are needed in order to resolve complex real-world problems that provide differing perspectives to health care delivery (Choi & Pak, 2006), such as FASD.

The central premise of interdisciplinary or interprofessional education is that if health professional students learn together, they will be better prepared to foster collaboration and teamwork in their future practice, ultimately leading to improved patient care and health outcomes (Barr, Koppel, Reeves, Hammick, & Freeth, 2005; Lapkin, Levett-Jones, & Gilligan, 2013). Similarly, scholars interested in interdisciplinary education have advocated that the best place to initiate transformations from the 'silo' approach to an interdisciplinary approach is during the education of health care students (Allen, Penn, & Nora, 2006). For that reason, on a practical level, interprofessional learning opportunities may provide a significant opportunity for educating students about FASD, as students could interact to discuss areas such as alcohol use screening, brief interventions, motivational interviewing, FASD prevention, FASD diagnosis and management, and caregiver support. Interdisciplinary learning opportunities may allow students to feel more confident in their own professional role. Additionally, frequent exposure to interdisciplinary education can promote professional socialization across disciplines, where professionals across disciplines learn together. Encouraging students to view cooperative interdisciplinary care as a positive experience should be the norm. Interdisciplinary experiences are critical in changing the 'silo' attitudes of many health care students, and may prevent the

development of stereotypes concerning their own health profession, and that of others (Carlisle, Cooper, & Watkins, 2004; Tunstall-Pedoe, Rink, & Hilton, 2003).

While health care students in this dissertation ($N = 45$) jointly believed that all professional populations should play a role in FASD prevention and management, differences existed between groups regarding their level of preparedness accessing resources for pregnant women and for individuals with FASD. A Kruskal-Wallis H test showed that there was a statistically significant difference in preparedness to access resources for pregnant women [$X^2(2, n = 37) = 6.010, p = 0.05$] and in preparedness to access resources for individuals with FASD [$X^2(2, n = 37) = 6.482, p = 0.039$] between the health care provider groups. Mann-Whitney post-hoc tests revealed that NOSM students felt more prepared than Nurse Practitioner students to access resources for pregnant women [$(U = 46.00, p = 0.026); M = 16.29$ vs $M = 10.10$] and for individuals with FASD [$(U = 39.50, p = 0.013); M = 16.68$ vs. $M = 9.45$]. Midwifery students also reported feeling more prepared than Nurse Practitioner students to access resources for pregnant women [$(U = 26.00, p = 0.038); M = 12.90$ vs. $M = 8.10$]. Therefore, medical students report feeling more prepared than Nurse Practitioner students when it comes to accessing resources for pregnant women and individuals with FASD. Midwifery students also reported feeling more prepared than Nurse Practitioner students when it comes to accessing resources for pregnant women only. No differences existed between the NOSM students and the Midwifery students.

Interdisciplinary and interprofessional approaches to education and primary care are also critical in this area, as interdisciplinary care has been highlighted as an essential approach to addressing the human resource shortage in maternity care and improving maternity care for women in Canada (Peterson, Medves, Davies, & Graham, 2007). Interdisciplinary maternity care

teams can improve access to care by cultivating the capacity of local practitioners to care for more women and facilitating earlier access to prenatal care, by increasing the choice of care providers, and by improving choice in the appropriateness of care providers (e.g., for women with low-risk pregnancies; Peterson et al., 2007). However, midwifery students have been largely neglected from interdisciplinary education studies, as most research focuses on medicine, nursing, allied health, and health administration students (e.g., Buelow, McAdams, Adams, & Rich, 2010). Consequently, interprofessional or interdisciplinary education needs to include midwifery students, along with medical, nursing, and other health care students, with regards to maternity care, given that interprofessional care is an important response to current and looming maternity needs (Association of Ontario Midwives, 2008). Northern Ontario is well situated to do this, as Laurentian University is one of three sites in Ontario with a Midwifery Education Program. The inclusion of midwifery students in interdisciplinary education will also ensure that other health care students encounter midwives working to their broadest scope of practice, further ensuring professional socialization as discussed earlier. This interaction is critical, as there has been a history of interdisciplinary rivalry in maternity care in Canada between midwives, nurses, and other medical professionals caused by ‘turf protection’ and a lack of respect or trust (Peterson et al., 2007). These opportunities for professional interaction and problem-solving will also help students in all three disciplines to feel better prepared when it comes to accessing resources and caring for pregnant women, birth mothers, foster and adoptive parents, and individuals with FASD.

Lastly, both health care professionals and health care students were asked to report their definition of “moderate alcohol consumption” in terms of both the reported number of drinks per occasion and the reported number of drinking occasions per week for non-pregnant women.

While no statistically significant differences emerged between health care student groups, interesting trends emerged. Overall, health care students indicated an average of 2.26 ($SD = .850$, $Mdn = 2$, range 1-6) drinks per occasion and an average of 4.77 ($SD = 3.10$, range 1-15) drinking occasions per week to be moderate. NOSM students reported the same number of drinks per occasion to be moderate ($M = 2.26$, $SD = .653$, range 1-4), but reported more drinking occasions per week to be moderate ($M = 5.21$, $SD = 3.630$). This group also reported the largest range when it came to drinking occasions per week, ranging from 1 to 15 drinks. Nurse Practitioner students reported the lowest number of drinks per occasion as moderate ($M = 1.90$, $SD = .568$, range 1-3) but also reported the highest number of drinking occasions per week to be moderate ($M = 5.80$, $SD = 2.394$, range 2-9). However, these numbers are within recommended drinking guidelines for Canadian women, and perhaps indicate that Nurse Practitioner students may be most familiar about Canada's Low Risk Drinking Guidelines (Butt et al., 2011). Interestingly, the Midwifery students reported the most drinks per occasion as being moderate ($M = 2.60$, $SD = 1.265$, range 2-6) but the least drinking occasions per week as being moderate ($M = 2.90$, $SD = 1.729$, range 1-7). Based on their responses about their definitions of moderate alcohol consumption, it is clear that students need further clarification regarding low risk drinking guidelines and the potential health risks associated with alcohol consumption.

The comparison of professional and student responses is critical, given that formal education, to a large extent, impacts knowledge, skills, competence, and attitudes as a health care professional. The results of this study support the finding that health care professionals tend to have more knowledge of FAS specifically (see, for example, Arnold et al., 2013; Brimacombe et al., 2008; Caley, 2006; Gahagan et al., 2006; Mengel et al., 2006; Nanson, Bolaria, Snyder, More, & Weiner, 1995; Rudeen et al., 2007; Wedding et al., 2007; Zoorob, Aliyu, & Hayes,

2010), as opposed to the larger constellation of impairments that may result from exposure to alcohol prenatally (e.g., neurobehavioural consequences, impairments in adaptive functioning, and secondary disabilities).

The results of the first paper also demonstrated that while Ontario health care providers had some knowledge of FASD and alcohol use during pregnancy, prior to the development of Canadian guidelines (Chudley et al., 2005; Cook et al., 2015), health care students over a decade later still responded in a similar manner. While not a predominant focus of the studies examining health care students across the three programs included in this dissertation, students also reported being most familiar with FAS and tended to discuss issues that are associated with a presentation of FAS, such as binge drinking patterns, exposure to alcohol during the first trimester, and populations that are stereotypically associated with FAS/FASD (e.g., Indigenous communities, women struggling with alcohol addiction).

5.1.2 Attitudes About Alcohol Consumption During Pregnancy

The second article titled “‘No alcohol is recommended, but...’: Health care students’ attitudes about alcohol consumption during pregnancy” employed a qualitative thematic analysis of scenario-based vignettes to examine the attitudes and beliefs of health care students regarding alcohol use during pregnancy. Although almost all students recognized that no alcohol consumption during pregnancy is the safest recommendation, many students recounted that this advice is not always conveyed during encounters with their pregnant patients or with women of childbearing age.

The results of this study are in line with the larger body of literature, as well as the results presented in paper one included in this dissertation, highlighting the conflicting attitudes about

the safety of alcohol use during pregnancy. For example, in a survey study of Canadian health care providers ($n = 5361$) conducted by Tough, Clarke, Hicks, and Clarren (2005b), 88% of providers indicated that no alcohol is recommended. An earlier Canadian study conducted with a group of randomly selected family physicians in Toronto, Ontario, Canada, employing a multiple-choice questionnaire, also assessed physicians' recommendations to women about alcohol use during pregnancy; participants were able to select more than one answer. In this study, 57.5% of physicians felt that the amount of alcohol considered safe for the fetus is unknown, 65% agreed that no alcohol is recommended throughout pregnancy, 5% agreed that no alcohol is recommended in the first trimester only, and over half (53.8%) of participants felt that a glass of wine or beer occasionally is not likely to be of concern (Nevin, Parshuram, Nulman, Koren, & Einarson, 2002).

Health care providers in the United States and Australia, two countries that share similar health care cultures and perspectives about FASD prevention, have responded in a comparable manner to Canadian providers regarding alcohol use during pregnancy. In a study of American obstetricians and gynaecologists, providers were asked how many drinks per week a pregnant woman could consume without risk of adverse pregnancy outcomes. 59.9% of providers indicated 0 drinks, 28.1% of providers indicated 1-2 drinks, and 10.6% of providers indicated 3 or more drinks (Anderson et al., 2010). Lastly, surveys of health professionals' (Payne et al., 2005) and midwives' (Payne et al., 2014) knowledge, attitudes, practices, and opinions about FASD and alcohol consumption during pregnancy indicated similar trends in Western Australia. In 2005, 87.3% of health care providers recommended not drinking at all, 29.1% recommended not becoming intoxicated, 29.3% indicated having less than seven standard drinks over a week, and 41.0% indicated that on any one day, women should have no more than two standard drinks

spread out over at least two hours (Payne et al., 2005). In 2014, midwives were much more familiar that not drinking during pregnancy is the safest option (99.4%). However, midwives still responded positively to other recommendations, such as alcohol is harmful during the first trimester (12.1%), trying to cut down on drinking alcohol (10.9%), do not become intoxicated (9.1%), and drinking alcohol occasionally is okay (1.8%; Payne et al., 2014).

Taken together, these results indicate that significant confusion still exists about the best recommendations regarding alcohol consumption during pregnancy. While health care professionals and health care students seem to have gotten the message that binge drinking during pregnancy is to be avoided, much ambiguity remains about infrequent and occasional consumption of alcohol. However, the results of this study also demonstrated that some students did not perceive infrequent binge exposures (e.g., 10+ drinks on one occasion as presented Kimberly's vignette) as being problematic. Some students discussed that this amount of alcohol consumption was not enough to be concerned about, and noted that they would likely not monitor the child for FASD as the child grows up or document the alcohol use in their patient's file. This lack of patient follow-up is a critical finding that should garner significant attention from even the conservative practitioners that refuse to acknowledge the risks of light drinking.

Notably, the results of Payne et al.'s (2014) study demonstrated that midwives may have the most knowledge of FASD prevention (e.g., offered advice about alcohol consumption in accordance with clinical guidelines, informed pregnant women about the effects of alcohol use during pregnancy, endorsed the use of brief intervention). While Payne et al. (2014) showed that midwives in Western Australia were knowledgeable that no alcohol during pregnancy was the best recommendation, other studies have demonstrated that midwives may be the most likely to condone alcohol use during pregnancy compared to other professional groups. This disconnect

between knowledge and practice is disconcerting. For example, in their qualitative, semistructured interview study of midwives in New South Wales, Australia, Jones and Telenta (2012) demonstrated that midwives had limited knowledge of the health risks associated with alcohol use during pregnancy, and that although there was a strong social assumption that pregnant women should not consume alcohol, the pregnant women also included in their study reported that they were often not asked about their alcohol use. Additionally, results from van der Wulp, Hoving, and de Vries' (2013) semistructured interview study with Dutch midwives illustrated that midwives often tell patients that limited alcohol use would not be harmful. Furthermore, although more midwives considered alcohol abstinence in pregnancy to be the best and official recommendation, only two thirds of midwives actually recommended abstinence in their work following updates to national guidelines in Denmark (Kesmodel & Kesmodel, 2011).

These results are in line with the findings from the present dissertation, as the Midwifery students in this study were also the most likely to condone alcohol use during pregnancy and framed their attitudes within their scope of practice (e.g., model of care and guiding philosophy that women have the right to make informed choices). Particularly, the Midwifery students discussed alcohol use during pregnancy from a focus of personal, informed choice. Interesting differences existed between the student groups, predominantly between Nurse Practitioner and Midwifery students. Nurse Practitioner students were the most informed about FASD (e.g., could give the most complete description of potential disabilities and outcomes associated with alcohol exposure) and were more consistent in their recommendations that alcohol should never be consumed in pregnancy, compared to Midwifery students who had a more tolerant view towards alcohol consumption during pregnancy.

In addition, the notion of personal and *informed* choice was also unique to the Midwifery students. They elaborated that it is the woman's personal decision to consume alcohol during her pregnancy, which includes an evaluation of the potential risks (Crawford-Williams, Steen, Esterman, Fielder, & Mikocha-Walus, 2015). While health care professionals are required to provide the most clear and consistent information possible to help women make *informed* choices about their pregnancies, the question remains whether or not women are *actually* informed about the potential risks of alcohol consumption during pregnancy. Upon further investigation, students held a number of biases and perceptions about women who may drink during their pregnancies, and believed that women who had more formal education and who came from a higher socioeconomic status were better informed about their pregnancies. However, these findings are troubling, as students' perceptions and attitudes were based on their personal beliefs, rather than drawing on their education. Consequently, students held the belief that many women are informed about their pregnancies, even when they may not be, as students reported not inquiring with women about their sources of information on healthy pregnancies and alcohol use during pregnancy. Because of this belief, many students, and potentially providers, may not be appropriately screening or asking women about their alcohol consumption, as they may maintain that most women have a good knowledge base already, that many women know not to drink during pregnancy, or assume that most women understand the current scientific evidence (France et al., 2010). A recent review of the history of attitudes toward drinking during pregnancy by Warren (2015) indicates that many women continue to ignore advisories about avoiding alcohol consumption during pregnancy, emphasizing the continued need for education in this area.

5.1.3 Stigma, Stereotypes, and Alcohol Use During Pregnancy

The third article titled “Recommendations that are selectively made to selective types of people’: Health care students’ attitudes about alcohol consumption during pregnancy” also employed a qualitative thematic analysis of scenario-based vignettes and semistructured interviews to examine health care students’ attitudes and beliefs about women who may continue to consume alcohol throughout their pregnancies. Beyond their confusion about the safety of alcohol consumption in light or moderate amounts, students elaborated on how their recommendations about safe alcohol use differ when it comes to different populations. In particular, students across all three programs were much more accepting of social alcohol use in their patients that they perceived to be educated, informed, and from a higher socioeconomic standing. Given current demographic patterns, these findings are concerning as health care students are likely missing patients in their practice who require further intervention.

Canadian findings from Lange, Quere, Shield, Rehm, and Popova (2015) demonstrated that women who consume alcohol during pregnancy are more likely to be older (>35 years), white, employed, have post-secondary education, and have a household income of \$80,000 and above. Recent findings in Ontario, Canada also support this trend and demonstrate that women with higher education are at a higher risk for consuming alcohol during pregnancy (Zidenberg, Watson, & Coons, 2017). Consequently, if health care providers are not screening *all* women for alcohol consumption during pregnancy, some women who may be drinking at higher levels, underreporting their alcohol consumption, or drinking on a regular basis may be missed (e.g., not asked about their alcohol use; alcohol use is not discussed with their primary care physician) and a critical opportunity for intervention will have been overlooked. Women often do not feel safe about disclosing their use of alcohol out of fear of judgment by health care professionals, or the

potential for child removal by welfare authorities (Poole, Schmidt, Green, & Hemsing, 2016). The belief that only certain types of women can have a child with FASD, as was demonstrated in this study, may perpetuate this fear and stigma, as women who may need help to reduce their drinking may be deterred from asking for it, and women who come forward about their alcohol use may be reassured that their drinking is not problematic (e.g., they are not perceived as high-risk).

To that end, students also reported being more concerned about alcohol misuse and alcohol exposed pregnancies in their patients they perceived to be at a higher risk, particularly women who struggled with addictions and women from Indigenous communities. While the vignettes did not specify that any of the women in the scenarios were Indigenous, participants in this study assumed that these women, especially those in rural and Northern settings, were Indigenous. Students often compared and contrasted women from different socioeconomic standings and held the belief that certain women are able to retain control over their drinking. While women who drink during their pregnancies are not a homogenous group, there are a number of notable reasons why some women may continue to drink during their pregnancies.

For example, women may use alcohol to cope with other social determinants of health, particularly violence, depression, poverty, and isolation, or may have an alcohol addiction (Coons, 2013a; Public Health Agency of Canada, 2005a). For women who are pregnant and are aware of the risks of alcohol use but struggle to abstain due to a multitude of factors (e.g., social pressure, life circumstances, violence or trauma, or addiction), an approach that focuses solely on promoting abstinence can compound the stigma and shame they may already be experiencing. This stigma may further perpetuate negative life circumstances, including drinking to self-soothe and avoiding accessing appropriate services that may help her and her child (Bell et al., 2016;

Choate, 2017; Poole & Isaac, 2001). It is critical that health care students and providers are able to engage in appropriate support for women with addictions and feel confident providing 'FASD-informed' (Rutman, 2016) or trauma-informed care (BC Provincial Mental Health and Substance Use Planning Council, 2013; Dechief & Poag, 2010; Poole & Greaves, 2012; Urquhart, Jasiura, & the TIP Project Team, 2013) that recognizes that substances may be a common way to cope for women with current or past experiences of trauma. In a study of 80 biological mothers who had given birth to a child with FASD, 95% had been sexually, physically, or emotionally abused as a child or an adult, 80% had a major mental illness, and 72% felt unable to reduce their alcohol use because they were in abusive relationships (Astley, Bailey, Talbot, & Clarren, 2000). One in three women will experience abuse or violence in their lifetime, and a significant portion of women will use alcohol or other drugs to cope with these experiences (BC Society of Transition Houses, 2011; Gatz et al., 2005).

It is also essential that health care professionals are aware of the social determinants of health, as was highlighted by students in this study. There is a demonstrated need to connect a woman's addiction to the rest of her life and her social situation, and providers should be prepared to provide care in a way that is supportive, safe, and does not retraumatize the biological mother. In many cases, harm reduction approaches may be the safest and most appropriate option (British Columbia Ministry of Health, 2005; Nathoo et al., 2015; The Society of Obstetricians and Gynaecologists of Canada, 2010). In addition to harm reduction, providers should also be cognizant of providing culturally appropriate care, especially within a rural and Northern Ontario context. While Canadian discourse has perpetuated the stereotype that FASD is an 'Aboriginal problem' (McKenzie et al., 2016), Indigenous women do report a higher prevalence of abuse (Daoud, Urquia, O'Campo, & Thiessen, 2012).

The discussion of FASD and alcohol consumption during pregnancy within Indigenous populations in rural and Northern Ontario is also problematic. On the one hand, Indigenous women are less likely to drink alcohol in general than non-Indigenous women in Canada, but they are more likely to drink heavily (i.e., binge drink) and to drink as a result of a variety of social determinants of health (e.g., poverty, experience of violence and abuse, and coping with intergenerational trauma associated with colonization; McKenzie et al., 2016). Subsequently, the children of Indigenous women are potentially at a higher risk for FASD. On the other hand, the assumption that Indigenous women are at a higher risk for FASD contributes to further colonial stigma, stereotyping, and surveillance of these women (Salmon, 2004; Tait, 2003, 2009). As Salmon (2011) argues, FASD has been labelled a ‘crisis situation’ among Indigenous communities in Canada and suggests that both risk and protective factors for FASD are deeply connected to the social conditions in which women become pregnant, give birth to, and mother their child with FASD. Several other researchers have also noted that FASD in rural and Northern communities can only be understood by the overall impact of the social determinants of health (e.g., Badry & Wight Felske, 2013; Government of Canada, 2015; Healey & Meadows, 2007) and by the needs of Northern communities (Salmon & Clarren, 2011). In order to understand women’s health issues that are important in FASD prevention work in rural and Northern settings, it is critical to understand trauma, alcohol abuse, child welfare involvement, and the impact on communities, as a broad perspective to social problems provides context for the prevalence and presentation of FASD in these regions (Badry & Wight Felske, 2013).

Although not explicitly discussed, Salmon (2011) also emphasized the complex interaction between Indigenous marginalization and the interplay of the social determinants of health (e.g., poverty, level of education, employment status, and place of residence). This

multifaceted relationship demonstrates the connections between the social construction of mothering, societal expectations and stereotypes of Indigenous peoples, and social determinants of health. A social construction paradigm, as was undertaken in the current dissertation, is particularly relevant here, as the social construction of mothering can position mothers who use alcohol during pregnancy as “unfit” or “bad” mothers (Salmon, 2011, p. 169) who pose a threat to their child, their community, and society. Health care professionals, such as the students included in this study, may further perpetuate these stereotypes and misconceptions in their practice as a result of their lack of knowledge, awareness, and personal attitudes about FASD.

While students maintained a good understanding of the multidimensional nature of addiction (e.g., from a social determinants of health framework), their stereotypical beliefs about FASD as an Indigenous issue continue to reinforce the socially constructed notion of the “bad” mother (Johnston, 2008; Johnston & Boyle, 2013). The intersection of colonization, discrimination, alcohol misuse, and mothering all contribute to the construction of what it means to be a “good” mother or a “good” parent. These constructions of motherhood speak to the racial prejudice and stereotypical notions about Indigenous mothers that still persist today. Because alcohol use in pregnancy is both a symptom and a legacy of colonization, professionals should bear this in mind when providing interventions and targeted supports for the prevention of FASD. Consequently, cultural course objectives in students’ formal education should be considered in relation to interdisciplinary education (Bridges, Davidson, Odegard, Maki, & Tomkowiak, 2011), which encourages students to examine their own cultural background and how it may impact interactions with patients, clients, and other team members. Acknowledging personal and professional stereotypes and prejudices should be a priority for future health care professionals, as an understanding of different cultural needs will be critical in determining

individualized care strategies that may vary depending on the population (e.g., Indigenous populations) and the geographic location within Northern Ontario (Smylie et al., 2000).

Finally, students in this dissertation reported feeling more competent in working with pregnant women compared to working with individuals and families directly affected by FASD. However, despite their increased comfort in working with pregnant women, students reported feeling unsure about how best to support women and where to refer them for care. Students also seemed disillusioned with health care delivery in their regions of the province and suggested that many of the negative circumstances presented in the vignette scenarios were illustrative of issues with access to care and continuity of care in rural and Northern Ontario, thus presenting “typical” situations that they may encounter in their clinical practice. These perspectives were significantly influenced by their attitudes and beliefs about health care delivery in rural and Northern Ontario in general, including their belief that there is “always less” in terms of access to care overall, as well as specialist care specifically (e.g., providers exclusively trained in FASD or addictions). Access to treatment has been noted as being very challenging for women who live in rural areas because of the expectation that they must leave their families and children to travel to access treatment (Poole et al., 2016).

In Northern Ontario, the majority of residents live in rural or remote communities. In general, an overall poorer health status, coupled with a lower self-reported health status, is a challenge that rural and Northern areas face, especially due to a chronic shortage of doctors and other health care providers (Strasser et al., 2009; Wenghofer, Timony, & Pong, 2011) and an unequal distribution of physician-to-patient ratios (Gauthier, Timony, & Wenghofer, 2012; Timony, Gauthier, Hogenbirk, & Wenghofer, 2013). Northern Ontario residents display an incredibly high need for quality health care services; however, the geography of rural and

Northern Ontario presents a number of challenges, including service, resource, and transportation-related challenges impeding quality health care (Ministry of Health and Long Term Care, 2010). It is possible that these perceptions contributed to students' feelings of apathy and disappointment, as well as their normalized beliefs about alcohol consumption in rural and Northern communities.

5.1.4 Summary of Findings

In summary, the findings presented here have addressed all three research questions posed. The results of this dissertation ended up focusing more so on the prevention of FASD, as opposed to knowledge of FASD specifically. Overall, the findings presented here have predominantly addressed two of the three research questions posed by contributing the following results:

1) Both health care professionals and health care students have some knowledge of FASD, including a stronger reported knowledge of FAS compared to FASD. Despite knowledge and awareness of FASD, many professionals and students reported confusion regarding scope of practice, professional role responsibilities, perceived barriers to diagnosis, management of alcohol use issues, and definitions of moderate alcohol consumption. While some students qualitatively described being knowledgeable about Canada's Low Risk Drinking Guidelines (Butt et al., 2011), students' responses about the number of drinks per occasion and the number of drinking occasions per week indicate that they are not necessarily providing evidence-based recommendations to their patients, pregnant or not.

2) While the larger study examined health care students' beliefs and attitudes towards individuals with FASD, their families, and women who drink during pregnancy, I made the

decision to focus solely on health care students' attitudes about alcohol use during pregnancy in this dissertation. Students stated their knowledge consisted of being aware that no alcohol consumption during pregnancy is the safest recommendation, but expressed confusion about varying levels of alcohol exposure during pregnancy, particularly in low and moderate amounts. Students also demonstrated a number of potentially classist and racist beliefs, particularly regarding Indigenous women and women with a low socioeconomic status, perceiving certain women to be more at risk of having a child with FASD. Consequently, students elaborated on how their own attitudes influence the recommendations that they provide to different types of women.

3) Students reported varying levels of perceived self-efficacy, both quantitatively and qualitatively. Students reported feeling most efficacious and prepared to work with pregnant women, as opposed to families or individuals with FASD. However, some students felt more comfortable than others in addressing alcohol consumption during pregnancy. Students identified a number of strategies that would enable them to feel more efficacious in primary care, including increased exposure to individuals with FASD and their family members (i.e., lived experiences), clinical exposure and experience, and increased formal education about FASD and alcohol consumption during pregnancy. These issues were touched upon throughout the dissertation, but were not a primary focus of the three manuscripts included herein. Therefore, these inferences are discussed below in regard to clinical and practical implications.

5.2 Clinical and Practical Implications

“...And even if they think they don’t need to be educated, they need to be re-educated. And that’s such a big deficit. Such a big deficit.”

Stacey, adoptive mother to one son with FASD

(Coons, Watson, Yantzi, et al., 2016)

In addition to the overall implications of the research included in this dissertation, there are also a number of significant implications for clinical practice. In particular, there is a need to address three essential areas: 1) Engaging in critical discussion about the risks of prenatal alcohol exposure, both for students and professionals in these disciplines and for public health care professionals in the larger community; 2) Addressing the entrenched alcohol culture and tolerance of alcohol consumption in general; and 3) Seeking out individual learning about developmental disabilities and FASD.

5.2.1 How Much is too Much? Understanding Prenatal Alcohol Exposure

A common theme that came up across all three manuscripts included in this dissertation surrounded the issue of “light”, “low”, “moderate”, and “occasional” prenatal alcohol exposure. These findings were demonstrated both by professionals’ and students’ responses to the questionnaire items, as well as students’ remarks about the scenario-based vignettes and their responses during the semistructured interviews.

Despite continued confusion and debate about the risks of social alcohol consumption during pregnancy (see, for example, Henderson, Gray, & Brocklehurst, 2007; O’Leary & Bower, 2012), the evidence to support a recommendation of safe levels of prenatal alcohol exposure does not exist (Cook et al., 2015). There is a challenge in ever knowing how much alcohol is too

much and consequently health care practitioners should not be actively recommending the use of, or exposure to, *any* teratogen because of the potential risks. Health care students and professionals should feel comfortable framing the message of alcohol abstinence as part of a healthy pregnancy approach that includes other positive behaviours aside from the avoidance of alcohol. This approach should extend beyond front line interventions with women in their care, and should include public health messaging for women and the media.

While the recommendation that no alcohol during pregnancy is the safest course of action is generally accepted in most countries internationally (see International Alliance for Responsible Drinking, 2016 for a summary of pregnancy guidelines), recent findings continue to demonstrate that this message is not disseminated to patients by health care professionals. The challenging of this message by researchers, particularly in the United Kingdom (e.g., Kelly et al., 2013) and the United States (e.g., Lundsberg, Illuzzi, Belanger, Triche, & Bracken, 2015), who have argued that light drinking during pregnancy is not harmful to women or their babies, has been suggested as one possible reason (Inoue et al., 2017).

Additionally, the misinterpretation of research findings by the mass media has further contributed to the mixed messages that women and health care professionals receive. For example, Global News indicated that “scientists are slowly changing their stance on health hazards of sipping on small amounts of alcohol while pregnant” (Chai, 2013, ¶1) and the Harvard Health Publication, which states that they provide “trusted advice for a healthier life”, published an article on the British research noting that “drinking a little alcohol early in pregnancy may be okay” and that a “strict recommendation to have zero alcohol during pregnancy seems extreme” (LeWine, 2013, ¶14). However, issues for health care students and professionals arise when there are not clear discussions about the quantity of alcohol being

consumed (e.g., standard drink), the multitude of potential confounding variables (e.g., gender; ethnicity; genetics; timing, frequency, and quantity of alcohol exposure; age; weight; drinking history and levels of drinking prior to pregnancy; and nutrition status; Chartier, Vaeth, & Caetano, 2013; Dick & Bierut, 2006; Mumenthaler, Taylor, O'Hara, & Vesavage, 1999), and the methodological approaches of the scientific studies (O'Leary & Bower, 2012). A consistent method for classifying maternal alcohol consumption during pregnancy has not been used across studies, the definitions and use of the terms low, moderate, and heavy are arbitrary and unreliable, and some studies have included women drinking at low levels in their control groups, confusing comparisons across groups and the overall interpretation of results (O'Leary & Bower, 2012). Additionally, many studies assessing women's drinking levels are based on self-report measures, and consequently there is a tendency for women to under-report their alcohol use.

As participants in this study noted, health care students need to be educated in how to critically analyze research findings to judge the quality of the scientific evidence that will inform their practice and recommendations. Both students and professionals should be prepared to engage in informed, non-judgmental counselling about the potential risks to the fetus if women are consuming alcohol at various amounts during their pregnancies. The majority of health care professionals do not routinely advise pregnant women about alcohol and pregnancy, and the abstinence message is not supported by all in the community (e.g., Crawford-Williams et al., 2015; Vagnarelli et al., 2011). There is a need to support health care professionals in feeling more prepared and confident to engage in these types of discussions with their pregnant patients and with women of childbearing age. Notably, future health care providers may feel more comfortable addressing alcohol consumption during pregnancy if they feel more prepared to discuss pre-pregnancy behaviours in general. Researchers have demonstrated that pre-pregnancy

alcohol consumption has an impact on drinking rates during pregnancy (McDonald et al., 2014). Health care students need to be cognizant of this risk factor in order to screen and identify women early who may be at risk. These discussions could be part of promoting healthy pregnancies in general, where alcohol consumption can be part of the conversation.

However, it is also important that health care students and providers inform women that there is not a safe level of alcohol use during pregnancy, especially in pregnancies where alcohol exposure can be avoided. Advice allowing for one or two drinks on special occasions, or infrequent drinking, can lead to confusing and conflicting messages for women. The lack of providing credible and up-to-date information from health care professionals may lead to continued misinformation if women acquire their information from non-credible sources (e.g., mass media). Consequently, by not engaging in informed discussions about alcohol use with their patients, health care students and professionals may be increasing their patients' risk of having an alcohol exposed pregnancy or giving birth to a child with FASD.

5.2.2 Women and Alcohol Use

Health care students and professionals also need to acknowledge the changing patterns of women's alcohol consumption in Canada. Alcohol is a legal, psychoactive drug that plays an important cultural role in Canadian society and is the most common drug used by Canadians (Canadian Centre on Substance Abuse, 2014; National Alcohol Strategy Working Group, 2007). Given that alcohol is "no ordinary commodity" (Alcohol and Public Policy Group, 2010, p. 769), it is not surprising that controversy continues about low levels of alcohol use in pregnancy. As a society, we remain ambivalent to the harms associated with alcohol use, despite growing evidence of the increasingly serious and rising health and social risks associated with alcohol use in Canada and worldwide (Canadian Institute for Health Information, 2017). As a society, we

also misinterpret FASD prevention strategies and messages as a threat to women's autonomy and feministic beliefs, as was the case with the outrage associated with the Centre for Disease Control's health recommendation regarding alcohol use and women of childbearing age in the United States (Cunha, 2016). Alcohol is often portrayed as "good, harmless fun" and we, as a society, need to stop our "romanticizing" our normalization of alcohol use (Picard, 2017). Alcoholic beverages remain an important, economically entrenched product (Alcohol and Public Policy Group, 2010), despite increases in alcohol poisoning, alcohol withdrawal, liver disease, chronic alcohol abuse, and other conditions that account for 77,000 hospital admissions in Canada (Canadian Institute for Health Information, 2017).

Data from the Canadian Alcohol and Drug Use Monitoring Survey demonstrated that the majority of males (54%) consumed alcohol at least weekly (Thomas, 2012). While alcohol consumption and risky drinking used to be considered a predominantly male issue, this pattern of drinking is on the rise in women (Drapkin, Eddie, Buffington, & McCrady, 2015; OECD, 2015; Public Health Agency of Canada, 2016), with 40% of female drinkers reporting consuming alcohol at least once a week (Health Canada, 2012; Thomas, 2012). An estimated 20% of female drinkers in Canada engage in risky alcohol consumption on at least a monthly basis, and this pattern of consumption is increasing (Bulloch, Williams, Lavorato, & Patten, 2016; Health Canada, 2012; Thomas, 2012). Risky drinking by adults in Canada has increased for both genders since 2003 (Canadian Centre on Substance Abuse, 2014).

Even more troubling, moderate and high risk alcohol consumption are more common among women aged 15 to 34, encompassing women of childbearing age. A cross-sectional study of Canadians also revealed that drinkers from Ontario tended to drink more often, drank wine more often and spirits less often, and drank more often during meals than drinkers from other

provinces (Paradis, Demers, & Picard, 2010). In this study, women from Ontario had the second highest annual consumption of drinks, on average, and consumed approximately 2.1 drinks per day (Paradis et al., 2010). This trend establishes the need for students to engage in appropriate screening for alcohol-use *before* pregnancy, given the influence of pre-pregnancy behaviours on alcohol consumption (at different time points) during pregnancy (McDonald et al., 2014). Aside from pregnancy, health care professionals in training should also feel comfortable discussing alcohol use with their patients to advise about low risk drinking guidelines to prevent other alcohol-related harms.

Interestingly, health care students should also consider how their own relationship with alcohol may influence their perspectives about alcohol consumption in general and alcohol consumption during pregnancy. In a study conducted with American obstetricians and gynaecologists, personal alcohol consumption was associated with beliefs, practice patterns, and feelings of preparedness (Anderson et al., 2010). Specifically, a greater personal consumption of alcohol was associated with: disagreeing that FASD occurs at similar rates among all cultural and ethnic groups; being more likely to suggest that pregnant and non-pregnant patients can consume larger amounts of alcohol per week and per occasion without an increased risk to their pregnancy or health; and being less prepared to conduct brief interventions for reducing alcohol consumption. Alternatively, less personal consumption of alcohol was associated with: being more likely to ask all pregnant women about alcohol use during their initial visit and subsequent visits; and educating all patients about the risks of alcohol use during pregnancy. Currently, as demonstrated in the third manuscript included in this dissertation, students may be unaware of how their own patterns of consumption and personal attitudes about alcohol use may influence their approach to care and their recommendations about alcohol use.

5.2.3 Seeking Out Individual Learning Opportunities

Finally, health care students should be aware that it may be their responsibility to continue their own learning about FASD and alcohol consumption during pregnancy. In 1995, Nanson et al. identified that the current medical education system may have already lost interest in FAS (FASD) and discussed that other topics may have overshadowed FAS (FASD) in medical education. More recent research on medical education has determined that the topic of substance use disorders has been given a low priority in medical school curricula (Walter & Kerr, 2011) and that there is a disparity in FASD content of curricula (Zoorob et al., 2010). Prioritizing and fully amalgamating skills to address patients' substance use into health care education is critical in assuring that physicians, and other health care providers, are equipped with the tools to provide adequate evidence-based care to their patients (O'Connor, Nyquist, & McLellan, 2011). As Walter and Kerr (2011) discuss, there is currently a dearth of baseline data on medical students' (and presumably other students') knowledge and perceived self-efficacy to counsel and screen pregnant women for alcohol use and addiction. Much of the research in this area has focused on medical education, and remains unclear to what extent these issues are addressed in other health care educational programs.

The results of this dissertation demonstrate the continued lack of movement in the understanding and action in the past 15 years regarding FASD prevention. There is a critical need for a call to action in several domains, including health care professional curriculum development (e.g., the inclusion of FASD as a topic within health care education), public awareness, and media coverage. More education and training regarding FASD, alcohol use guidelines, alcohol screening and brief intervention, and motivational interviewing are necessary. For example, education around the biology of FASD, explaining the mechanisms of alcohol and

how it impacts cells, or the use of standardized patients (e.g., a patient with FASD, a woman who is drinking during her pregnancy) may empower health care students. Beyond those in the health care field, there is also a need for professional education and governmental strategic planning, including those working in the alcohol industry, that supports both the education and clinical practice with a number of professions.

However, given the large number of topics students must cover in their medical, midwifery, and nurse practitioner programs, students should be prepared to add to their own education and acquire information from informed and reliable sources when necessary. As students in this study highlighted, education alone is not sufficient, and students have a desire to receive information about FASD and alcohol use during pregnancy from alternative sources. Providing students with opportunities to have individuals with lived experience come in and educate students about the realities of living with FASD is an interesting, enticing, and reasonable solution. Having individuals discuss their own lives and personal situations may also generate an interest in FASD or developmental disabilities. Knowledgeable and healthy birth mothers who can help practitioners understand what their issues were and what kinds of supports they needed would also be important for health care students and would provide the future practitioners with a better opportunity to comprehend the lived realities and social determinants of health around alcohol use.

If individuals and caregivers affected by FASD are not available to discuss their lived experiences, future health care professionals could also use the vignette scenarios included in this study as a learning tool, as these vignettes were based on caregivers' lived experiences. Given the relatively low response rate in this study (17.2% for NOSM students, 22.6% for Midwifery students, and 35.5% for Nurse Practitioner students), it is possible that students currently do not

have an interest in these topics and that greater exposure to individuals with FASD may increase their awareness and interest in this area.

5.3 Methodological Rigour, Study Considerations, and Future Directions

5.3.1 Ensuring the Quality of Qualitative Research

As early as the 1980's, researchers noted the importance of judging the reliability and validity of qualitative research (Guba & Lincoln, 1989; Lincoln & Guba, 1985). However, researchers have differed, and continue to differ, on the appropriateness of terms used to judge the quality of qualitative research and the operational definitions of suggested terms, such as rigour, trustworthiness, credibility, consistency/dependency, and transferability. For example, Mårtensson, Fors, Wallin, Zander, and Nilsson (2015) have recently proposed using the terms credible, contributory, communicable, and conforming to critique qualitative research.

Regardless of the terms used, qualitative methods are now widely employed and increasingly accepted in health research, and should be assessed with the same broad concepts of reliability, validity, and generalizability, considering the distinctive goals of the qualitative research (Mays & Pope, 2000). Some of the strategies suggested to achieve methodological rigour include: prolonged engagement; persistent observation; thick, rich description of findings; authenticity of findings (i.e., representation of the findings); inter-rater reliability; coherence (i.e., presentation of the findings); peer review or debriefing; clarifying research bias; member checking; external audits; and triangulation (Berger, 2013; Fossey, Harvey, McDermott, & Davidson, 2002; Morse, 2015). Many of these suggested approaches were employed in the current study.

Reliability and validity of the semistructured interviews and scenario-based vignettes was ensured through triangulation and member checking (Golafshani, 2003; Lincoln & Guba, 1985; Shenton, 2004). The triangulation of methods, both in variety of methods used (e.g., multiple qualitative methods) and in mixed methods designs, can strengthen qualitative studies (Patton, 2002). Quantitatively, the descriptive results from the professional responses to the FASD-specific questionnaire were triangulated with student responses. Both questionnaires used in this study have also been used in previous research and therefore there is also an opportunity to provide comparisons to national data (Clarke et al., 2005; Public Health Agency of Canada, 2005b; Tough et al., 2008), as well as to other health care professionals in training (e.g., at Queen's and McMaster University; Isaacs et al., 2012; Minnes et al., 2012). The value of using multiple qualitative methods in this study was critical, because understanding the educational needs of health care students in training will inform the development of appropriate interventions and curricula changes that will be useful to current and future students.

Involving participants in member checks also allowed the researcher to ensure authenticity in the informants' responses through enabling trust in the research process and by confirming that my interpretations of their individual interviews were reflective of their constructed meanings. Member checks were conducted at multiple time points during this study. Prior to data collection for the present study, member checks were conducted with parents of children with FASD who had participated in previous research examining their lived experience raising a child with FASD in Ontario and whose stories informed the vignettes. Nine parents and caregivers raising children with FASD in Ontario, from a variety of family types (e.g., biological, adoptive, foster), reviewed the vignettes and approved their content and realism, indicating that the stories presented in the vignette were an accurate representation of parents'

feelings and experiences. These member checks ensured the accuracy and credibility of the vignettes used in the present study.

Member checks with participants in this study were also conducted, which included ‘on the spot’ checks (e.g., during the vignettes and semistructured interviews) to clarify information, as well as the verification of emerging themes to ensure the truthfulness of the results after the initial data analysis. Additionally, frequent debriefing sessions between myself and my supervisor, as well as with my committee members, allowed for recurrent discussions about the emerging findings, because collaborative discussions can allow the vision of the main investigators to be widened as others bring their experiences and perceptions to the table. The findings presented in this study were reviewed and refined many times with my committee members and with participants to ensure their accuracy and credibility. Ongoing discussion also allowed for continued reflection and deliberation about any flaws in the proposed course of action during the data collection and writing processes, and these meetings therefore contribute to the credibility of this research.

Furthermore, it was important to ensure that the analysis of findings was interpretive, so that the results were not given the status of fact, and that they remained grounded in examples from the data, as was done in the qualitative manuscripts included herein. Transparency of results and reflexivity in the interpretation process have been suggested as good benchmarks for judging the quality of the research (Elliott, Fischer, & Rennie, 1999; Reid et al., 2005), and I strived to meet these criteria when completing this dissertation. As the primary researcher, I was aware of my own biases as a researcher and tried to remain open to students’ experiences and responses in order to construct their meaning about FASD and alcohol consumption during pregnancy.

5.3.2 Study Considerations

Although this study addressed health care professionals' and students' knowledge and attitudes about FASD and alcohol use during pregnancy, the research findings may be affected by several limitations. Despite an ongoing and continued effort to recruit students, the number of participants included in this study was limited, especially for the quantitative data, which may make it difficult to generalize the findings to all health care students in Northern Ontario, in the province of Ontario, or in Canada. While I also strived to recruit as many participants as possible for the qualitative phase of this study, only 21 of the 45 participants from Phase I were interested in completing the qualitative phase. While this number is potentially small, given the dispersion of students across the three programs, there is ongoing debate regarding data saturation (see Fusch & Ness, 2015 and O'Reilly & Parker, 2012) that suggests that large numbers of participants are not needed and that data saturation does not necessarily need to be met, as uniqueness in the data can be further explored. Nonetheless, the limited number of participants make it difficult to provide specific comparisons across the three programs studied, and there is a need for more information and participants to make further inferences. There is also potentially a limited applicability of the findings of this study outside of the province of Ontario, given differences in provincial and territorial policies to address FASD (e.g., well-established government strategies to address FASD, such as those in British Columbia and Alberta).

Additionally, there are possibly challenges in comparing the professional data to the student data. The professional data are 15 years old, and as such may not reflect the current level of knowledge held by practicing health care professionals today. However, as described in this chapter, many student responses were similar to the professional responses. Moreover, the original survey of health care providers included a large number of psychiatrists ($n = 168$), which

represented approximately 20% of respondents. Because the focus of their work is rarely on pregnant women who use alcohol, the inclusion of their responses may have impacted the overall results presented herein. However, psychiatrists play a prominent role in the care of individuals with FASD, particularly regarding mental health concerns, and were therefore included in the analysis to better understand professionals' knowledge about FASD.

Furthermore, because of the age of the original data collected, there are also differences in the terminology used (e.g., fetal alcohol syndrome, fetal alcohol effects). Additionally, since this study was conducted, the Canadian guidelines for diagnosis have been updated, shifting diagnostic guidelines from the previously used 4-Digit Diagnostic Code (Astley, 2013) to using FASD as a diagnostic label (Cook et al., 2015). Consequently, there is a need to further investigate students' and professionals' knowledge of these guidelines, as both groups would have participated before these changes.

Finally, it is also important to note that the participant-selecting bias presented in qualitative research means that the students in this study were the most interested and concerned about FASD in clinical practice. While these students were invested in this study and were paying attention to issues about FASD and alcohol use during pregnancy, it is possible that their responses to the vignettes could be different from those they would make in their actual practice, as students may have felt the need to respond in a socially desirable way. Furthermore, because this study was situated within the social constructionism paradigm, it is important to bear in mind that each students' lived reality may be different and consequently may have affected their interpretation and response to each vignette. For example, students may have replied to the vignettes in discrete ways based on differences between the scope of the programs and the individual differences of the students. For example, participant demographics, experiences of

their own pregnancies or those of a partner, those who have had clinical experience in developmental disabilities, FASD, or alcohol use, and those who have received prior training or education about FASD (e.g., in a previous degree) all may have influenced their constructed realities about FASD and alcohol use during pregnancy.

However, during the qualitative interviews, students did discuss their limited experiences with FASD and alcohol use during pregnancy and continually referred to the vignettes in their more general discussions regarding alcohol use during pregnancy. Thus, I feel that their responses were truthful and accurate and reflect their current levels of comfort in this area. It seems likely that with further education and additional clinical experience, health care professionals in training may feel better equipped to address FASD and discuss alcohol use during pregnancy. While their statements show confusion and apprehension, it is likely that there are other students with even less certainty about their practice. Moreover, the lack of participation in the study overall may indicate that students have a lack of interest in FASD or developmental disabilities and may not perceive these issues to be important. Consequently, the author of this dissertation cautions about the transferability of these findings to other health care students or practicing providers, and suggests that more research is warranted to examine differences between health care professions.

5.3.3 Suggestions for Future Research

In order to enhance the findings reported herein, future researchers should seek to examine a number of critical areas. It would be advantageous to further investigate the influence of personal experiences and personal biases on professionals' and students' knowledge and attitudes about FASD and alcohol use during pregnancy. As previously highlighted, professionals' own alcohol use can influence their recommendations and attitudes about the

safety of alcohol use during pregnancy (Anderson et al., 2010). It would be interesting to identify if, and how much, students and professionals are drinking (e.g., are they drinking within Canada's Low Risk Drinking Guidelines?) and how their own drinking patterns influence their clinical beliefs and recommendations. It would also be vital to investigate the experiences and attitudes of practicing providers, including those who are preceptors and whose attitudes have the potential to directly impact students and learners, as was described in this study.

In addition to personal experiences, it would also be interesting to examine the data presented herein from a sex- and gender-based approach. While there is some mention of the sex and the gravidity of the health care practitioners included in the papers presented here, I did not conduct any analyses using this particular lens. It would be important to note if there are group differences based on sex and gravidity, and if these differences apply to health care providers working in rural or Northern Ontario.

Future research should also examine differences between practicing professionals and students to determine if updated clinical guidelines and improved education about FASD and alcohol consumption during pregnancy are better preparing students for the realities of clinical practice in these areas. Understanding knowledge and attitudes over time, and comparing cohorts of students, would provide valuable insights into changes in attitudes about the safety of alcohol use during pregnancy. As demonstrated in this study, the attitudes of students remained little changed in this area compared to professionals' attitudes from the early 2000's, indicating that alcohol use during pregnancy may, in fact, be becoming more socially acceptable compared to earlier data.

Perceptions regarding alcohol use during pregnancy should also be studied from various perspectives, including the viewpoints of women of childbearing age and the media. Given

recent trends, future studies should seek to understand why highly educated women from middle to high socioeconomic statuses continue to drink during their pregnancies. These studies could investigate why women drink during pregnancy, their decision-making processes, their judgments about the quality of current scientific evidence, and their information sources about the safety of alcohol use during pregnancy. A media analysis regarding alcohol consumption during pregnancy would also be warranted, investigating social portrayals of alcohol use during pregnancy in popular media. This area of research currently remains unexplored, though an analysis of health journalism in news media about FASD research demonstrated that FASD is frequently presented using sensational and inaccurate headlines (Naumann, 2014).

Furthermore, future research should explore differences across specific programs (e.g., comparison across medical schools, midwifery programs, and nurse practitioner programs) to determine if, and how, knowledge and attitudes may differ across Northern Ontario, Ontario as a whole, and nationally. Qualitative studies in this area are also warranted to understand why nurse practitioners, in particular, feel less prepared to care for and access resources for individuals with FASD and pregnant women. Despite their quantitative responses indicating a fair amount of knowledge about FASD and alcohol use during pregnancy, nurse practitioner students in this study qualitatively reported feeling unprepared and lacking in self-efficacy. The experiences of providers and students should also be explored in conjunction with their patients and caregivers affected by FASD. Future research exploring health care services and delivery in rural and Northern Ontario is needed in order to address the needs of individuals with FASD living in these regions and women with addictions.

Lastly, there is a need to understand students' and professionals' attitudes about developmental disabilities in general. As discussed above, the low response rates in this study

potentially indicate a lack of interest in developmental disabilities and FASD. Recent research indicates that stigmatizing attitudes towards people with intellectual and developmental disabilities are present in mainstream health professionals, which in turn affect the ongoing challenges in health care services for these populations (Pelleboer-Gunnink, Van Oorsouw, Van Weeghel, & Embregts, 2017). In Ontario, *The AMS Phoenix Project: A Call to Caring* (see CommunicateCARE.machealth.ca) is one example of ongoing programs that provide a curriculum of caring aimed at helping health care professionals care for individuals with developmental disabilities (Boyd, 2016). It would be noteworthy to investigate students' interest in developmental disabilities to understand why or why not they may be interested in caring for these populations, and, if so, why and how students become involved in this area. Follow-up research from this study investigating the implications of integrating the scenario-based vignettes in the health care curricula, as well as other curricula changes, would also be critical in understanding health care students' attitudes over time and interest in FASD and developmental disabilities. The introduction of different vignettes, including a scenario where a woman herself has FASD, may also provide a unique opportunity to increase FASD knowledge and prevention. As students in this study discussed, listening to the lived experiences of individuals with FASD and their caregivers would be powerful and influential in helping them understand issues related to FASD and alcohol use during pregnancy. Therefore, research investigating the mode of delivery of information to students (e.g., lectures, independent learning, clinical experience, volunteer experience, presentations by guest lectures/speakers) is also warranted.

5.4 Knowledge Translation and Mobilization

An important component of conducting research is also the process of knowledge mobilization, whereby researchers move available knowledge (e.g., findings from formal

research) into active use by bridging the gap between research, policy, and practice. An important part of this process is building relationships between research producers and the users through the use of networks, informal and formal events (e.g., conference presentations), and collaboration of resources. Although the results of this dissertation will be published in academic journals to facilitate and enable the accessibility of the impact of the research amongst researchers and professionals, knowledge translation must go beyond the use of academic publications.

According to the National Institute on Disability and Rehabilitation (2005, 2013) knowledge translation and mobilization refers to the multidimensional, active process of ensuring that new knowledge gained through the course of research ultimately “improves the lives of people with disabilities, and furthers their participation in society” (¶74). Therefore, dissemination of the research findings goes well beyond simply making research available through the traditional methods of journal publication and academic conference presentations and involves a process of extracting the main messages and key implications from the research results. Findings from this study will be exchanged with colleagues and collaborative research project members who are stakeholders in the implications of this work.

Additionally, and perhaps most importantly, the findings of this study will be shared with the students and the three programs who supported this work. Health care students who participated in this study were made aware of the results throughout the research process, and a final summary of findings has been sent to all participants who requested them at the beginning the project. In addition to study participants, the results of this study were also shared with study supporters and organizations that provided secondary data and other materials for this work. Although the dissemination to the three programs has not yet been undertaken, I hope to share

the findings of this dissertation in both written and oral formats. Ideally, the three programs would be receptive to a discussion about curricula changes regarding FASD, as well as the integration of the scenario-based vignettes as a case-based learning tool.

On a practical level, the use of scenario-based vignettes provided an opportunity for knowledge mobilization to occur immediately and ‘on-the-spot’ as students reflected on the various situations, FASD, and their formal education, while they responded to the case-based scenarios. The need for case-based learning and training has been previously suggested as a key component in reducing the knowledge and application gap in clinical practice for FASD (Brems, et al., 2010). Therefore, collaboration with the three programs may allow for curricula changes based on the findings of this dissertation, allowing for improved education and confidence about advising female patients about FASD and alcohol use during pregnancy.

Furthermore, the widespread use of the internet has provided a vehicle for dissemination of research to many individuals, including the family members who participated in the previous project that informed this work, and who are invested in the outcomes of these types of projects. By sharing the findings with FASD organizations, community leaders, and FASD advocates, research connections can facilitate reciprocal relationships between researchers and invested parties.

5.5 Conclusion

In conclusion, this dissertation has furthered our understanding of health care professionals’ and students’ knowledge, attitudes, and self-efficacy regarding FASD and alcohol consumption during pregnancy. This dissertation has provided evidence for continued discussion on the risks of alcohol consumption during pregnancy and society’s attitudes about the safety of varying amounts of alcohol use during pregnancy. The findings of this dissertation have affirmed

the results of previous work that identify that stressors for families raising children with FASD are not internal to the family unit, but rather are the result of limited support in the community, including locating educated health care professionals (Coons, Watson, Yantzi, et al., 2016). Health care students and professionals are still not understanding the message that no alcohol consumption during pregnancy is the safest and most prudent option, and these results highlight the need for health care professionals to feel prepared in counselling women about other options or outlets to deal with stress and anxiety, beyond alcohol consumption. There is a clear need to provide evidence to health care professionals that demonstrates the justification for why health care professionals should be recommending abstinence during pregnancy. The perception that some women are protected from having a child with FASD further illuminates the pressing need to educate professionals and society about the risks of low to moderate alcohol consumption during pregnancy, as students and providers may not be engaging in effective FASD prevention with all women. Unfortunately, even though significant advances have been made in knowledge acquisition, education, and prevention, prevalence rates of FASD are little changed and surprising amounts of misinformation regarding alcohol consumption and pregnancy still exist (Gearing, McNeill, & Lozier, 2005; Paley, 2009; Roozen et al., 2016). Overall, improving the confidence of practicing and future health care professionals regarding FASD and alcohol consumption during pregnancy is critical, as an adequate knowledge base combined with a strong sense of self-efficacy is essential in providing effective prevention of FASD.

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Appendix A

Laurentian University Research Ethics Board Approval



APPROVAL FOR CONDUCTING RESEARCH INVOLVING HUMAN SUBJECTS Research Ethics Board – Laurentian University

This letter confirms that the research project identified below has successfully passed the ethics review by the Laurentian University Research Ethics Board (REB). Your ethics approval date, other milestone dates, and any special conditions for your project are indicated below.

TYPE OF APPROVAL / New <input checked="" type="checkbox"/> / Modifications to project <input type="checkbox"/> / Time extension <input type="checkbox"/>	
Name of Principal Investigator and school/department	Kelly Coons, School of Rural and Northern Health, supervisor, Shelley Watson, Psychology
Title of Project	Northern Ontario Health Care Students' Knowledge and Self-Efficacy Regarding Fetal Alcohol Spectrum Disorder
REB file number	2015-06-10
Date of original approval of project	August 10, 2015
Date of approval of project modifications or extension (if applicable)	
Final/Interim report due on: (You may request an extension)	August, 2016
Conditions placed on project	

During the course of your research, no deviations from, or changes to, the protocol, recruitment or consent forms may be initiated without prior written approval from the REB. If you wish to modify your research project, please refer to the Research Ethics website to complete the appropriate REB form.

All projects must submit a report to REB at least once per year. If involvement with human participants continues for longer than one year (e.g. you have not completed the objectives of the study and have not yet terminated contact with the participants, except for feedback of final results to participants), you must request an extension using the appropriate LU REB form. In all cases, please ensure that your research complies with Tri-Council Policy Statement (TCPS). Also please quote your REB file number on all future correspondence with the REB office.

Congratulations and best wishes in conducting your research.

Rosanna Langer, PHD, Chair, *Laurentian University Research Ethics Board*

Appendix B

Vignettes

Vignette #1

Shannon is a 32-year-old, married woman who is pregnant with her first child. Shannon has a bachelor's degree in Labour Studies and Communications from an Ontario university and works as a marketing consultant at a top marketing firm in Toronto, Ontario. Shannon has a very active social life, and has a weekly dinner date after work with five of her closest female friends.

Shannon is currently seven months pregnant. While Shannon did not drink at all during her first trimester, she drank occasionally and lightly throughout her second and third trimesters. Shannon has never binged drunk or gotten drunk, and has never had any hard liquor during her pregnancy. She says that she often has a glass or two of wine or a couple beers per week. Shannon's friends frequently reassure her that having a few drinks during her pregnancy does not pose any risk to her baby.

While Shannon claims that she could go the nine months without drinking any alcohol, she believes there is no conclusive evidence that light drinking during pregnancy will harm her baby. Shannon feels as though keeping as much of her normal, non-pregnant life as possible is benefiting her physically and mentally, including consuming a few drinks with her friends at dinner or when celebrating important events.

Questions:

- What are your first impressions of this vignette?
- As a health care professional, what advice would you give to Shannon at this stage of her pregnancy (third trimester)? What advice would you have given to Shannon at the beginning of her pregnancy?
- Do you think what Shannon is doing during her pregnancy poses any risks to her unborn child? Why or why not?
- How comfortable do you feel addressing this situation?

Vignette #2

Kimberly is a 23-year-old, unmarried woman who is pregnant for the first time. Kimberly lives in a small, rural community in northern Ontario that is two hours from the closest urban center. Kimberly owns her own car, but commuting is often problematic due to her erratic work hours and weather in the wintertime.

Kimberly is currently five months pregnant. Kimberly found out she was pregnant at eight weeks. Even though Kimberly rarely drinks, she stopped drinking completely upon finding out she was pregnant. However, Kimberly attended a friend's birthday party before she discovered she was pregnant and recalls drinking about ten drinks on that occasion, during her third week of pregnancy.

Kimberly has a strong social support network around her, particularly from her friends and her mother who still lives in the same community. However, Kimberly's partner and the father of her child continues to drink in front of her, even though Kimberly has requested that he not drink. In certain social situations, her partner has urged her to have a couple drinks to help her relax and have fun. In these instances, Kimberly has chosen to drink a non-alcoholic cocktail or a non-alcoholic glass of wine instead of an alcoholic beverage.

Questions:

- What are your first impressions of this vignette?
- As a health care professional, what advice would you give to Kimberly at this stage of her pregnancy (second trimester)? What advice would you have given to Kimberly before she became pregnant?
- Do you think what Kimberly did at the beginning of her pregnancy poses any risks to her unborn child? Why or why not?
- How comfortable do you feel addressing this situation?

Vignette #3

Jessica is a 30-year-old, married woman who is pregnant for the first time. Jessica obtained a Bachelor of Arts degree in English and a Bachelor of Education from a southern Ontario university. While Jessica has lived in a major urban center for several years, she has recently moved back to her home community in a small, rural town in southern Ontario to accept a teaching position.

Jessica is currently three months pregnant. When Jessica made an appointment to see her family doctor, she expressed some concern and anxiety about her pregnancy. Because this is Jessica's first pregnancy, she is worried and uncertain about what to expect. Her doctor reassured her that everything was fine and that if she was really worried she should have a few drinks to help her relax and to get a better sleep. Although Jessica never drinks alcohol, she accepted the doctor's advice.

Questions:

- What are your first impressions of this vignette?
- As a health care professional, what advice would you give to Jessica at this stage of her pregnancy (first trimester)? What advice would you have given to Jessica before she became pregnant?
- Do you think the advice the family doctor gave Jessica poses any risks to her unborn child? Why or why not?
- How comfortable do you feel addressing this situation?

Appendix C

Semi-Structured Interview Guide for Health Care Students

1. Tell me about your health care education program that you are currently enrolled in (i.e., medical school, nursing program, midwifery program).
2. Have you ever heard of fetal alcohol spectrum disorder (FASD)? What do you know about FASD?
3. Where do you obtain your information about FASD? How do these sources impact your perception of FASD?
 - *Follow-up:* What is your perception regarding how FASD is currently portrayed and discussed in the media? Greater society?
 - *Follow-up:* Have you been exposed to FASD during your education? How? In what context did you receive this education or training? *Prompt:* Did you learn about FASD in relation to developmental disabilities? Women's health? Prenatal care? Etc.
 - *Follow-up:* How do you feel about interprofessional learning and training? How would this type of education help (or not help) you in learning about intellectual and developmental disabilities? FASD?
4. What previous experience, if any, do you have with people with intellectual or developmental disabilities? FASD? Pregnant women?
 - *Follow-up:* How do you feel about working with people with intellectual or developmental disabilities? FASD? Pregnant women?
5. How have these previous experiences influenced your perceived self-efficacy (*ability*) to care for individuals with intellectual or developmental disabilities? FASD? Their families? Pregnant women?
 - Could you give an example of a situation in which you felt particularly successful in meeting the needs of an individual with an intellectual or developmental disability?
 - Could you give an example of a situation in which you felt that you faced challenges in meeting the needs of an individual with an intellectual or developmental disability?
 - *Follow-up:* If you do not feel prepared, what would help you to feel prepared to work with individuals with intellectual or developmental disabilities? FASD? Their families? Pregnant women?

6. What would you tell a woman who was pregnant about alcohol consumption during pregnancy? What would you tell a woman who was of childbearing age, or planning to become pregnant, about alcohol consumption during pregnancy?
 - *Follow-up*: What do you know about Canadian guidelines to address or manage FASD?
 - *Follow-up*: What do you know about Canada's Low Risk Drinking Guidelines?
7. How do you think your program of study/training is set up to take care of individuals with intellectual or developmental disabilities? FASD?
8. What led you to want to train in Northern Ontario?
9. What do you consider to be required to care for individuals with FASD? What community and health care services do you think must be accessed?
 - *Prompt*: How do you think rural and northern health care issues impact care for people with FASD (or with intellectual or developmental disabilities in general)?
 - *Follow-up*: According to you, when is a community considered a rural community? A Northern community?
10. If you were helping to design a curriculum on fetal alcohol spectrum disorder, what would you include?

Appendix D

Summary Themes and Sub-themes Presented in Chapter Three

Superordinate theme	Sub-theme	Example of illustrative quote
Theme 1: Attitudes regarding amount of alcohol and timing of exposure	<p>“So many clients ask if they have ‘ruined their babies’”: Alcohol exposure before pregnancy identification</p> <p>“At this point, from what she’s disclosed, I wouldn’t say I’m too worried”: Amount of alcohol exposure</p>	<p>My first impression is that a lot of people drink before they realize that they are pregnant and often times what we say to people is there’s ... this lovely all or nothing effect...I wouldn’t be concerned about that one incident of drinking and would talk to her about how we encourage...officially no alcohol...but not to hold on to worries about that one night. – <i>Eva</i></p> <p>“My understanding is that...there may be some consequences to her baby when it’s born. It could have issues related to FASD, whether they’re cognitive or behavioural, social, physical issues, they’re all possible. But just because she did drink, that doesn’t necessarily mean that that’s going to happen.” – <i>Layla</i></p>
Theme 2: Obligation, but no conclusive evidence	<p>“Obligation to inform that no alcohol is best”: Responsibility to talk to patients</p> <p>“If we don’t know what the risks are, people aren’t</p>	<p>“She made a comment that there’s no...evidence that light drinking during pregnancy will harm her baby. That’s maybe a little bit of a tough thing to argue but there’s certainly no conclusive evidence that there is any safe level to it and so I think that it’s important to emphasize that there is not any sort of established safe level...there’s always that risk that what she’s doing is harming the child.” – <i>Braden</i></p> <p>“We’re not gonna pass a law that says moms aren’t allowed to drink</p>

	making informed choices”: Knowledge of potential risks	alcohol, but we can give them information about the risks. But the trouble is we’re giving them vague information about risks.” – <i>Braden</i>
Theme 3: Personal choice	“As long as she’s informed...she can make her own choice”: Respecting the mother	“If you preface with public health information you can pretty much say ‘as a health care provider, I’m required to say X-Y-Z’ ...Especially from the midwifery angle, talk about choice. So here is the guideline and of course...your pregnancy is your choice. Your lifestyle, your choice.” – <i>Sally</i>

	Harm reduction and binge drinking: Perception of the ability to stop drinking	“If I had someone who came in and who was having problems with drinking I think I would definitely try to reduce it as opposed to trying to get them to stop completely ‘cause that just doesn’t seem very realistic.” – <i>Mackenzie</i>
Theme 2: “Mom as a total thing, not just a carrier of an unborn fetus”: Understanding the broader social determinants of health	Complex relationship between women and alcohol Partner involvement and recognition of other risk factors	“It becomes really important to think about the mom to be as a total thing, not just a carrier of an unborn fetus. To look at them as an entire person and their context. Why did they drink? Why do they feel they still need to? What is so scary about going forward? I find that if you can connect and understand some of the behavioural reasons why people drink or whatever it would be, why they are on street drugs, then we can connect with them.” – <i>Braden</i> “I think I’d be worried about her. Particularly, I would probably be concerned about what happened,...what the consequences of her drinking early in her pregnancy were. But I think I would be worried about her just because...it sounds like her social situation is kind of difficult with her partner continuing to drink in front of her and seems like he’s pushing it on her, so I’d be worried that she’s at risk of maybe drinking during pregnancy. And also the fact that she seems kind of isolated.” – <i>Layla</i>

Appendix F
(Braun & Clarke, 2006)

Phase	Description of the process
1. Familiarising yourself with your data:	Transcribing data (if necessary), reading and re-reading the data, noting down initial ideas.
2. Generating initial codes:	Coding interesting features of the data in a systematic fashion across the entire data set, collating data relevant to each code.
3. Searching for themes:	Collating codes into potential themes, gathering all data relevant to each potential theme.
4. Reviewing themes:	Checking in the themes work in relation to the coded extracts (Level 1) and the entire data set (Level 2), generating a thematic 'map' of the analysis.
5. Defining and naming themes:	Ongoing analysis to refine the specifics of each theme, and the overall story the analysis tells; generating clear definitions and names for each theme.
6. Producing the report:	The final opportunity for analysis. Selection of vivid, compelling extract examples, final analysis of selected extracts, relating back of the analysis to the research question and literature, producing a scholarly report of the analysis.

Appendix G

Health Care Student Questionnaire

As a health care professional in training, you are invited to participate in this study. We will ask you to answer questions about your knowledge and experiences regarding individuals with developmental disabilities in general, as well as individuals with fetal alcohol spectrum disorder. In addition, we will ask you about your experiences and beliefs about learning. You do not have to answer all questions if you do not want to. You can also discontinue your participation at any time without penalty.

The questionnaires will take approximately 20-30 minutes to complete. For your participation, you will be entered into a draw to win a Surface Pro 3 valued at approximately \$850.

Would you also be interested in participating in a semi-structured interview about your experiences as a health care student in relation to developmental disabilities and fetal alcohol spectrum disorder? You will receive a \$10 Tim Horton's gift card for your participation in this interview. If yes, please indicate below and provide your contact information.

No Yes

Name: _____

E-mail Address: _____

Phone Number: _____

We would like to begin by asking a few questions about you.	
1. What is your gender?	
<input type="checkbox"/> Male	
<input type="checkbox"/> Female	
<input type="checkbox"/> Transgender	
<input type="checkbox"/> Prefer not to answer	
2. What is your age?	_____ years
3. What is your current program of study?	
<input type="checkbox"/> Undergraduate medicine	
<input type="checkbox"/> Nurse-practitioner	
<input type="checkbox"/> Midwifery	
4. What year of the program are you in?	
<input type="checkbox"/> 1	<input type="checkbox"/> 2
<input type="checkbox"/> 3	<input type="checkbox"/> 4
5. What is your marital status?	
<input type="checkbox"/> Single	
<input type="checkbox"/> Married	
<input type="checkbox"/> Living with a partner	
<input type="checkbox"/> Divorced	
<input type="checkbox"/> Separated	
<input type="checkbox"/> Widowed	
6. Are you currently pregnant?	
<input type="checkbox"/> Yes	<input type="checkbox"/> No
7. Have you ever been pregnant?	
<input type="checkbox"/> Yes	<input type="checkbox"/> No

8. How many children do you have? _____

9. When you complete your education, what type of community do you intend to practice in? Check all that apply.

For the purposes of this question, an urban community would include Sudbury, Timmins, and Sault Ste. Marie; a rural community would include Kapuskasing and Elliot Lake; a remote community would include Sioux Lookout, Moose Factory, and Attawapiskat. A Northern community would include any location north of Parry Sound.

rural urban sub-urban remote Northern Southern
 First Nations community other (please specify): _____

10. What is the anticipated date of completion for your program? (please indicate year) _____

11. Do you have a family member or close friend with a developmental disability?

Yes No

If yes, what developmental disability?

12. Which degrees and/or qualifications have you already completed?	<i>Degree/Qualification</i>	<i>Educational Institution, City</i>	<i>Year of Completion</i>

We would like to ask you some questions on your knowledge about developmental disabilities.				
13. How would you rate your current level of knowledge regarding the <u>assessment/diagnosis</u> of individuals with the following:	<i>Very limited</i>	<i>Limited</i>	<i>Moderate</i>	<i>Extensive</i>
Autism spectrum disorders	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Down syndrome	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fragile X syndrome	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fetal alcohol spectrum disorder	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Physical disabilities (e.g., cerebral palsy)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hearing and/or visual difficulty	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other disability (please specify): _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. How would you rate your current level of knowledge regarding the <u>treatment</u> of individuals with the following:	<i>Very limited</i>	<i>Limited</i>	<i>Moderate</i>	<i>Extensive</i>
Autism spectrum disorders	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Down syndrome	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fragile X syndrome	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fetal alcohol spectrum disorder	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Physical disabilities (e.g., cerebral palsy)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hearing and/or visual difficulty	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Other disability (please specify): _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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15. Have you participated in any <u>training sessions or workshops</u> on any of the following topics:	<i>General undergraduate training (e.g., BA, BSc, etc.)</i>	<i>Professional /graduate training (e.g., MD, BScN, MSc, MSW, PhD, etc.)</i>	<i>Other training (please specify)</i>
Assessment/diagnosis of individuals with developmental disabilities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> _____
Treatment of individuals with developmental disabilities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> _____
Autism spectrum disorders	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> _____
Down syndrome	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> _____
Fragile X syndrome	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> _____
Fetal alcohol spectrum disorder	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> _____
Physical disabilities (e.g., cerebral palsy)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> _____
Hearing and/or visual difficulty	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> _____
Other disability (please specify):	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> _____
16. Overall, how helpful did you find the following for increasing your knowledge about developmental disabilities?	Not helpful	Moderately helpful	Very helpful

General undergraduate training (e.g., BA, BSc, etc.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Professional/postgraduate training (e.g., MD, BScN, MSc, MSW, PhD, etc.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other (please specify): _____ _____ _____ _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

17a. Do you have experience (work or volunteer) with individuals with the following disabilities? (choose all that apply)	<i>None</i>	<i>Very Limited</i>	<i>Limited</i>	<i>Moderate</i>	<i>Extensive</i>
Autism spectrum disorders	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Down syndrome	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fragile X syndrome	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fetal alcohol spectrum disorder	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Physical disabilities (e.g., cerebral palsy)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hearing and/or visual difficulty	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other disability (please specify): _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17b. Do you feel that you had enough access to information or resources (at school or online) to meet the needs of these individuals? <input type="checkbox"/> Yes <input type="checkbox"/> No					

17c. If not, what resources would be most helpful? Check all that apply.

- Web-based material
 Written material (books, journal articles, etc.)
 Information obtained from workshops/training seminars
 Webinars
 Information obtained from colleagues
 Other (please specify) _____

18. In what areas would you like more training or education about different developmental disabilities? Check all that apply.

- Social Skills
 Language Skills
 Fine/Gross Motor Skills
 Memory
 Sensory
 Other (please specify) _____

19. If you had questions regarding an individual with a developmental disability, whom would you most likely go to for help?

- Child Care Workers
 Psychologists
 Special Needs Consultants
 Speech and Language Pathologists
 Social Workers
 Other (please specify): _____

	<i>Not very competent</i>	<i>Mildly competent</i>	<i>Moderately competent</i>	<i>Very competent</i>
20. How competent do you feel <u>collaborating</u> with different healthcare providers, educators, and other professionals?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	<i>Not very competent</i> <i>(could meet few needs)</i>	<i>Mildly competent</i> <i>(could meet some needs)</i>	<i>Moderately competent</i> <i>(could meet most needs)</i>	<i>Very competent</i> <i>(could meet all needs expertly)</i>
21. How competent do you feel in <u>meeting the needs</u> of individuals with developmental disabilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

22a. Have you had experience (in class or on placement) working as part of an inter-professional team?

No Yes

22b. If yes, was this experience in the field of developmental disabilities?

Yes

No (please specify), it was in the field of _____

23a. Do you belong to any organizations or groups supporting individuals with developmental disabilities?

No Yes

23b. If yes, what organizations? (please specify):

Appendix H

Fetal Alcohol Spectrum Disorder Survey for Health Care Students

Fetal Alcohol Spectrum Disorder Survey for Health Care Students

Part A

(General knowledge and attitudes)

In recent years there has been increased investigation about the effects of alcohol consumption during pregnancy and the potential for subsequent morbidity and mortality among offspring. Experimental findings have been the main focus. Clinical aspects have received less attention. It would be helpful to know what information has reached you, whether it has been useful, and how it could be improved. This questionnaire will take approximately 15 minutes to complete.

Fetal Alcohol Spectrum Disorder:

What is your definition of Fetal Alcohol Spectrum Disorder (FASD)?

1. When did you first hear of FASD? (Please select one answer only.)

- | | |
|--------------------------|--------------------------|
| In the last year or two | <input type="checkbox"/> |
| Three to four years ago | <input type="checkbox"/> |
| More than four years ago | <input type="checkbox"/> |
| Never | <input type="checkbox"/> |

2. From what sources have you gained knowledge about FASD? (Please select all that apply).

- | | |
|----------------------|--------------------------|
| Mass Media | <input type="checkbox"/> |
| Parents/patients | <input type="checkbox"/> |
| Colleagues | <input type="checkbox"/> |
| CME seminars, rounds | <input type="checkbox"/> |

Webinar	<input type="checkbox"/>
Medical journals, books	<input type="checkbox"/>
Medical school, residency, fellowship	<input type="checkbox"/>
Nurse practitioner training	<input type="checkbox"/>
Midwifery program training	<input type="checkbox"/>
Other (please specify):	<input type="checkbox"/>

3. In your opinion, is the incidence of FASD in Canada higher, equivalent, or lower than the incidence of each of the following?

	<i>Higher</i>	<i>Equivalent</i>	<i>Lower</i>	<i>Don't Know</i>
Down Syndrome	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Spina Bifida	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cerebral Palsy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Autism Spectrum Disorders	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fragile X Syndrome	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4. Please indicate your opinion on the following statements:

	<i>Strongly agree</i>	<i>Agree</i>	<i>Disagree</i>	<i>Strongly disagree</i>	<i>Undecided</i>
Alcohol's effects on fetal development remains unclear	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
It is the physician's role to manage problems in the area of alcohol use	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
It is the midwife's role to manage problems in the area of alcohol use	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
It is the nurse practitioner's role to manage problems in the area of alcohol use	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
FASD occurs at similar rates among all cultures and ethnic groups	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The drinking patterns of pregnant women are substantially influenced by the drinking patterns of their male partners	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Discussing alcohol use during pregnancy will frighten or anger patients	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Discussing the use of alcohol during pregnancy will deter women from continuing and/or seeking treatment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Making a diagnosis of FASD does not change anything for the child	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Prenatal alcohol exposure is a significant risk factor for permanent brain damage	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Alcohol Use:

5. Patients, both men and women, are often told to drink only “in moderation.”					
What is your definition of a moderate level of alcohol consumption for <u>non-pregnant women</u>?					

Average number of drinks per occasion: _____					
Average number of drinking occasions per week: _____					
6. How prepared do you feel to care for the following groups of clients in the area of alcohol abuse or dependency?					
	<i>Very prepared</i>	<i>Prepared</i>	<i>Unprepared</i>	<i>Very unprepared</i>	<i>Will not care for</i>
Pregnant women	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Birth mothers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Foster parents	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Adoptive parents	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Individuals with FASD	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. How prepared do you feel to access resources for the following groups of clients in the area of alcohol abuse or dependency?					
	<i>Very prepared</i>	<i>Prepared</i>	<i>Unprepared</i>	<i>Very unprepared</i>	<i>Will not care for</i>
Pregnant women	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Birth mothers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Foster parents	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Adoptive parents	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Individuals with FASD	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Part B
(Prevention issues)

Women receive different types of information about how to achieve and maintain a healthy pregnancy. Please consider your own training when answering the following questions.

Non-Pregnant Women:

8. Do you anticipate treating non-pregnant women of childbearing age?				
Yes <input type="checkbox"/> No <input type="checkbox"/>				
9. Based on your training, how often would you anticipate discussing the following with <i>all women of childbearing age</i>?				
	<i>Frequently</i>	<i>Sometimes</i>	<i>Rarely</i>	<i>Never</i>
Role of folic acid in decreasing neural tube defects	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Risks of smoking during pregnancy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Risks of alcohol during pregnancy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Nutrition	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Mental health	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Partner's use of drugs and alcohol	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Depression	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Birth control	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sexual history	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Based on your training, how often would you anticipate routinely <i>obtaining a detailed history</i> about the following from <i>all women of childbearing age</i>?				
	<i>Frequently</i>	<i>Sometimes</i>	<i>Rarely</i>	<i>Never</i>
Sexual abuse	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Emotional abuse	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Alcohol use	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Personal history of addictions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Family history of alcohol misuse	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. There are many reasons why health care professionals may not talk to women about alcohol use before they become pregnant. Please indicate whether you believe any of following are reasons that health care professionals may not talk to women about alcohol use:				
	<i>Yes</i>		<i>No</i>	
There is not enough time in an office visit to talk to women about these topics	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
There is not enough solid information available about alcohol use	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Many clients are not interested in discussing alcohol use	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Many clients already have a good knowledge about alcohol use	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Information about alcohol use is not available in a form that may be useful to clients	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Pregnant Women:

12. Would you consider the following to be <i>barriers to women seeking care for alcohol use during pregnancy</i>?		
	<i>Yes</i>	<i>No</i>
Dual diagnoses (e.g., depression, bipolar disorder, panic attacks)	<input type="checkbox"/>	<input type="checkbox"/>
History of sexual abuse or domestic abuse	<input type="checkbox"/>	<input type="checkbox"/>
Co-dependence (partner/peer/parental substance abuse)	<input type="checkbox"/>	<input type="checkbox"/>
Current violence in the home	<input type="checkbox"/>	<input type="checkbox"/>
Extrinsic barriers (e.g., childcare, housing, transportation, poverty)	<input type="checkbox"/>	<input type="checkbox"/>
Fear of public shame, blame, etc.	<input type="checkbox"/>	<input type="checkbox"/>
Misinformation about the safety of alcohol use during pregnancy	<input type="checkbox"/>	<input type="checkbox"/>
Fear of losing children to partner or child welfare	<input type="checkbox"/>	<input type="checkbox"/>
System prejudice based on social/economic class	<input type="checkbox"/>	<input type="checkbox"/>
Communication/language barriers	<input type="checkbox"/>	<input type="checkbox"/>
Absence of addiction treatment services	<input type="checkbox"/>	<input type="checkbox"/>
Absence of gender-specific addiction treatment services	<input type="checkbox"/>	<input type="checkbox"/>
13. Please indicate if you are familiar with, and would feel competent using, any of the alcohol screening tools or tests listed below. (Please check all that apply.) <input type="checkbox"/> None <input type="checkbox"/> T-ACE (Tolerance, Annoyed, Cut Down, Eye-Opener) <input type="checkbox"/> TWEAK (Tolerance, Worried, Eye-Opener, Amnesia, K/Cut Down) <input type="checkbox"/> CAGE (Cut Down, Annoyed, Guilty, Eye-Opener) <input type="checkbox"/> MAST (Michigan Alcoholism Screening Test) <input type="checkbox"/> AUDIT (Alcohol Use Disorders Identification Test) <input type="checkbox"/> Urine or blood test <input type="checkbox"/> Other (please specify): _____		
14. Which of the following best describes the advice you would give pregnant women regarding alcohol use during pregnancy? <input type="checkbox"/> No alcohol is recommended <input type="checkbox"/> Alcohol is only dangerous during the first trimester <input type="checkbox"/> A glass of beer or wine in moderation is OK <input type="checkbox"/> No specific recommendations would be given <input type="checkbox"/> Other (please specify): _____		

Part C
(Diagnostic issues)

15. Do you think there should be a mandatory reporting of FASD?				
<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Don't know				
16. Is FASD a reportable condition in the province of Ontario?				
<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Don't know				
17. In your opinion, do the following characteristics define Fetal Alcohol Syndrome?				
	<i>Yes</i>	<i>No</i>	<i>Don't know</i>	
Prominent forehead	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Flat philtrum	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Thin upper lip	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Thick upper lip	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Short palpebral fissures	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Upslanting palpebral fissures	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Downslanting palpebral fissures	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Central nervous system dysfunction	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Prenatal growth deficiency	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Postnatal growth deficiency	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
18. Which of the following items would give you the most accurate information regarding the diagnosis of Fetal Alcohol Syndrome? (Please select <i>one</i> only.)				
<input type="checkbox"/> Mother has history of alcohol abuse or dependency				
<input type="checkbox"/> Small at birth				
<input type="checkbox"/> Behaviour problems				
<input type="checkbox"/> Cognitive problems				
<input type="checkbox"/> Special facial characteristics				
<input type="checkbox"/> Combination of growth, brain, and facial abnormalities				
19. Please indicate whether the following, in your opinion, are associated with or are directly caused by FASD:				
	<i>Associated with FASD</i>	<i>Directly caused by FASD</i>	<i>Neither</i>	<i>Don't know</i>
Long term emotional disorders	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Disrupted school experience	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Addictions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Legal problems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cleft palate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hearing problems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Attention deficit disorder	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Low IQ	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Average IQ	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
High IQ	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Inappropriate sexual behaviour	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hypersensitivity to stimuli	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Behaviour problems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Learning disabilities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Mental health problems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Aggressive behaviour	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Poor self esteem	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Irritability	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Difficulty with social interactions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fatigue	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Employment difficulties	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Dependent living arrangements	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<p>20. Many doctors do not make a diagnosis of FASD in their practice. Please indicate which of the following factors may contribute to this situation. (Please select <i>all</i> that apply).</p> <p>If making the diagnosis would be beyond your scope of practice, please check this box. <input type="checkbox"/></p> <p><input type="checkbox"/> Lack of time needed to make diagnosis</p> <p><input type="checkbox"/> Lack of specific training to make the diagnosis</p> <p><input type="checkbox"/> Lack of access to FASD specialists</p> <p><input type="checkbox"/> Belief that making the diagnosis will not make a difference to the individual</p> <p><input type="checkbox"/> Belief that making the diagnosis will lead to stigmatization of the individual and the family</p> <p><input type="checkbox"/> Other (please specify): _____</p>				