


# Supportive alcohol policy as a key element of fetal alcohol spectrum disorder prevention

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## Abstract

In Canada, a Four-Part Model of Fetal Alcohol Spectrum Disorder (FASD) Prevention has been developed that describes a continuum of multi-sectoral efforts, including broad awareness campaigns, safe and respectful conversations around pregnancy and alcohol use, and holistic and wraparound support services for pregnant and postpartum women with alcohol, and other health and social concerns. Supportive alcohol policy is at the centre of the four mutually reinforcing levels of prevention. The purpose of this narrative review is to describe alcohol policies related to specific levels of FASD prevention, and to consider the implications of alcohol policies on FASD prevention and women's and fetal health. The majority of the evidence focused on alcohol in pregnancy guidelines, alcohol warning labels, and knowledge and uptake of national or regional alcohol and pregnancy guidelines. Several US studies described shifts in alcohol and pregnancy policy over the 7-year period, including moves to punitive approaches that criminalize women's substance use or prompt child apprehension. This review indicates that more attention could be paid to the role of alcohol policy in FASD prevention and in promoting women's and fetal health, and that policy actions and advocacy could be important catalysts for both FASD prevention and women's health promotion. Moving forward, it is essential that alcohol policies are rooted in evidence; attend to and promote women's health including health during pregnancy; and are collaborative in order to prompt a higher standard of care, and more holistically respond to the factors that contribute to women's alcohol use during pregnancy.

## Keywords

alcohol policy, fetal alcohol spectrum disorder, maternal health, pregnancy, women's health

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## Introduction

Fetal alcohol spectrum disorder (FASD) describes a range of lifelong cognitive, behavioural, physical, and emotional disabilities that can result from alcohol use in pregnancy.<sup>1</sup> FASD is preventable, and efforts to prevent FASD are multi-sectoral and inextricably linked to alcohol regulatory policy, health, child welfare, mental health, substance use, housing, and social justice fields.

Internationally, attention to developing alcohol policy has increased. In 2017, the World Health Organization released *'Best Buys' And Other Recommended Interventions For The Prevention And Control Of Noncommunicable Disease*, which identified the need for multi-sectoral actions to address the harmful use of alcohol.<sup>2</sup> Further to

its release, international alcohol policy best practices for improving public health and safety outcomes have been evaluated in 11 policy domains including Pricing and Taxation; Physical Availability; Impaired Driving Countermeasures; Marketing and Advertising Controls; Minimum Legal Drinking Age; Screening, Brief Intervention and Referral (SBIR); Liquor Law Enforcement; Alcohol

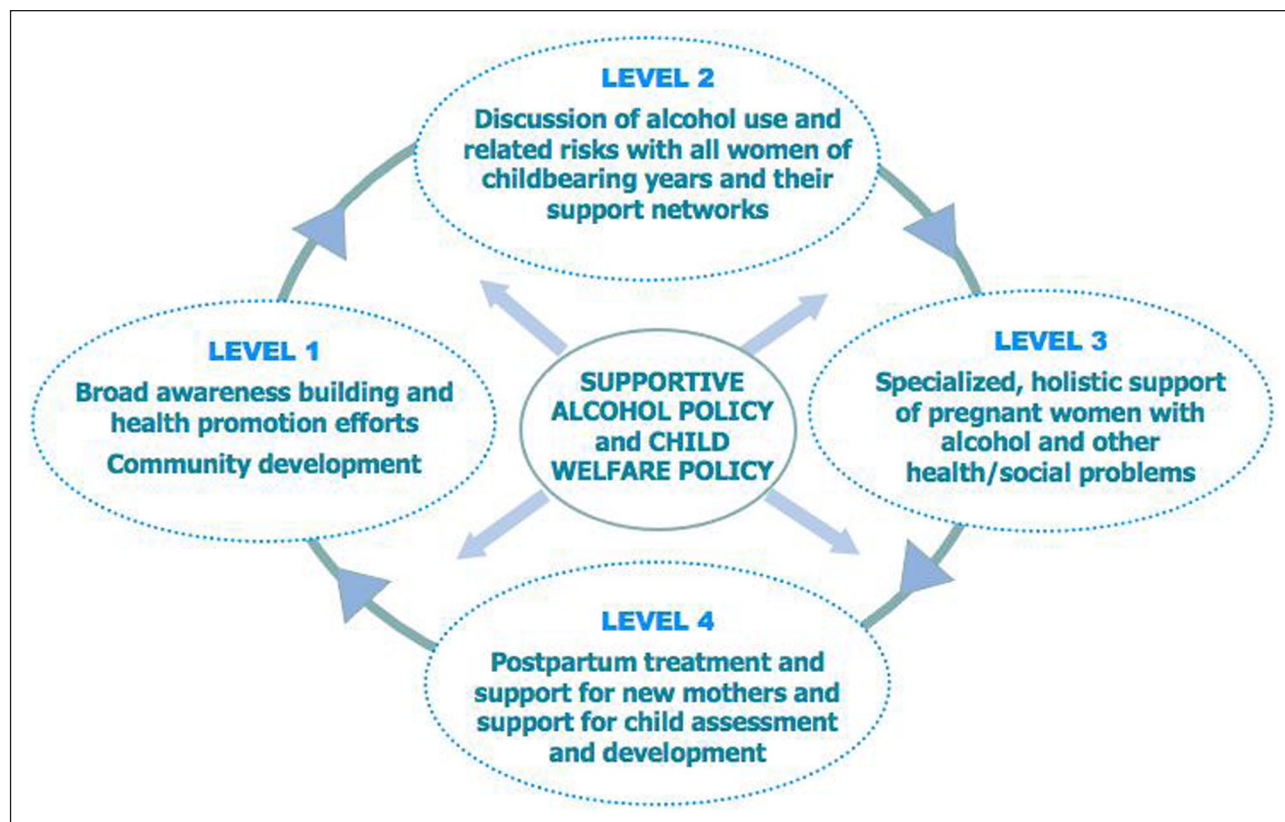
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**Figure 1.** Four-part model of FASD prevention.

Control System; Existence of a Formal Provincial/Territorial Alcohol Strategy; Monitoring and Reporting of Alcohol Harms; and Health and Safety Messaging.<sup>3</sup> This research has shown the need for improvements across all 11 policy domains.<sup>3</sup> However, their relation to women's health and pregnancy has not been articulated.

Alcohol policies are critical because they determine the availability of alcohol and other aspects of the environment in which decisions about drinking are made, including how decisions are made in the preconception and perinatal periods. For instance, a Spanish study exploring neighbourhood accessibility to alcohol found that the density of alcohol establishments in neighbourhoods in which women lived increased the odds of women consuming alcohol during pregnancy.<sup>4</sup> Furthermore, alcohol use guidelines provide the basis for health and safety messaging, screening and brief interventions and can influence consumption. Following an update of Danish guidelines to include abstinence messaging around alcohol use during pregnancy, there was a decline in maternal alcohol consumption.<sup>5</sup>

In Canada, a Four-Part Model of FASD Prevention has been developed that describes a continuum of needed multi-sectoral efforts for women and their support networks to achieve FASD prevention goals (see Figure 1).<sup>6</sup> The model recognizes the range of interventions required to achieve reduction of alcohol use in pregnancy, and how

each level needs to be linked to, coordinated with and reinforcing of the work of other levels.<sup>7</sup> In this model, supportive alcohol policy is at the centre of the four mutually reinforcing levels of prevention, inclusive of awareness raising and multi-level interventions reaching women and their support networks at various levels of risk. Such examples of supportive alcohol policies include alcohol warning labels, prioritizing access to treatment, requiring screening and brief intervention, and prohibiting criminal prosecution for alcohol use during pregnancy.<sup>8</sup>

Research has increasingly attended to the multi-faceted ways in which FASD prevention can be enacted through the Four-Part Model of FASD Prevention. However, despite the importance of supportive alcohol policy, there has been a dearth of international research on alcohol policy and FASD prevention. In this article, we sought to explore the interconnections of the four levels with supportive alcohol policy, a central tenet to the model,<sup>6</sup> highlighting international evidence on alcohol and pregnancy policies. The findings demonstrate how alcohol policy interacts with each level of the Four-Part Prevention Model and its implications for women's and fetal health.

## Body

The findings from this review are derived from a larger review that described the state of the literature on FASD

prevention from 2015 to 2021<sup>9</sup> and an annotated bibliography of the research on FASD prevention published in 2021.<sup>10</sup> Drawing on the original review, this article describes a range of alcohol policies and their impact, including warning labels and point-of-sale warning signs, community-driven alcohol strategies, alcohol in pregnancy guidelines and their uptake, policies that mandate screening and brief intervention, substance use policies and treatment access, and legislative policies.

### *Level 1 prevention*

Level 1 prevention efforts include broad awareness raising and health promotion efforts, as well as community development.<sup>11</sup> From 2015 to 2021,  $n=12$  studies described research related to alcohol policy and Level 1 prevention, with a primary focus on alcohol warning labels and point-of-sale warnings, and community-driven alcohol strategies. Three additional articles described the impact of the alcohol industry on Level 1 prevention efforts.

**Warning labels.** Alcohol warning labels are a low-cost, population-level prevention and health promotion strategy designed to raise awareness and warn people of the harms of alcohol use in pregnancy. Since 2015,  $n=9$  articles were identified from Australia, Canada, France, and the United Kingdom, primarily focusing on the efficacy of warning labels, of which results remain mixed.

Researchers in Canada found an interest from consumers in warning labels and inclusion of information about standard drink sizes on alcohol containers.<sup>12</sup> The findings suggested that changing the information on alcohol containers to include standard drink sizes and information about the low-risk drinking guidelines can help consumers better understand national drinking guidelines and better estimate their consumption.

A study from France examined the efficacy of warning labels introduced in 1991 and 2007 based on recall, noticeability, credibility, comprehension, responsiveness, and the ability to encourage moderate drinking or abstinence. Both the 1991 and 2007 versions were perceived to lack visibility or noticeability because of their size, location, and outdatedness. They were also perceived to be vague, lack credibility, and ineffective in promoting concern about prenatal alcohol exposure.<sup>13</sup> The authors from another French study found that additional communication strategies were needed beyond warning labels.<sup>14</sup> These findings were mirrored in other studies from Australia and Canada, where warning labels were seen as an important part of a comprehensive FASD prevention strategy,<sup>15,16</sup> but less effective when used as a single strategy.

However, in Canada, researchers have found that warning labels can contribute to a reduction in alcohol sales. For example, one Canadian territory had alcohol warning labels for over 15 years with messaging that alcohol can

cause birth defects. In 2017–2018, new alcohol warning labels were introduced in a larger size, full colour, and warnings that included alcohol and cancer risks and guidance for low-risk drinking or standard drink information. These warning labels resulted in a reduction of alcohol sales but stopped being produced because of complaints from the alcohol industry that the labels were ‘defaming’ their products. When the original pregnancy warning labels were re-introduced, there was an even greater reduction in alcohol sales.<sup>17</sup> The findings emphasized the accumulating impact of varying and visible labels.

**Point-of-sale warning signs.** One US study explored point-of-sale warning signs and their effect on prevalence of use and birth outcomes.<sup>18</sup> The findings suggested that point-of-sale warnings led to a 11% decrease in the odds of alcohol use during pregnancy, and an approximately 16.6% decrease in the odds of first-time mothers using alcohol during pregnancy. Point-of-sale warning signs were also associated with reduced very low birth weight and decreases in very preterm birth.<sup>18</sup>

Warning labels on alcohol containers and point-of-sale warning signs in alcohol serving establishments need to be widely enacted, offering clear and non-stigmatizing messages. While these evidenced initiatives may not foster a reduction of alcohol use in pregnancy on their own,<sup>15,16</sup> they build awareness that is foundational to all levels of FASD prevention. Furthermore, both warning labels and point-of-sale warning signs reach all people who consume alcohol. As such, they have the potential to achieve Level 1 prevention goals of raising awareness of the risks of alcohol use in pregnancy in ways that increase understanding by everyone in society, not only women of childbearing years. Such initiatives need to be taken up by public health departments, liquor licensing departments of governments, and can be integrated into community-driven prevention strategies.

**Community-driven alcohol strategies.** Community-driven alcohol strategies are led by community action and often include multi-component measures to prevent FASD, such as local referendum around alcohol availability paired with community-wide education about alcohol use and FASD.<sup>19</sup> Two community-driven alcohol strategies were described. The Marulu FASD strategy was developed in response to concern among aboriginal community leaders about the high rates of FASD in Fitzroy Valley, Australia. The development of the Marulu FASD strategy involved reviewing other community led FASD strategies, organizing community meetings and workshops, conducting a prevalence and feasibility study, and establishing the Marulu FASD Unit to help organize and sustain strategies.<sup>20</sup> The strategy included alcohol availability restrictions as well as a range of awareness and support programming.

In the United Kingdom, the Alcohol-Exposed Pregnancy Programme was developed to raise awareness of FASD,

provide preconception and prenatal care, and determine FASD prevalence in Manchester. Key to their programme was an awareness campaign, #Drymester, which was supplemented by training of professionals to engage in brief interventions on alcohol and contraceptive use, and identify and support women at risk of having an alcohol-exposed pregnancy.<sup>21</sup>

*Impacts of the alcohol industry.* The alcohol industry is invested in how alcohol policies are formed, with a prominent interest in marketing and advertising control. Alcohol and pregnancy policies have been influenced by the alcohol industry. For example, during Australia's Senate Inquiry into FASD, the alcohol industry was reported to undermine community concern, dispute evidence about the harms of alcohol during pregnancy, campaign for ineffective industry measures, and attack researchers and health professionals.<sup>22</sup> Furthermore, the alcohol industry interfered with efforts to bring in evidence-based, full colour health warning labels on alcohol beverage containers despite the support for labels in over 150 public health and medical organizations and among the Australian public.<sup>15</sup> This was similarly reported in a Canadian territory, where large, full colour warning labels linking alcohol and cancer ceased production because of interference from the alcohol industry.<sup>17</sup>

Industry-funded public health bodies are also less likely to provide information about FASD and other alcohol-related harms on their websites or social media and less likely to advise that it is safest not to drink during pregnancy.<sup>23,24</sup> As a result, women looking for information about alcohol use during pregnancy may not receive the most accurate information because industry-funded websites often omit and misrepresent the evidence on key risks of alcohol consumption during pregnancy.<sup>23</sup>

## Level 2 prevention

Level 2 prevention involves brief intervention and support by health and social care providers with all women of childbearing years and their support networks, both in preconception and during pregnancy.<sup>11</sup> Key policy initiatives include alcohol in pregnancy and lower-risk drinking guidelines as well as alcohol policies and procedures related to screening and brief intervention. We found  $n=15$  articles published between January 2015 and December 2021, describing alcohol in pregnancy and lower-risk drinking guidelines, knowledge and uptake of alcohol use and pregnancy guidelines, and policies related to screening and brief intervention.

*Standard guidance in alcohol in pregnancy guidelines.* Research from Greece, the United States (US), and Lebanon described the development of, or existing, substance use in pregnancy guidelines.<sup>25-27</sup> US researchers examined the variability in the definition of a standard drink size and

guidelines about low-risk alcohol use from a pool of 75 countries. In their findings, only  $n=37$  countries had identified standard drink sizes. Within the countries where standard drink sizes had been established, there was significant variability in standard drink sizes across countries, particularly in comparison with the World Health Organization's recommended standard drink size of 10 g of pure ethanol, demonstrating a lack of international consistency.<sup>25</sup>

Research summarizing and comparing substance use in pregnancy guidelines also revealed inconsistent messaging in alcohol use guidelines. While guidelines from Australia, New Zealand, the World Health Organization, Canada, and the US all recommend universal screening for alcohol use before and during pregnancy, not all guidelines recommend training for healthcare providers about appropriate interventions for women who use, or are dependent, on alcohol during pregnancy.<sup>27</sup> Creating consistent standard drink sizes and alcohol in pregnancy guidelines are important, as practitioners may not know about or may use other countries' guidance when working with women in the preconception or pregnancy periods.<sup>28</sup>

*Knowledge and uptake of national alcohol use in pregnancy guidelines.* Several studies explored the knowledge and implementation of alcohol use in pregnancy guidelines in Australia, the United Kingdom, Switzerland, and Canada. Two studies from the United Kingdom explored midwives' practices following the release of the 2016 Chief Medical Officer's alcohol guidelines, which were updated from previous guidelines to advise women to abstain from alcohol during, or when planning, a pregnancy. While midwives may advise women to abstain from alcohol during pregnancy, many were not aware of the guidance.<sup>29</sup> Among those who were aware of the guidance, 91% cited that abstinence was recommended. However, 19% cited recommendations from previous guidelines. Furthermore, while almost all midwives advised women to abstain from alcohol during their initial appointment, the implementation of this advice dropped to 38% at subsequent visits.<sup>30</sup>

Research from Canada and Australia also found a lack of awareness of alcohol and pregnancy guidelines<sup>28</sup> and breastfeeding guidelines.<sup>31</sup> A Swiss study further found that while midwives were more aware of the risks of alcohol use in pregnancy following the release of national guidelines, their knowledge and engagement with more extensive prevention strategies remained limited.<sup>32</sup> A Canadian study found that 90.9% of practitioners used of other guidelines related to alcohol use in pregnancy either as a standalone or alongside national guidelines.<sup>28</sup>

However, several studies also reported enablers to guideline adherence. For example, in Northern Ireland, alcohol liaison midwives (a specialized alcohol midwifery role) helped educate and increase awareness of the guidelines with other maternity staff, in addition to their role in



supporting women who use alcohol during pregnancy.<sup>33</sup> In Canada, enablers of guideline adherence among midwives, obstetricians, family physicians, and nurses included knowledge about the risks of alcohol in pregnancy, perceived responsibility to identify and address at-risk drinking, and a belief that women are motivated to reduce their alcohol consumption if pregnant or planning to become pregnant.<sup>28</sup>

While alcohol guidelines can prompt implementation of brief interventions,<sup>34</sup> researchers also found that a lack of confidence in ability to use screening questionnaires and to provide brief intervention, a lack of belief in the effectiveness of both practices,<sup>28</sup> and concern about stigmatizing women<sup>35</sup> acted as barriers to guideline uptake. An Australian study assessing the potential barriers to the implementation of guidelines further found that for clinicians, context and capacity; social influences; confidence to implement guideline recommendations; and respond to patient needs were most commonly cited barriers. The authors also described challenges from clinical managers, including stress and the complexities of managing change when implementing alcohol guidelines.<sup>36</sup>

The mixed uptake of alcohol in pregnancy guidelines points to the necessity of clear and consistent guidelines that are made widely available to, and well used by, healthcare providers. Guidance about alcohol use in pregnancy must be prepared and regularly refreshed with clear and consistent messaging, based on current evidence. Beyond the guidelines themselves, service provider education and practice protocols can promote consistent messaging and foster compassionate understanding of the influences on women's use, and their preferences for support.

**Alcohol screening and brief interventions.** Alcohol screening and brief interventions are best practices in optimizing the health of pregnant women and women of childbearing age.<sup>37</sup> One US study described the prevalence of substance use screening by state, year, substance, and prenatal substance use policies. While the authors found that approximately 95% of women reported being asked about alcohol use, they also found that state-level policies influenced screening rates.<sup>38</sup>

In states where laws with punitive alcohol policies (i.e., where prenatal substance use was designated as child abuse or neglect), the rates of screening were lower across all substances. Whereas, in states with supportive alcohol policies (i.e., where providers were mandated by law to screen for substance use in pregnancy) had a higher prevalence of screening.<sup>38</sup> While guidelines note that screening should be conducted universally,<sup>38,39</sup> being younger, less educated, unmarried, Black, non-Hispanic, or publicly insured, and having a history of cigarette use pre-pregnancy were associated with increased odds of reporting prenatal substance use screening. The authors discussed how, despite recommendations for universal screening,

state-level policies and selective screening approaches have impacted the prevalence of screening.<sup>38</sup>

One US study described activities that empower healthcare providers to support women who may be at risk of prenatal alcohol exposure. The FASD Prevention Programme recruited champions from across the US to integrate screening and brief intervention training into residency programmes and hospital rounds. The programme also created resources to assist clinicians in integrating screening and brief interventions into their daily practice including the provision of a directory of state-by-state treatment resources to assist with making referrals.<sup>40</sup> Such initiatives can assist physicians and all health and social service providers who work with women at risk for an alcohol-exposed pregnancy, to deliver consistent messaging surrounding alcohol use during pregnancy, to listen to women's needs, and to refer to/collaborate with other services. They can also further incentivize uptake of mandatory screening laws, by ensuring providers have the confidence and competence to engage in both screening and brief interventions.

### *Level 3 and Level 4 preventions*

Level 3 and Level 4 preventions involve the provision of holistic support for women's substance use and other health and social concerns during the pregnancy and postpartum period, respectively.<sup>11</sup> Between January 2015 and December 2021,  $n=3$  articles described substance use policies and treatment access.

Researchers from the US examined state-level prenatal substance use policies and substance use disorder treatment admissions among pregnant women. The authors found that in states where substance use was criminalized during pregnancy, there was a decline in treatment admissions. However, the states that adopted multi-pronged policies, including treatment and supportive services, clinician reporting requirements, and criminal justice initiatives, experienced an increase in substance use treatment admissions, suggesting the importance of cross-sectoral policies that adopt a comprehensive approach to substance use.<sup>41</sup> For some women, mandated substance use treatment was described as a means of promoting safety and connection, especially in the context of women's trauma, abuse, neglect, and familial substance use.<sup>42</sup>

Another US study explored the impact of medical cannabis laws on substance use treatment admissions. The authors found that cannabis as well as alcohol and cocaine treatment admissions increased for pregnant women in states that introduced medical cannabis.<sup>43</sup>

### *Alcohol and pregnancy legislative policy*

Research primarily conducted in the US explored the impact of legislation in response to alcohol use in pregnancy. The responses range from punitive surveillance approaches that

control and report women's behaviour and prompt child removal, to supportive approaches that improve women's health and support healthy pregnancies through the provision of information and early intervention and treatment services.<sup>44</sup> Research on alcohol and pregnancy policy responses examined the efficacy of responses,<sup>44,45</sup> the relationship between state-level policies targeting alcohol use during pregnancy on alcohol use,<sup>8</sup> birth outcomes,<sup>46</sup> and the effects of policies by race<sup>47</sup> or education.<sup>48</sup>

Two studies examined the effects of policies that treat prenatal substance use at birth as child abuse or neglect. In states where punitive policies existed, the rate of foster care entry of children under the age of one was 9.5% more frequent than in states without those policies.<sup>45</sup> An Australian study found that a larger proportion of children whose mothers had maternal alcohol use disorder had a maltreatment allegation against them prompting out of home care, compared to children whose mothers did not have an alcohol use disorder during pregnancy. Furthermore, there were increasing odds of a maltreatment allegation with decreasing socioeconomic status and among Indigenous women.<sup>49</sup>

Other studies exploring the effects on alcohol use and birth outcomes found that living in a state that defined alcohol use during pregnancy as child abuse or neglect had increased odds of low birth weight, having a premature birth, and lowered odds of obtaining prenatal care compared to women in states without these policies.<sup>46</sup> There were also lower odds of binge and heavy drinking.<sup>8</sup> In states where supportive alcohol policies – such as where mandatory warning signs were implemented – there were lower odds of binge drinking. However, other supportive alcohol policies, including priority treatment for pregnant women and mothers was associated with higher odds of any drinking.<sup>8</sup>

In examining the evolution of state-level policies in the US, and how they have reflected public health goals or efforts to restrict the reproductive rights of women, Roberts et al.<sup>50</sup> found that the number of alcohol policies has increased, but the policy environment is increasingly punitive, often with states mixing supportive policies with punitive ones. These policies are often associated with other policies that restrict women's reproductive autonomy, and have been shown to cause women to delay or avoid prenatal care and/or substance use treatment.

Roberts et al.<sup>47,48</sup> further explored the effects of policies on certain demographics and found that both race and education influenced the effect of policies on maternal alcohol use and maternal and fetal health. For White women, punitive policies that cited substance use as child abuse and neglect were associated with increased preterm birth, and no punitive policies were associated with prenatal care utilization. For Black women, both supportive and punitive alcohol policies were associated with decreased preterm birth and increased prenatal care. However, where alcohol use was cited as child abuse and neglect, Black women had decreased late prenatal care.<sup>47</sup>

Only one supportive alcohol policy (reporting requirements for data and treatment purposes) was associated with lower low birth weight for women with less than a high school education. However, supportive alcohol policies were associated with increased prenatal care. Mandatory alcohol warning signs were also associated with decreased binge drinking for women with both more than and less than high school level education.<sup>48</sup> The findings of both studies emphasize the need for contextual and evidence-based policymaking.<sup>47,48</sup>

### *Shifting alcohol policy to be more supportive of FASD prevention*

There remains a dearth of literature on how alcohol policy, which is central to the Four-Part Model of Prevention, can address alcohol use in pregnancy, women's and fetal health, and FASD prevention. While evidence-based alcohol policies can help reduce the health and social harms from alcohol, the research from the US demonstrates that legislation surrounding women's alcohol use in pregnancy has become increasingly punitive and is often not evidence-based.<sup>8,47,51</sup> Indeed, Woodruff and Roberts<sup>51</sup> described the US policy landscape – as it relates to the development of substance use and pregnancy policies – to lack grounding in evidence. However, research from Roberts and colleagues also points to the importance of contextualizing alcohol policy, as to not decrease access to prenatal care or increase the prevalence of adverse maternal or fetal outcomes among certain populations.<sup>47,48</sup>

There remains a gap in alcohol policy that attends to and proactively promotes women's health, including health during pregnancy. For example, a review of alcohol use guidelines found that several countries did not have sex-specific recommendations,<sup>25</sup> despite sex differences in the absorption and processing of alcohol.<sup>52</sup> Furthermore, a 2016 systematic review found that alcohol policy interventions lacked the integration of gender-specific data,<sup>53</sup> reflecting the development of gender-blind alcohol policies that can influence alcohol use in pregnancy.

While research has signalled the increase of punitive alcohol policies, policies that criminalize women for alcohol use during pregnancy or prompt child removal need to be avoided. Such punitive policies do not improve outcomes for women and children, and create significant barriers to needed support.<sup>54,55</sup> These policies do not adequately take into account the reasons for women's substance use, and negate that women seek substance use treatment out of concerns for their baby's health.<sup>56</sup> However, these positive intentions can be thwarted if women fear they will face criminal legal action, automatically lose custody, or be treated judgementally by service providers.<sup>55,57</sup> Alcohol policies that raise awareness of risks, promote reduction of availability, and advance brief intervention and support are important, but must be created to support women and

address interconnected concerns, such as housing, public, and child welfare.

Moving forward, it is particularly important that alcohol policy be linked to child welfare policies that support mothering. Cross-system collaboration can help create a higher standard of care<sup>58</sup> and address the barriers that prevent women from seeking care in the first place, because they can more holistically respond to the factors that contribute to women's substance use during pregnancy.<sup>59</sup> Through collaboration and supportive policies across these sectors, women are: able to have healthy pregnancies; supported with early attachment and parenting; linked to treatment and diagnosis as necessary; and able to access services that prioritize women's goals and address the social and structural determinants of health.<sup>60</sup>

### Limitations

This narrative review explores alcohol policies related to the four levels of FASD prevention and considers the implications of alcohol policies on FASD prevention efforts and women's and fetal health. The research included in this narrative review is a subset of research derived a larger review and annotated bibliography of international, English-language research—related to FASD prevention, including the prevalence of and impacts associated with the prevalence of, and factors associated with, alcohol use in pregnancy, Levels 1–4 prevention, and systemic and other ethical considerations.

While using a subset of the broader FASD prevention literature allows for a greater analysis of the role of alcohol policy in FASD prevention efforts and promoting women's health, it is not inclusive of research that more broadly attends to population health. As such, it may not address research that describes the impacts of additional policies (such as those on minimum legal drinking age, liquor law enforcement,<sup>3</sup> etc.). Furthermore, while this research is inclusive of what has been published internationally on alcohol policies related to the four levels of FASD prevention, the majority of FASD prevention literature, and thus this subset of data, is primarily reflective of research published from the US, the United Kingdom, Canada, and Australia, all of which have vastly different legislative systems.

Moving forward, it is important for additional research that explores the role of alcohol policy in FASD prevention efforts, particularly in Europe, South America, Asia, and Africa, where there is a growing interest in understanding the prevalence and factors associated with alcohol use in pregnancy, but where the intersections with alcohol policy have been underexplored.

### Conclusion

This narrative review highlights the need for increased attention to centring supportive alcohol policy in FASD

prevention efforts. The shift towards laws and policies that affect women's ability to access information about the risks of alcohol use in pregnancy or limit access to healthcare, treatment and support services are counteractive to prevention goals. Given the punitive legislative discourse surrounding alcohol and pregnancy, especially in the US, it is important to identify and activate evidence-based alcohol policies that support multi-level efforts to prevent alcohol use in pregnancy and FASD and promote women's and fetal health.

Supportive alcohol policies, such as outlet restrictions and point-of-sale warning signage, have the potential to lead to a population-level reduction in alcohol harms in ways that benefit everyone and avoid stigmatizing of women. Pregnancy-related supportive alcohol policies, such as national guidelines around lower-risk drinking, that offer clear and consistent messaging around alcohol use in pregnancy and encourage discussion of alcohol by healthcare providers can empower women of childbearing years, pregnant women, and their support networks to make health promoting decisions that reduce maternal and fetal harm.

In addition to efforts to prevent FASD at multiple levels by individual women, health and social care providers, and community-based organizations, more research and action are needed to centre alcohol policy. When such centring of supportive policies reflects evidence on women's and fetal health outcomes and supports their needs, it will reinforce other forms of FASD prevention, and contribute to improvement in women's and fetal health.

### Declarations

*Ethics approval and consent to participate*

Not applicable.

*Consent for publication*

Not applicable.

*Author contribution(s)*

**Lindsay Wolfson:** Conceptualization; Formal analysis; Investigation; Methodology; Writing – original draft; Writing – review & editing.

**Nancy Poole:** Conceptualization; Formal analysis; Funding acquisition; Supervision; Writing – original draft; Writing – review & editing.

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### Availability of data and materials

The authors confirm that the data supporting the findings of this review are available within the article.

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