

## The Prevalence of Alcohol Use During Pregnancy in Canada

---

Taylor Watkins, MA <sup>a,b</sup>; Lindsay Wolfson, MPH <sup>b,c</sup>; Jocelynn Cook, PhD <sup>b,d</sup>

<sup>a</sup> Laurentian University, Sudbury, Ontario, Canada

<sup>b</sup> Canada FASD Research Network, Canada

<sup>c</sup> Centre of Excellence for Women's Health, Vancouver, British Columbia, Canada

<sup>d</sup> The Society of Obstetricians and Gynaecologists of Canada, Ottawa, Ontario, Canada

### KEY MESSAGES

In Canada, research on the prevalence of and risk factors associated with alcohol use during pregnancy is scarce. Current evidence suggests that the prevalence of alcohol use during pregnancy is rising globally, with an estimated 10 – 15% of pregnancies in Canada being alcohol exposed. In this issue paper we describe what is known about the prevalence of alcohol use in pregnancy, influences and factors associated with alcohol use during pregnancy, and the role of stigma in perpetuating fear, shame, and blame around substance use during pregnancy. We conclude with policy, practice, and research implications.

### Issue:

Alcohol use during pregnancy has been identified as a significant public health concern [1-5] and is associated with adverse fetal development and increased likelihood of several complications during pregnancy, including miscarriage, stillbirth, low birth weight, and preterm birth [3]. It may also result in Fetal Alcohol Spectrum Disorder (FASD), a diagnostic term used to describe the brain and body impacts of individuals prenatally exposed to alcohol.

Alcohol is a widely used and socially accepted substance among women of reproductive age [6, 7]. Despite ongoing public health efforts to address alcohol use during pregnancy, it is estimated 10% of women globally consume alcohol during pregnancy, with the highest rates of alcohol use being reported in nations with longstanding and ingrained cultures of alcohol use.

**The purpose of this issue paper is to describe what is known about the prevalence of alcohol use during pregnancy, identify risk factors associated with alcohol consumption during the prenatal period, and provide research, policy, and practice recommendations. Where possible, this issue paper will emphasize what is known in the Canadian context.**

*The authors would like to thank Audrey McFarlane, Dr. Kelly Harding, and Dr. Nancy Poole for reviewing this work.*

## Background:

Pregnancy is a period that can represent changes in women's identities, roles, responsibilities, and relationships. Women who are pregnant or planning a pregnancy may be increasingly motivated to adopt healthy lifestyle behaviours, such as increasing their vegetable intake or abstaining from alcohol and other substances [10]. Despite public health efforts to increase access to preconception and perinatal health education, and services that include information about alcohol use during pregnancy, the prevalence continues to increase globally [7, 9]. A number of factors are related to alcohol use in pregnancy, including the timing of pregnancy recognition, the use of alcohol to cope with violence, trauma, or day-to-day stressors, intersecting social determinants of health, and addiction and dependency [9, 10, 11]. These factors are further impacted by a lack of awareness regarding the impacts of prenatal alcohol exposure and misinformation about what constitutes a *safe* amount of alcohol during pregnancy [3, 12].

In 2019, 30.5% of Canadian women of reproductive age reported weekly alcohol use, with 18.5% reporting heavy alcohol consumption (i.e., consuming four or more drinks on one occasion) [13]. The highest rates of heavy alcohol consumption were reported among women aged 20-29 years. Given the significant proportion of unplanned pregnancies around the world [8], which has been reported to be 42% and is estimated to be as high as 65% [7], pre-pregnancy alcohol use is important to consider as alcohol use may continue at similar levels before pregnancy recognition [3, 7]. While this issue paper will focus on the prevalence of alcohol use during pregnancy with an emphasis on the Canadian context, it is important to recognize preconception as an essential period and opportunity to support pregnant women<sup>1</sup>, their partners, families and support networks in making healthy lifestyle changes.

### 1. The Prevalence of Alcohol Use During Pregnancy

The prevalence of alcohol use during pregnancy varies nationally and regionally with global trends of alcohol use uniquely impacting each country [4, 7]. In 2017, researchers reported the global prevalence of alcohol use during pregnancy to be approximately 10%, with the highest rates being reported in Europe (25.2%) and the lowest in the Middle East and North Africa (0.2%) [4].

In Canada, it is estimated that 10 to 15% of pregnant women use alcohol during pregnancy [6, 7, 9]. Estimates of alcohol use during pregnancy have been largely captured through provincial and territorial birth registries and databases. This data is quite limited and often demonstrates substantially lower (i.e., 0.9-1.8%) prevalence rates compared to the estimated national prevalence of prenatal alcohol use [1]. This discrepancy can be a result of incomplete patient charts, providers' lack of confidence or competence to ask about alcohol use in pregnancy, and/or women's apprehension of sharing information about their prenatal alcohol use due to stigma and fear of punitive responses, such as child apprehension or removal due to prenatal substance use [14].

---

<sup>1</sup> To date, research has primarily focused on the binary, and therefore, minimal to no research has captured the prevalence of alcohol use during pregnancy among non-binary, gender diverse, and transgender individuals.

In published literature, there remains limited prevalence data on prenatal alcohol use among the general Canadian public. The majority of prevalence research has focused on Indigenous women and other equity deserving and socially excluded populations [8]. This literature is often inaccurately used to represent entire sub-populations despite being retrieved from a specific community and/or region [15]. Such use and hyperfocus has resulted in the overreporting of Indigenous Peoples and communities. Consequently, Indigenous communities have faced ongoing discrimination and stigma, the perpetuation of harmful and misinformed stereotypes, and a lack of meaningful attention to the ongoing impacts of colonization and intergenerational trauma [8, 15]. Further, despite *all* populations being equally as likely to consume alcohol during pregnancy, similar trends are seen in the United States, where women of colour, particularly Black, Indigenous, and Hispanic women are also more likely to be screened for alcohol use and receive prenatal counselling compared to white women [16, 17]. Therefore, recent evidence suggests that the provision of prenatal alcohol counselling and screening in the US and Canada are not universal and rooted in intrinsic bias [16, 17].

Globally, researchers have used different approaches to establish the prevalence of alcohol use during pregnancy. For example, the use of biomarkers (e.g., meconium, phosphatidylethanol, etc.) has increased in popularity because of their reliability [9, 18] compared to self-reported measures. However, biomarkers neglect to address the inherent stigmatizing nature of self-reporting measures that can result in the underreporting of alcohol use or withdrawal from accessing prenatal health care services [9, 18].

## **2. Influences and Factors Associated with Alcohol Use During Pregnancy**

Reasons for alcohol use during pregnancy can be influenced by a diverse range of social and structural factors [7, 8]. Pregnancy recognition [19], knowledge of FASD [20] and/or the impacts of alcohol use during pregnancy [11, 14, 20-22], marital status [13, 23], and if the pregnancy was planned [14, 15, 19, 21, 22, 24, 25] are all associated with alcohol use during pregnancy. Preconception substance use including tobacco [11, 17, 19, 23] and alcohol [23] are also well documented as risk factors for alcohol use during pregnancy.

Other risk factors for alcohol use during pregnancy include adverse childhood experiences [26, 27] and trauma [28, 29], mental health concerns [30-32], and inadequate access to prenatal care services [7, 14]. Alcohol is often described as a coping mechanism to deal with external stressors (e.g., financial strain and intimate partner violence) [31, 33-36] and social isolation [37, 38]. However, maternal age, educational attainment, and socioeconomic status (SES) have all been described as both a protective and risk factor for alcohol use during pregnancy. While several studies have found that women of older age, higher SES, and higher educational attainment have an increased likelihood of consuming alcohol during pregnancy [39-41], other studies have posited that younger maternal age, lower SES, and lower educational attainment are linked to increased alcohol consumption during pregnancy [7, 42-44].

Other influences and factors that have been associated with alcohol use during pregnancy include feelings of judgment, ambivalence, or defensiveness surrounding alcohol use during pregnancy [45]; having health insurance and access to appropriate and comprehensive coverage [46, 47]; food insufficiency [24]; guilt and low self-efficacy [33]; and religion [47]. Partner alcohol use has been

underexplored but has been suggested to increase women's alcohol use during pregnancy due to the availability and accessibility of alcohol in the environment and external pressures to use [48].

In addition to these social and structural risk factors, women experience challenges in accessing reliable information about alcohol use in pregnancy [8, 14, 49]. Previous evidence suggests that women report receiving inconsistent or contradictory messaging about safe levels of alcohol and other substance use during pregnancy from their health and social service providers [8, 19, 49]. These are compounded by women receiving conflicting messaging regarding alcohol and other substance use, particularly around low levels of alcohol use, from their friends, family, and the media [19, 49].

Additionally, the authors of several studies found that the misinformation surrounding alcohol use during pregnancy is compounded with the lack of awareness of the harmful effects of prenatal alcohol exposure, cultural customs and societal norms around alcohol use, and access to contraceptive, substance use, and prenatal health care services, particularly for women of colour and women living in rural and remote regions [7, 8, 42, 44]. Ultimately, the complexity of factors associated with alcohol use during pregnancy emphasizes the contextual nature of substance use and the importance of supporting all individuals in the perinatal period in ways that both meet people's individual needs and result in the safest pregnancy possible for mother and baby.

### **3. Stigma and Alcohol Use During Pregnancy**

Stigma remains a prevalent barrier for women of reproductive age to access prenatal health and social services [1, 14, 20]. Women frequently report shame, guilt, and judgment from service providers who may neglect to account for the various and complex life circumstances that may contribute to alcohol use during pregnancy [11, 14, 20-23]. Where women do access prenatal health services, the stigma associated with alcohol use during pregnancy can make women reluctant to disclose information or they may underreport their consumption [14, 40]. However, this underreporting can often be attributed to fear of punitive responses, such as the prompting of child welfare involvement, the prioritization of substance use responses where safe housing, nutrition, or other needs may need to be addressed first, or due to language barriers, simply misunderstanding advice, and being afraid to ask questions [14].

Media portrayals and public discourses regarding alcohol use during pregnancy have perpetuated harmful narratives towards pregnant people who have substance use disorders or have consumed alcohol during pregnancy [8, 14, 50]. These portrayals amplify misconceptions about individuals who use substances and may result in providers only discussing substance use with distinct populations that have been historically marginalized, despite intentions to support all patients/clients [8]. As fear of stigma and judgment are among the most significant factors deterring women from accessing preconception and perinatal health care services, judgmental and abstinence-focused responses from friends, family, health care professionals and society at large can perpetuate feelings of shame, guilt, and fear [8, 14]. Therefore, implementing trauma-informed, harm reduction-oriented, and women-centered approaches can help increase safe spaces for women to access care [51].

## Implications and Recommendations:

The issues described in this paper can inform practice, policy, and research. The following implications and recommendations highlight how we can both support people who use alcohol during pregnancy and how we can address research gaps surrounding the prevalence of alcohol use during pregnancy.

### 1. Policy Implications

- Alcohol has become a normalized part of our society. Shifting gender norms and roles, as well as the increasing targeted marketing and advertising that posits alcohol as fun and as an aid for social connection, coping and relaxation, has contributed to women's increased alcohol use [8]. Understanding the role of alcohol use in our daily lives and developing responsive policies to targeted marketing, can help reduce the overall prevalence of alcohol use in Canadian society.
- Implementing alcohol policies such as those restricting availability can help improve everyone's health and contribute to reducing alcohol use during pregnancy while promoting women's and fetal health. Supportive alcohol policies that are trauma-informed, evidence-based, and harm reduction oriented can enable healthy pregnancies, while mitigating the barriers that prevent women from seeking medical and supportive services [52].
- Supportive pregnancy-specific alcohol policies, such as national guidelines, can influence women of childbearing age, pregnant individuals, and their support networks to make healthy lifestyle choices that improve their own health and wellbeing [52]. Through increasing awareness, supporting implementation of, and training providers on how to use guidelines, such as [Canada's Guidance on Alcohol and Health](#) (which describes the continuum of risk associated with alcohol use and recommends no alcohol is safest during pregnancy) or the Society of Obstetricians and Gynaecologists of Canada [Guidelines on Substance Use and Pregnancy](#), and we can better inform FASD prevention strategies and women's health programming, and increase confidence among service providers to have evidence-informed discussions around alcohol use during pregnancy [22, 23]. This multi-pronged approach to implementation can help measure the effects of said guidelines.
- Provincially, billing codes must be updated to include questions about alcohol use during pregnancy. Providers have a limited time to ask all the questions included on the antenatal record. Without having billing codes that ask about alcohol use during pregnancy, it is less encouraging for providers to ask such questions and deters from data capture.
- [Canada's Guidance on Alcohol and Health](#) is based on the principle of harm reduction and the fundamental belief that people living in Canada have the right to know that all alcohol use comes with risk. Provincial policies, including policies mandated through professional medical, nursing, and midwifery associations, must adopt a similar harm reduction oriented approach, so that providers *can* ask questions about substance use in pregnancy and pregnant people feel safe to answer them.

## 2. Practice Implications

- Integration of strengths-based, trauma-informed, and harm reduction-oriented approaches in service delivery can increase women’s access to the services and supports that they may need to reduce their substance use [45]. Such approaches address the complex external and internal factors influencing alcohol use during pregnancy, combat stigma, and address the structural and systemic influences that adversely impact maternal and fetal health outcomes [8, 10].
- Improving the uptake of evidence and accessibility to consistent, reliable, and evidence-based information about alcohol use during pregnancy is imperative [8]. Providers can leverage off [Canada’s Guidance on Alcohol and Health](#) to increase their confidence and comfortability with discussing alcohol use with their patients, while ensuring that they are providing clients consistent, evidence-based information.
- Normalizing conversations about alcohol use in the preconception and pregnancy periods, including through integrating questions about alcohol with conversations about nutrition and diet, can help foster a safe and non-judgmental environment for individuals who use alcohol. By normalizing conversations, providers can focus on building trust and relationships, thus decreasing stigma women experience when discussing alcohol use during pregnancy. Examples of how to engage in these discussions can be found in:
  - [Talking About Substance Use During Pregnancy](#)
  - [Doorways to Conversation: Brief Intervention on Substance Use with Girls and Women](#)
- Increasing the availability of preconception care can effectively aid increased health promoting behaviours and increase the effective use of contraceptive methods. Embedding discussions in school-based educational programming or brief interventions in preconception or during early years programs can help decrease the risk of prenatal alcohol exposure, unplanned pregnancies, and continued alcohol use prior to pregnancy recognition.

## 3. Research and Data Implications

- In Canada, there is a need for longitudinal research among people of reproductive age to better understand patterns of alcohol use during the preconception, prenatal, postpartum, and interconception periods to facilitate the further development of responsive and integrated prevention strategies [1].
- Canadian databases and registries highlight information related to prenatal alcohol exposure, alcohol use during pregnancy is exclusively self-reported [1]. Stigma associated with alcohol use and a lack of confidence and competence to engage in screening and brief interventions can reduce the reliability of self-reported measures. Further research and knowledge translation to promote the uptake of effective, evidence-based, and compassionate approaches can help decrease both the stigma and prevalence of alcohol-exposed pregnancies [5, 46, 47] while enhancing the accuracy and reliability of data collection [1].
- Health care providers play a critical role in capturing information about alcohol use during pregnancy and ensuring that information is accurately represented in Canadian provincial and territorial data systems [1]. While questions about alcohol are including in all provincial and territorial antenatal records, the questions are not all framed nor captured the same way. Further, not all patients will feel safe answering questions about alcohol use. Encouraging the

delivery of trust-based and respectful screening and brief interventions across all trimesters can help us understand the prevalence of prenatal alcohol use and identify resources to support women looking to reduce their use [1].

### **Conclusion:**

In Canada, numerous social and structural factors have been associated with alcohol use during pregnancy, such as stigma, misinformation regarding safe levels of alcohol consumption, the normalization of alcohol use, and using alcohol to cope with trauma and other stressors [8]. Despite understanding factors that contribute to alcohol use during pregnancy, there remains limited accurate and reliable information of the prevalence of prenatal alcohol use, including in Canada. The findings of this issue paper demonstrate the need for uptake of policy, practice, and research recommendations, such as the multi-pronged implementation of Canada's Guidance on Alcohol and Health. Further, increasing the adoption of non-stigmatizing and non-judgmental support for pregnant and postpartum people to comfortably discuss and ask questions about alcohol use by trusted health and social service providers can help further support future FASD prevention efforts.



## References

1. Cook, J. L. (2021). Alcohol use during pregnancy and fetal alcohol spectrum disorder in Canada: who, what, where? *Health Promotion and Chronic Disease Prevention in Canada*, 41(9), 264–266. <https://doi.org/10.24095/hpcdp.41.9.03>
2. Walker, M. J., Al-Sahab, B., Islam, F., & Tamim, H. (2011). The epidemiology of alcohol utilization during pregnancy: An analysis of the Canadian maternity experiences survey (MES). *BMC Pregnancy and Childbirth*, 11(52). <https://doi.org/10.1186/1471-2393-11-52>
3. Dejong, K., Olyaei, A., & Lo, J. (2019). Alcohol use in pregnancy. *Clinical Obstetrics and Gynecology*, 62(1), 142–155. <https://doi.org/10.1097/GRF.0000000000000414>
4. Lange, S., Probst, C., Rehm, J., & Popova, S. (2017). Prevalence of binge drinking during pregnancy by country and World Health Organization region: Systematic review and meta-analysis. *Reproductive Toxicology*, 73, 214-221. <http://doi.org/10.1016/j.reprotox.2017.08.004>
5. Popova, S., Lange, S., Probst, C., Parunashvili, N., & Rehm, J. (2017). Prevalence of alcohol consumption during pregnancy and Fetal Alcohol Spectrum Disorders among the general and Aboriginal populations in Canada and the United States. *European Journal of Medical Genetics*, 60(1), 32-48. <https://doi.org/10.1016/j.ejmg.2016.09.010>
6. Schmidt, R. E., Wey, T. W., Harding, K. D., Fortier, I., Atkinson, S., Tough, S., Letourneau, N., Knight, J. A., Fraser, W. D., & Bocking, A. (2023). A harmonized analysis of five Canadian pregnancy cohort studies: Exploring the characteristics and pregnancy outcomes associated with prenatal alcohol exposure. *BMC Pregnancy and Childbirth*, 21(128). <https://doi.org/10.1186/s12884-023-05447-2>
7. Popova, S., Dozet, D., Akhand Laboni, S., Brower, K., & Temple, V. (2022). Why do women consume alcohol during pregnancy or while breastfeeding? *Drug and Alcohol Review*, 41(4), 759–777. <https://doi.org/10.1111/dar.13425>
8. Lyall, V., Wolfson, L., Reid, N., Poole, N., Moritz, K. M., Browne, A. J., & Askew, D. A. (2021). “The problem is that we hear a bit of everything...”: A qualitative systematic review of factors associated with alcohol use, reduction, and abstinence in pregnancy. *The International Journal of Environmental Research and Public Health*, 18(3445). <https://doi.org/doi.org/10.3390/ijerph18073445>
9. Delano, K., Koren, G., Zack, M., & Kapur, B. M. (2019). Prevalence of fetal alcohol exposure by analysis of meconium fatty acid ethyl esters: A national Canadian study. *Scientific Reports*, 9(1), 2298-2296. <doi:10.1038/s41598-019-38856-5>
10. Rockcliffe, L., Peters, S., Heazell, A. E. P., & Smith, D. M. (2021). Factors influencing health behaviour change during pregnancy: a systematic review and meta-synthesis. *Health Psychology Review*, 15:4, 613-632. <https://doi.org/10.1080/17437199.2021.1938632>
11. Flannigan, K., Unsworth, K., & Harding, K. (2018). FASD prevalence in special populations. Canada’s FASD Research Network. <https://canfasd.ca/wp-content/uploads/2018/08/Prevalence-2-Issue-Paper-FINAL.pdf>
12. Popova, S., Lange, S., Poznyak, V., Chudley, A., Shield, K., Reynolds, J., Murray, M., & Rehm, J. (2019). Population-based prevalence of fetal alcohol spectrum disorder in Canada. *BioMed Central Public Health*, 19(845). <https://doi.org/10.1186/s12889-019-7213-3>
13. Varin, M., Palladino, E., MacEachern, K. H., Belzak, L., & Barker, M. M. (2021). At-a-glance prevalence of alcohol use among women of reproductive age in Canada. *Health Promotion and Chronic Disease Prevention in Canada Research, Policy, and Practice*, 41(9). <https://doi.org/10.24095/hpcdp.41.9.04>
14. Oni, H. T., Drake, J. A., Dietze, P., Higgs, P., & Islam, M. M. (2022). Barriers to women’s disclosure of and treatment for substance use during pregnancy: A qualitative study. *Women and Birth*, 35, 576–581. <https://doi.org/10.1016/j.wombi.2021.12.009>
15. Wolfson, L., Poole, N., Ninomiya, M. M., Rutman, D., Letendre, S., Winterhoff, T., Finney, C., Carlson, E., Prouty, M., McFarlane, A., Ruttan, L., Murphy, L., Stewart, C., Lawley, L., & Tammy Rowan. (2019). Collaborative action on fetal alcohol spectrum disorder prevention: Principles for enacting the truth and reconciliation commission call to action #33. *International Journal of Environmental Research and Public Health*, 16(9). <https://doi.org/10.3390/ijerph16091589>
16. Hebert, L. E., Vera, M. R., & Sarche, M. C. (2023). Prenatal alcohol counseling among American Indian and Alaskan Native Women and Non-Hispanic White Women in pregnancy risk assessment monitoring system. *Women’s Health Issues*, 23. <https://doi.org/10.1016/j.whi.2023.06.003>
17. Thompson, E. L., Barnett, T. E., Litt, D. M., Spears, E. C., & Lewis, M. A. (2021). Discordance between perinatal alcohol use among women and provider counseling for alcohol use: An assessment of the pregnancy risk



- assessment monitoring system. *Public Health Reports*, 136(6), 719–725.  
<https://doi.org/10.1177/0033354920984146>
18. Breunis, L. J., Wassenaar, S., Sibbles, B. J., Aaldriks, A. A., Bijma, H. H., Steegars, E. A. P., Koch, B. C. P. (2021). Objective assessment of alcohol consumption in early pregnancy using phosphatidylethanol: A cross-sectional study. *BMC Pregnancy and Childbirth*, 21, 342. <https://doi.org/10.1186/s12884-021-038047>
  19. Fletcher, T., Mullan, B., & Finlay-Jones, A. (2022). Perceptions of two different alcohol use behaviours in pregnancy: an application of the prototype/willingness model. *Health Psychology and Behaviour Medicine*, 10(1):1071-1085. <https://doi.org/10.1080/21642850.2022.2143362>
  20. Roozen, S., Stutterheim, S. E., Bos, A. E., Kok, G., & Curfs, L. M. (2020). Understanding the social stigma of fetal alcohol spectrum disorder: From theory to interventions. *Foundations of Science*.  
<https://doi.org/10.1007/s10699-020-09676-y>
  21. Choate, P., Brady, D., MacLaurin, B., Ariyo, K., & Sobhani, D. (2019). Fetal alcohol spectrum disorder: what does public awareness tell us about prevention programming? *International Journal of Environmental Research and Public Health*, 16(4229). <https://doi.org/10.3390/ijerph16214229>
  22. Poole, N., Schmidt, R., Green, C., & Hemsing, N. (2016). Prevention of fetal alcohol spectrum disorder: Current Canadian efforts and analysis of gaps. *Substance Abuse: Research and Treatment*, 10, 1–11.  
<https://doi.org/10.4137/SART.S34545>
  23. Dozet, D., Burd, L., & Popova, S. (2023). Screening for alcohol use in pregnancy: A review of current practices and perspectives. *International Journal of Mental Health and Addiction*, 21, 1220–1239.  
<https://doi.org/10.1007/s11469-021-00655-3>
  24. Maas, V. Y. F., Poels, M., de Kievet, M., H., Hartog, A. P., Franx, A. & Koster, M. P. H. (2022). Planning is not equivalent to preparing, how Dutch women perceive pregnancy planning in relation to preconception lifestyle behaviours: A cross-sectional study. *BMC Pregnancy Childbirth*, 22, 577. <https://doi.org/10.1186/s12884-022-04843-4>
  25. Canadian Centre on Substance Use and Addiction. (2023). Canada’s guidance on alcohol and health: Final Report.  
[https://ccsa.ca/sites/default/files/2023-01/CCSA\\_Canadas\\_Guidance\\_on\\_Alcohol\\_and\\_Health\\_Final\\_Report\\_en.pdf](https://ccsa.ca/sites/default/files/2023-01/CCSA_Canadas_Guidance_on_Alcohol_and_Health_Final_Report_en.pdf)
  26. Currie, C.L., Sanders, J. L., Swanepoel, L-M., & Davies, C. M. (2020). Maternal adverse childhood experiences are associated with binge drinking during pregnancy in a dose-dependent pattern: Findings from the All Our Families cohort. *Child Abuse & Neglect*, 101. <https://doi.org/10.1016/j.chiabu.2019.104348>
  27. Racine, N., McDonald, S., Chaput, K., Tough, S. and Madigan, S. (2020). Maternal substance use in pregnancy: Differential prediction by childhood adversity subtypes. *Preventive Medicine: An International Journal Devoted to Practice and Theory*, 141. <https://doi.org/10.1016/j.ypmed.2020.106303>
  28. Shahram, S.Z., Bottorff, J.L., Kurtz, D.L.M., Oelke, N.D., Thomas, V. and Spittal, P.M. (2017). Understanding the life histories of pregnant-involved young aboriginal women with substance use experiences in three Canadian cities. *Qualitative Health Research*, 27(2), 249-259. <https://doi.org/10.1177/1049732316657812>
  29. Gonzales, K.L., Jacob, M.M., Mercier, A., Heater, H., Nall Goes Behind, L., Joseph, J., and Kuerschner, S. (2018). An indigenous framework of the cycle of fetal alcohol spectrum disorder risk and prevention across the generations: Historical trauma, harm and healing. *Ethnicity & Health*, 26(2), 280-298.  
<https://doi.org/10.1080/13557858.2018.1495320>
  30. Onah, M.N., Field, S., van Heyningen, T. and Honikman, S. (2016). Predictors of alcohol and other drug use among pregnant women in a peri-urban South African setting. *International Journal of Mental Health Systems*, 10 (38).  
<https://doi.org/10.1186/s13033-016-0070-x>
  31. Lamy, S., Houivet, E., Marret, S., Hennart, B., Delavenne, H., Benichou, J., Thibaut, F. (2019). Risk factors associated to tobacco and alcohol use in a large french cohort of pregnant women. *Archives of Women's Mental Health*, 22(2), 267-277. <https://doi.org/10.1007/s00737-018-0892-4>
  32. Addila, E.A., Bisetegn, T.A., Gete, Y.K., Mengistu, M.Y. and Beyene, G.M. (2020). Alcohol consumption and its associated factors among pregnant women in Sub-Saharan Africa: A systematic review and meta-analysis' as given in the submission system. *Substance Abuse Treatment, Prevention, and Policy*, 15(1), 29.  
<https://doi.org/10.1186/s13011-020-00269-3>
  33. Latuskie, K.A., Andrews, N.C.Z., Motz, M., Leibson, T., Austin, Z., Ito, S., and Pepler, D.J. (2019). Reasons for substance use continuation and discontinuation during pregnancy: A qualitative study. *Women and Birth*, 32 (1), e57-e64. <https://doi.org/10.1016/j.wombi.2018.04.001>
  34. Shrestha, U., Weber, T.L. and Hanson, J.D. (2018) “But Problems Dwell so the Urge Is Constant...” Qualitative

- Data Analysis of the OST CHOICES Program. *Alcoholism: Clinical & Experimental Research*, 42(9), 1807-1814.
35. Fletcher, O.V., May, P.A., Seedat, S., Sikkema, K.J. and Watt, M.H. (2018). Attitudes toward alcohol use during pregnancy among women recruited from alcohol-serving venues in Cape Town, South Africa: A mixed-methods study. *Social Science & Medicine*, 215, 98-106. <https://doi.org/10.1016/j.socscimed.2018.09.008>
  36. Petersen-Williams, P., Mathews, C., Jordaan, E. and Parry, C.D.H. (2014). Predictors of alcohol Use during pregnancy among women attending midwife obstetric units in the Cape Metropole, South Africa. *Substance Use & Misuse*. <https://doi.org/10.1155/2014/871427>
  37. Deutsch, A.R. (2019). The importance of intimate partner violence in within-relationship and between-person risk for alcohol-exposed pregnancy. *Alcoholism: Clinical & Experimental Research*, 43(4), 679-689. <https://doi.org/10.1111/acer.13968>
  38. Tesfaye, G., Demlew, D., G/tsadik, M., Habte, F., Molla, G., Kifle, Y., and Gebreegziabhier, G. (2020) The prevalence and associated factors of alcohol use among pregnant women attending antenatal care at public hospitals Addis Ababa, Ethiopia, 2019. *BMC Psychiatry*, 20 (337). <https://doi.org/10.1186/s12888-020-02747-1>
  39. Ishitsuka, K., Hanada-Yamamoto, K., Mezawa, H., Saito-Abe, M., Konishi, M, Ohya, Y., & Japan Environment and Children’s Study Group. (2020). Determinants of alcohol consumption in women before and after awareness of conception. *Maternal and Child Health Journal*, 24(2), 165–176. <https://doi.org/10.1007/s10995-019-02840-0>.
  40. McCormack, C., Hutchinson, D., Burns, L., Wilson, J., Elliott, E., Allsop, S., Mattick, R. (2017). Prenatal Alcohol Consumption Between Conception and Recognition of Pregnancy. *Alcoholism: Clinical and Experimental Research*, 41(2), 369-378. <https://doi.org/10.1111/acer.13305>
  41. Murakami, K., Obara, T., Ishikuro, M., Ueno, F., Noda, A., & Kuriyama, S. (2021). Associations of education and work status with alcohol use and cessation among pregnant women in Japan: the Tohoku Medical Megabank Project Birth and Three-Generation Cohort Study. *BMC Public Health*, 21(1), 1-10. <https://doi.org/10.1186/s12889-021-11461-w>
  42. Addila, A. E., Azale, T., Gete, Y. K., & Yitayal, M. (2021). Determinants of hazardous alcohol use among pregnant women attending antenatal care at public health facilities in Gondar town, Northwest Ethiopia: A nested case-control study. *PloS ONE*, 16(7), e0253162. <https://doi.org/10.1371/journal.pone.0253162>
  43. De Genna, N. M., Goldschmidt, L., Marshal, M., Day, N. L., & Cornelius, M. D. (2017). Maternal Age and Trajectories of Risky Alcohol Use: A Prospective Study. *Alcoholism: Clinical & Experimental Research*, 41(10), 1725-1730. <https://doi.org/10.1111/acer.13451>
  44. De Jong, M., George, A., & Jacobs, T. (2021). A scoping review of the determinants of Fetal Alcohol Spectrum Disorder in South Africa: An intersectional perspective. *Health Policy and Planning*, 36(9), 1459 –1469. <https://doi.org/10.1093/heapol/czab101>
  45. Nathoo, T., Poole, N., Wolfson, L., Schmidt, R., Hemsing, N., and Gelb, K. (2018). Doorways to Conversation: Brief Intervention on Substance Use with Girls and Women. Vancouver, BC: Centre of Excellence for Women’s Health. [https://cewh.ca/wp-content/uploads/2018/06/Doorways\\_ENGLISH\\_July-18-2018\\_online-version.pdf](https://cewh.ca/wp-content/uploads/2018/06/Doorways_ENGLISH_July-18-2018_online-version.pdf)
  46. Yaesoubi, R., Main, M., Martin, G., Palatial, D. A., & Sharifi, M. (2022). Reducing the prevalence of alcohol-exposed pregnancies in the U.S.: A simulation modelling study. *Medical Decision Making*, 42(2), 217–227. <https://doi.org/10.1177/0272989X211023203>
  47. Floyd, L. R., Ebrahim, S., Tsai, J., O’Connor, M., & Sokol, R. (2006). Strategies to reduce alcohol-exposed pregnancies. *Maternal and Child Health Journal*, 10, S149–S151. <https://doi.org/10.1007/s10995-006-0116-9>
  48. Gearing, R.E., Selkirk, E.K., Koren, G., Leslie, M. (2008) Perspectives of mothers with substance use problems on father involvement. *The Canadian Journal of Clinical Pharmacology*, 15(1), e99 - e107. [https://www.researchgate.net/publication/5606063\\_Perspectives\\_of\\_mothers\\_with\\_substance\\_use\\_problems\\_on\\_father\\_involvement](https://www.researchgate.net/publication/5606063_Perspectives_of_mothers_with_substance_use_problems_on_father_involvement)
  49. Hammer, R., & Rapp, E. (2022). Women’s views and experiences of occasional alcohol consumption during pregnancy: A systematic review of qualitative studies and their recommendations. *Midwifery*, 111. <https://doi.org/10.1016/j.midw.2022.103357>
  50. Harding , K. D., Dionne, A., & Harding , E. V. (2022). “You don’t want to drink? What are you, pregnant?!”: Portrayals of alcohol and substance use during pregnancy on television. *Journal of Fetal Alcohol Spectrum Disorder*, 4, e129–e161. <https://doi.org/10.22374/jfasrp.v4SP1.19>
  51. Poole, N., Schmidt, R., Green, C., & Hemsing, N. (2016). Prevention of fetal alcohol spectrum disorder: Current Canadian efforts and analysis of gaps. *Substance Abuse: Research and Treatment*, 10, 1–11. <https://doi.org/10.4137/SART.S34545>

52. Wolfson, L., & Poole, N. (2023). Supportive alcohol policy as a key element of fetal alcohol spectrum disorder prevention. *Women's Health Substance Use and Pregnancy*, 19, 1–10.  
<https://doi.org/https://doi.org/10.1177/17455057231151838>