

## FASD PREVENTION:

An Annotated Bibliography of Articles Published in 2018

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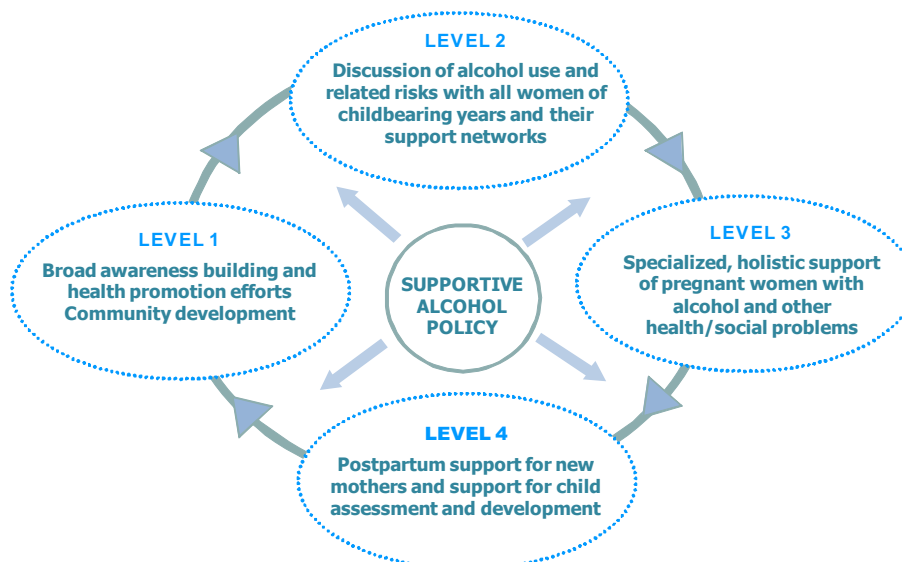
# FASD Prevention Literature Search 2018

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## Introduction

Annually, researchers associated with the Prevention Network Action Team (pNAT) of the CanFASD Research Network search the academic literature for articles related to fetal alcohol spectrum disorder (FASD) prevention. The findings are organized using a four-level prevention framework used by the pNAT to describe the wide range of work that comprises FASD prevention. The annual literature search is intended to update those involved in FASD prevention in Canada, so they can inform their practice and policy work with current evidence. The members of the pNAT also have the opportunity in monthly webmeetings to discuss the implications of the findings for their work.



## Search Methods

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The following databases were searched using Ebsco Host for articles published between January and December 2018:

1. Bibliography of Native North Americans
2. CINAHL Complete (Cumulative Index of Nursing and Allied Health Literature)
3. MEDLINE with Full Text
4. PsycINFO
5. Social Work Abstracts
6. Urban Studies Abstracts
7. Women's Studies International

Searches of each database were conducted using the following search terms:

1) Fetal alcohol syndrome OR fetal alcohol spectrum disorder OR FASD OR feotal alcohol spectrum disorder OR alcohol related fetal damage; 2) [FASD OR fetal alcohol OR feotal alcohol OR alcohol exposed pregnancy OR alcohol] + [pregnancy] + [prevention OR preventing OR preventative]; 3) [Fetal OR fetus OR feotus OR foetal] + alcohol; 4) [Alcohol OR drink\*] + [pregnancy OR pregnant OR prenatal OR antenatal OR perinatal or maternal] + prevention; 5) [Pregnan\* OR conception OR preconception OR post-partum] + [alcohol OR drink\*]; 6) [Alcohol OR drink\*] + prevention + [women OR girls OR youth OR teen\* OR Aboriginal OR First Nation\*]; 7) [Alcohol OR drink\*] + awareness; 8) FASD + awareness; 9) [Alcohol OR drink\*] + intervention\* + [women OR girls OR female]; 10) [Alcohol OR drink\*] + [motivational interviewing OR Screening OR brief intervention OR SBIR OR SBIRT] + [women OR girls OR gender OR female]; 11) [Alcohol or drink\*] + [home visit\* OR NICU OR neonatal intensive care unit OR midwives or midwife or midwifery]; 12) [Parent child assistance program OR PCAP]; 13) [Pregnan\* OR conception OR preconception OR post-partum] + [substance use treatment OR harm reduction].

All searches were limited to articles published in the English language. Articles were further screened for relevance to the FASD NAT, and non-relevant articles (e.g. diagnosis of FASD) were removed from the list. Articles were then categorized into one or more theme, as presented below.

## Search Results

Fifty-eight ( $n = 58$ ) articles were included from our searches. Nine ( $n = 9$ ) articles were assigned to more than one category, and two were attributed to more than one country. Table 1 provides an overview of the number of articles found in each topic area by country. It can be seen that research on FASD prevention, published in English is most often being generated in the United States and Canada followed the United Kingdom, Australia and South Africa.

**Table 1: Studies identified by topic and country**

|                                       | Number of Studies |            |         |         |               |         |         |       |       |
|---------------------------------------|-------------------|------------|---------|---------|---------------|---------|---------|-------|-------|
| Country                               | Prevalence        | Influences | Level 1 | Level 2 | Preconception | Level 3 | Level 4 | Other | Total |
| Australia                             | 0                 | 0          | 1       | 1       | 0             | 2       | 0       | 1     | 5     |
| Belgium                               | 0                 | 0          | 0       | 0       | 1             | 0       | 0       | 0     | 1     |
| Canada                                | 1                 | 1          | 1       | 0       | 0             | 5       | 0       | 1     | 9     |
| Denmark                               | 0                 | 0          | 0       | 1       | 0             | 0       | 0       | 0     | 1     |
| France                                | 1                 | 1          | 1       | 1       | 0             | 0       | 0       | 0     | 4     |
| India                                 | 0                 | 1          | 0       | 0       | 0             | 0       | 0       | 0     | 1     |
| Northern Ireland                      | 0                 | 0          | 0       | 1       | 0             | 0       | 0       | 0     | 1     |
| Norway                                | 0                 | 1          | 0       | 0       | 0             | 0       | 0       | 0     | 1     |
| Russia                                | 0                 | 0          | 0       | 1       | 0             | 0       | 0       | 0     | 1     |
| South Africa                          | 1                 | 3          | 0       | 0       | 0             | 0       | 0       | 1     | 5     |
| Spain                                 | 1                 | 0          | 0       | 0       | 0             | 0       | 0       | 0     | 1     |
| Sweden                                | 0                 | 1          | 0       | 0       | 0             | 1       | 0       | 0     | 2     |
| Tanzania                              | 1                 | 1          | 0       | 0       | 0             | 0       | 0       | 0     | 2     |
| The Netherlands                       | 0                 | 0          | 0       | 0       | 1             | 0       | 0       | 0     | 1     |
| UK (England, Ireland and/or Scotland) | 2                 | 2          | 1       | 1       | 0             | 0       | 0       | 0     | 6     |
| USA                                   | 1                 | 4          | 4       | 6       | 0             | 3       | 1       | 7     | 26    |
|                                       | 8                 | 15         | 8       | 12      | 2             | 11      | 1       | 10    | 67    |

## A. Prevalence of drinking in pregnancy

1. **Abernethy, C., McCall, K. E., Cooper, G., Favretto, D., Vaiano, F., Bertol, E., & Mactier, H. (2018). Determining the pattern and prevalence of alcohol consumption in pregnancy by measuring biomarkers in meconium. *Archives of Disease in Childhood - Fetal and Neonatal Edition*, 103(3), F216-F220. doi:10.1136/archdischild-2016-311686**

Researchers investigated the feasibility of using ethanol biomarkers (FAEEs and EtGs) in meconium samples to estimate the prevalence and patterns of alcohol use during pregnancy. Over 6-months all women giving birth to a single child over 36 weeks gestation at an inner-city maternity unit in Scotland, UK were invited to participate. Women that consented to participate ( $n = 325$ ) were interviewed about their alcohol consumption during pregnancy, and none reported consuming large amounts of alcohol during pregnancy. A total of 237 anonymised meconium samples were analyzed. Based on previous research, FAEE concentrations  $>600$  ng/g of meconium and EtG concentrations  $>30$  ng/g were deemed to be indicative of regular alcohol consumption of  $> 2$  drinks per day, or  $>5$  drinks per week during pregnancy. Ninety-eight samples (42%) were positive for significant FAEE concentrations and 93 (40%) were positive for EtG concentrations indicating some level of alcohol consumption during pregnancy, while 35 (15%) samples indicated significant consumption of alcohol during pregnancy based on EtG. EtG levels are highly sensitive and specific to alcohol consumption during pregnancy. No associations between biomarkers and socioeconomic factors or infant gestation, birth weight or head circumference were found. The authors conclude that it is feasible to use ethanol biomarkers to determine prevalence and patterns of alcohol consumption during pregnancy.

2. **Bakhireva, L. N., Shrestha, S., Garrison, L., Leeman, L., Rayburn, W. F., & Stephen, J. M. (2018). Prevalence of alcohol use in pregnant women with substance use disorder. *Drug and Alcohol Dependence*, 187, 305-310. doi:10.1016/j.drugalcdep.2018.02.025**

This study compared the prevalence of alcohol use in women attending general obstetrics clinics ( $n = 365$ ) associated with the University of New Mexico with women attending a specialized multi-disciplinary program providing comprehensive care to pregnant women with substance use disorder (SUD), of which 95% are treated for opioid use disorder (OUD) ( $n = 295$ ). Screenings collected self-reported alcohol consumption patterns, demographics and tobacco use from the two groups at 22.3 gestational weeks. Results comparing the two groups showed no differences in maternal mean age (SUD clinic = 27.9; obstetric clinics = 28.0). Reports of at least one binge drinking episode during the periconception period and in early pregnancy were similar (SUD clinic = 29% and 24% respectively; obstetrics clinics = 25% and 24% respectively). However, the average number of binges was higher among those attending the SUD clinic (median=3;  $Q1=1$ ;  $Q3=10$ ) compared to the obstetrics clinic (median=1;  $Q1=1$ ;  $Q3=3$ ;  $p < 0.001$ ). Tobacco use in the last three years was much more prevalent among those in the SUD clinic (86%) than in the obstetrics clinics (31%;  $p < .001$ ). The authors conclude that prevalence rate of drinking in early pregnancy for both clinic groups highlights the need for alcohol screening and intervention for all pregnant women, particularly those with SUD/OUD.

3. **Fletcher, O. V., May, P. A., Seedat, S., Sikkema, K. J., & 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. doi:10.1016/j.socscimed.2018.09.008**

Although the number of women who drink in Western Cape Province, South Africa, is estimated to be only 13%, nearly half of those women (42.8%) report drinking during pregnancy. In this mixed methods study, researchers explored how attitudes about and knowledge of alcohol use during pregnancy may or may not affect their behaviors during preconception and pregnancy. Women ( $n = 200$ ) were recruited from eight alcohol-serving venues to participate in a survey. The survey included questions regarding demographic information; attitudes toward alcohol use during pregnancy; history of abuse; depressive symptoms; current drinking behavior; drinking during past pregnancy; pregnancy intentions; and, pregnancy attitudes. In-depth interviews were conducted within a subset of 23 women. Interviews lasted approximately 60 minutes, and included follow-up probes about survey topics. Most of the women reported having had at



least one pregnancy ( $n = 176$ ). Results showed that few of the women endorsed harmful attitudes toward drinking in pregnancy (17%), yet nearly 60% reported drinking during a previous pregnancy. Analyses showed that positive knowledge and attitudes was not enough to prevent alcohol use in pregnancy. Several themes that contributed to alcohol use during pregnancy were identified: 1) unwanted or unplanned pregnancy; 2) alcohol as a way of coping (including abuse); 3) importance of venue space; 4) socialization and social norms; 5) invincibility (it won't happen to me). The authors conclude that FASD prevention efforts need to go beyond education efforts to include interventions that provide structural support and build on intrinsic motivation.

**4. Gomez-Roig, M. D., Marchei, E., Sabra, S., Busardò, F. P., Mastrobattista, L., Pichini, S., . . . Garcia-Algar, O. (2018). Maternal hair testing to disclose self-misreporting in drinking and smoking behavior during pregnancy. *Alcohol*, 67, 1-6. doi:10.1016/j.alcohol.2017.08.010**

In this study, Spanish researchers conducted hair analyses of pregnant women at delivery in order to compare maternal self-report data of nicotine (NIC) and alcohol use during pregnancy with biomarkers. A maternal hair length of 9 cm cut close to the scalp was necessary to include the entire gestational period. Of the enrolled women ( $n = 153$ ), 28% ( $n = 43$ ) self-reported tobacco use sometime during the pregnancy, and 3% ( $n = 4$ ) self-reported some alcohol consumption during the pregnancy. Biomarker results of NIC values showed that 77% ( $n = 117$ ) were non-smokers during pregnancy, while EtG values showed that 35% ( $n = 54$ ) did not drink any time during their pregnancy. Comparing self-reporting to biomarkers, findings show that women were reasonably conscious of their smoking levels and self-declared with acceptable reliability. Conversely, women were either not aware of their alcohol consumption levels or simply misreported them. Hair concentrations of NIC and EtG was only correlated in active smoking women who were also moderate or excessive drinkers. The authors state understanding self-misreporting is needed in order to better design prevention and intervention programs for women using substances. They note that educational and advertising campaigns about the risks of smoking and smoke-free legislation have had a positive impact on significantly reducing levels of smoking in pregnancy. They contend that there is a lack of accurate information and education about the severe risks of alcohol consumption in pregnancy, and that active measures should be taken to educate and inform maternal-fetal health professionals as well as the public.

**5. Howlett, H., Mackenzie, S., Gray, W. K., Rankin, J., Nixon, L., Richardson, A., ... Brown, N. W. (2018). Assessing prevalence of alcohol consumption in early pregnancy: Self-report compared to blood biomarker analysis. *European Journal of Medical Genetics*, 61, 531-538. <https://doi.org/10.1016/j.ejmg.2018.05.009>**

The authors of this study examined the prevalence of alcohol use during the first trimester of pregnancy by comparing both self-report and blood biomarker analysis measures. Six hundred blood samples were randomly selected for analysis from 2,986 samples drawn at midwife booking visits in a healthcare trust in North East England in 2014 and 2015. These samples were analyzed to identify the presence of validated markers of chronic alcohol exposure (Carbohydrate Deficient Transferrin (CDT) and Gamma glutamyltransferase (GGT)) and were compared with women's self-report data. Women self-reported alcohol use during the first trimester at a rate of 0.8%, and blood biomarker analysis revealed prevalence rates of 1.4% for CDT and GGT a prevalence rate of 3.5% in the first trimester. The self-reported prevalence rate (0.8%) was lower than those obtained during biomarker analysis (1.4% for CDT and 3.5% for GGT). However, the difference was not significant based on CDT. The results of this study further indicate that self-report measures, as well as certain blood biomarkers, may underestimate the prevalence of alcohol use during pregnancy for various reasons. The researchers highlight complex potential reasons for apparent difference in self-reports including stigma, recall bias, social pressure and patient-clinician interaction. They suggest that further research is needed to explore the combination of blood biomarkers and self-report information to aid in detecting alcohol-exposed pregnancies.

6. Lamy, S., Houivet, E., Marret, S., Hennart, B., Delavenne, H., Benichou, J., ... Thibaut, F. (2018). Risk factors associated to tobacco and alcohol use in a large French cohort of pregnant women. *Archives of Women's Mental Health*. Advance online publication. <https://doi.org/10.1007/s00737-018-0892-4>

The authors of this study aimed to identify risk factors associated with maternal alcohol and tobacco use as assessed by maternal self-reports ( $n = 724$ ) and biological measurements of meconium samples ( $n = 645$ ) during the third trimester of pregnancy among women attending maternity hospitals in Normandy, France. The authors found maternal tobacco use was associated with being not married or having partner that smoked. Higher education levels and wanting a pregnancy was associated with decreased risk of tobacco use. The risk for alcohol use during pregnancy increased when there was familial conflict (e.g., with a relative or partner), as well as in instances of previous treatment for a mental or emotional condition. Risk results were similar for the analysis cotinine and ethylglucuronide in meconium samples, except for marital status which was not associated with cotinine. The results of this study indicate a need for community education and prevention programs focusing on women with a history of mental or emotional disorders, or those with addictions.

7. Latuskie, K. A., Leibson, T., Andrews, N. C. Z., Motz, M., Pepler, D. J., & Ito, S. (2018). Substance use in pregnancy among vulnerable women seeking addiction and parenting support. *International Journal of Mental Health and Addiction*. Advance online publication. <https://doi.org/10.1007/s11469-018-0005-7>

Based on a retrospective chart review of clients' charts from *Breaking the Cycle* in Toronto, ON, Canada, the authors identified substance-specific use and patterns of use throughout pregnancy among vulnerable women. Data was collected from 470 client records from 1995 to 2016. Women who attend *Breaking the Cycle* typically have a significant history of polysubstance use, as well as a complex history of trauma, child welfare involvement, and mental health challenges. The results of the chart review indicated that polysubstance use during pregnancy was relatively common in this sample of women. For example, 7% of women reported abstinence from substances during pregnancy, 27% reported using one substance during pregnancy, 24% reported using two substances, 20% reported using three substances, and 24% reported using four or more substances. Additionally, for each substance used during pregnancy, each woman's pattern of use was coded across pregnancy based on one of eight general patterns of use. The most common pattern of use for many substances, notably tobacco, crack cocaine, cannabis, and other opioids, was continued use throughout pregnancy. Relapse rates were also high for women who initially attempted to stop their use of cocaine, crack cocaine, and heroin. Consequently, vulnerable women with complicated life histories face significant barriers to decreasing and stopping their substance use during pregnancy. The authors conclude that further research is needed to understand how and why women who are high-risk change their substance use patterns during pregnancy and what treatment strategies are the most effective for this unique population.

8. Mpelo, M., Kibusi, S. M., Moshi, F., Nyundo, A., Ntwenya, J. E., & Mpondo, B. C. T. (2018). Prevalence and factors influencing alcohol use in pregnancy among women attending antenatal care in Dodoma Region, Tanzania: A cross-sectional study. *Journal of Pregnancy*, 2018, 1-7. <https://doi.org/10.1155/2018/8580318>

Pregnant women randomly selected from antenatal care services in the Dodoma region of Tanzania ( $n = 365$ ) to determine the prevalence and associated factors of alcohol consumption during pregnancy. Participants completed structured questionnaires that assessed sociodemographic characteristics and reported alcohol consumption. The results of this study identified a prevalence rate of 15% of alcohol consumption during pregnancy. Factors that were associated with alcohol consumption during pregnancy included pre-pregnancy alcohol consumption and having relatives who consume alcohol. Additionally, a lower level of education, making local brews as a source of income, and not having had complications in a previous pregnancy were also associated with alcohol consumption during pregnancy. The results of this study indicate a significantly high prevalence of alcohol consumption during pregnancy in this region of Tanzania and speak to the need for targeted public health interventions that address alcohol consumption during pregnancy for women of reproductive age.

## B. Influences and factors associated with drinking in pregnancy

1. **Abernethy, C., McCall, K. E., Cooper, G., Favretto, D., Vaiano, F., Bertol, E., & Mactier, H. (2018). Determining the pattern and prevalence of alcohol consumption in pregnancy by measuring biomarkers in meconium. *Archives of Disease in Childhood - Fetal and Neonatal Edition*, 103(3), F216-F220. doi:10.1136/archdischild-2016-311686**

See abstract above

2. **Fletcher, O. V., May, P. A., Seedat, S., Sikkema, K. J., & 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. doi:10.1016/j.socscimed.2018.09.008**

See abstract above

3. **Gonzales, K. L., Jacob, M. M., Mercier, A., Heater, H., Nall Goes Behind, L., Joseph, J., & 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*. doi:10.1080/13557858.2018.1495320**

Building on a multilevel framework of historical trauma and health, researchers used community-based participatory research with American Indian and Alaska Natives (AI/AN) about the best ways to advance health equity and increase positive birth outcomes by reducing substance-exposed pregnancies for this population. Focus groups were used to gather data from 74 members of the urban AI/AN community. Data analysis revealed that: 1) the community had detailed and extensive knowledge about FASD and personal experience with its adverse effects; 2) the cycle of FASD risk is inextricably linked to historical, intergenerational and contemporary trauma that underlies medical mistrust; and, 3) opportunities for individual-, family- and community-level healing and support are needed that value AI/AN people and culture, integrate Indigenous ways of knowing, and are trauma-informed.

4. **Lamy, S., Houivet, E., Marret, S., Hennart, B., Delavenne, H., Benichou, J., ... Thibaut, F. (2018). Risk factors associated to tobacco and alcohol use in a large French cohort of pregnant women. *Archives of Women's Mental Health*. Advance online publication. <https://doi.org/10.1007/s00737-018-0892-4>**

See abstract above.

5. **Latuskie, K. A., Andrews, N. C. Z., Motz, M., Leibson, T., Austin, Z., Ito, S., & Pepler, D. J. (2018). Reasons for substance use continuation and discontinuation during pregnancy: A qualitative study. *Women and Birth*. Advance online publication. <https://doi.org/10.1016/j.wombi.2018.04.001>**

To understand women's experiences using substances during pregnancy and the reasons women continue or discontinue their substance use during pregnancy, the researchers conducted focus groups with women who attended *Breaking the Cycle* in Toronto, Canada. Participants ( $n = 11$ ) identified that external (e.g., societal pressures, financial strain) and internal (e.g., guilt) stressors, feelings of guilt and low self-efficacy, and a lack of understanding of the scientific and medical consequences of substance use contributed to their ongoing substance use. On the other hand, participants also identified the importance of high self-efficacy and the quality of relationships when trying to make positive changes to their substance use. The authors make recommendations for improving access and for developing more comprehensive services. Non-judgmental support and care are required for pregnant women with substance use issues in order to help them increase their self-efficacy and empower them to stop their substance use during pregnancy.



6. Louw, J. G., Tomlinson, M., & Olivier, L. (2018). Unrealistic optimism with regard to drinking during pregnancy among women of childbearing age in a South African community. *South African Journal of Psychology*, 48(2), 219-229. doi: 10.1177/0081246317717105

The authors of this study investigated the concept of unrealistic optimism, a cognitive bias in health psychology where individuals judge themselves to be less at risk of experiencing a negative life event compared to the average person (e.g., the risk associated with alcohol use during pregnancy). Women from the Northern Cape Province in South Africa ( $n = 129$ ) responded to a questionnaire about their perception of personal and general risk regarding alcohol use during pregnancy. Three significant predictors of the perception of personal risk emerged: 1) the perception of risk posed by drinking during pregnancy to others; 2) knowledge of FASD; and 3) the perception of how easy it would be for the participant to quit drinking. There was no evidence that participants believed themselves to be less at risk compared to others when it came to the risks of alcohol use during pregnancy.

7. Lupattelli, A., Ronningen, E., Krosgrud, S. K., Nordeng, H., & Ystrom, E. (2018). Personality and its relation to the use of alcohol and cigarettes during pregnancy: A multinational study. *Journal of Health Psychology*. Advance online publication. doi: 10.1177/1359105318775194

Using a cross-sectional, multinational, web-based questionnaire, the authors of this study investigated the impact of women's personality on alcohol use and smoking habits both before and during pregnancy. Data was collected from 9,187 women from 18 countries, which included information on maternal personality traits, background information, as well as alcohol use and cigarette smoking. Personality was assessed using the Big Five Inventory, which captures core elements of the personality dimensions neuroticism, extraversion, openness to experience, agreeableness and conscientiousness. High conscientiousness and agreeableness emerged as protective factors against alcohol consumption during pregnancy. Additionally, highly extroverted women were more likely to consume medium to high amounts of alcohol (10-17% increased odds) and high neuroticism increased odds continued smoking during pregnancy (16% increased odds). The authors suggest that personality, as well as country of residence, may impact prenatal and postnatal care.

8. Mpelo, M., Kibusi, S. M., Moshi, F., Nyundo, A., Ntwenya, J. E., & Mpondo, B. C. T. (2018). Prevalence and factors influencing alcohol use in pregnancy among women attending antenatal care in Dodoma Region, Tanzania: A cross-sectional study. *Journal of Pregnancy*, 2018, 1-7. <https://doi.org/10.1155/2018/8580318>

See abstract above

9. Pati, S., Chauhan, A. S., Mahapatra, P., Hansdah, D., Sahoo, K. C., & Pati, S. (2018). Weaved into the cultural fabric: A qualitative exploration of alcohol consumption during pregnancy among tribal women in Odisha, India. *Substance Abuse Treatment, Prevention, and Policy*, 13. <https://doi.org/10.1186/s13011-018-0146-5>

The authors of this qualitative study investigated the perceptions and beliefs among tribal women and the larger community in Odisha, India, where alcohol misuse among women is common. Using in-depth interviews and focus groups, the authors explored perceptions about alcohol consumption during pregnancy. The results suggest that a complex interaction of factors contribute to the consumption of alcohol by pregnant women. The consumption of alcohol during pregnancy could be attributed to: 1) a lack of social monitoring; 2) easy access to alcohol; 3) low alcohol literacy; 4) alcohol's normalcy in daily customs and traditions; and 5) the community-wide perception that home-made alcohol does not pose any risk. The results of this study show that alcohol consumption is deeply embedded in the daily rituals of tribal women in Odisha, India, and specific cultural-based interventions are required to address the needs of this population.

- 10. Petersen-Williams, P., Mathews, C., Jordaan, E., & Parry, C. D. H. (2018). Predictors of alcohol use during pregnancy among women attending midwife obstetric units in the Cape Metropole, South Africa. *Substance Use & Misuse*, 53(8), 1342-1352. <https://doi.org/10.1080/10826084.2017/1408654>**

Using a cross-sectional survey design, this study explored the predictors of alcohol use among pregnancy women in 11 Midwife Obstetric Units in Cape Town, South Africa. Pregnant women were screened to assess for self-reported prevalence rates of alcohol consumption during pregnancy. Of these 5,231 women, 684 were sub-sampled and completed both an interviewer administered questionnaire and provided a urine sample for comparison. Independent predictors of alcohol consumption during pregnancy included: being a person of colour; having a marital status other than married; experiencing violence or aggression in the past 12 months; having a partner who drinks; and partner drug use. When considering the sub-sample of women, only partner tobacco use was independently associated with higher odds of biologically validated alcohol consumption. Being aware of the risk factors associated with alcohol consumption during pregnancy is important for tailoring appropriate interventions that accurately identify women in need of support.

- 11. Scholin, L., Hughes, K., Bellis, M. A., Eriksson, C., & Porcellato, L. (2018). Exploring practices and perceptions of alcohol use during pregnancy in England and Sweden through a cross-cultural lens. *European Journal of Public Health*, 28(3), 533-537. [doi:10.1093/eurpub/ckx208](https://doi.org/10.1093/eurpub/ckx208)**

This qualitative study explored perceptions and practices of alcohol use during pregnancy through conducting semi-structured interviews with 21 parents in England and 22 parents in Sweden. The majority of women in both countries abstained from alcohol when they found out they were pregnant, despite alcohol being part of their social contexts before pregnancy. Most women believed they should modify their alcohol intake when they become mothers. Although several English parents argued that responsible motherhood did not necessarily equate to abstinence, Swedish parents held strong opinions against drinking any amount during pregnancy. Based on the interview findings, the authors discuss the important period before recognition of pregnancy; and suggest that it may be a priority to target women who plan to get pregnant with info about avoiding alcohol in the early stages, and choosing the different strategy of promoting increased contraception use for those not planning to get pregnant. They note that pregnancy can be teachable moment, when a redefinition of self and one's social role as a mother encourages behaviour change.

- 12. Schultz, K., Teyra, C., Breiler, G., Evans-Campbell, T., & Pearson, C. (2018). "They Gave Me Life": Motherhood and Recovery in a Tribal Community. *Substance Use & Misuse*, 53(12), 1965. [doi:10.1080/10826084.2018.1449861](https://doi.org/10.1080/10826084.2018.1449861)**

This study examined factors related to substance misuse and recovery among mothers in a Pacific Northwest tribe, with a focus on motherhood as a motivating factor in seeking treatment and sustaining recovery. Using community-based participatory research approach 20 in-depth interviews and one focus group ( $n = 12$ ) with American Indian women living on or near the reservation were conducted. Researchers identified four major themes related to the challenges, motivations and strategies for seeking treatment and recovery. These included: 1) the close relationship between interpersonal violence and substance misuse; 2) the importance of integrating traditional healing in treatment services; 3) the challenges to recovery in small communities; and 4) the motivating role of motherhood in seeking treatment and successful recovery. The authors note how pregnancy and motherhood may be underexplored factors in Native women's substance use. Implications for treatment and recovery among Native mothers in tribal communities were described including the necessity of trauma-informed treatment, community and culturally-based interventions, more integration of treatment services with Child Protective Services, and drawing on motherhood as a motivation for seeking and succeeding in recovery.

13. **Shrestha, U., Weber, T. L., & 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. doi:10.1111/acer.13837**

This study aimed to understand the context of American Indian women's use of alcohol in pregnancy, utilizing qualitative and quantitative data from the Oglala Sioux Tribe (OST) CHOICES Program, a tribally run public health program that aims to reduce alcohol-exposed pregnancy in the preconception period. Data on alcohol consumption patterns of 264 women were analyzed, including average drinks consumed daily, their choice of drinks (beer, whiskey, wine, etc.), how much money participants were spending on alcohol. In addition, qualitative data analysis was done on the decisional balance exercise of the CHOICES program (that looks at good things and not so good things about participants' drinking). Women reported drinking an average of 12 drinks daily, ranging between one and 86. Women drinking at home spent a median of \$4,320 per year and \$12,960 per year if drinking at a bar. More women reported drinking beer compared with other types of alcohol. Positive aspects of drinking identified by the women included escaping from problems, socializing, and relaxation. Negative aspects included impact on families and domestic violence. The study highlights the challenges encountered by Native women in their daily lives which influence their drinking, such as struggles with violence, peer pressure, financial burden, and depression, and brings attention to how the Oglala Sioux women who participated see the positive aspects of drinking as outweighing the negative aspects, and their drinking as a solution and not a problem.

14. **Specker, B. L., Wey, H. E., Minett, M., & Beare, T. M. (2018). Pregnancy Survey of Smoking and Alcohol Use in South Dakota American Indian and White Mothers. *American Journal of Preventive Medicine*, 55(1), 89-97. doi:10.1016/j.amepre.2018.03.016**

The data from a population-based survey was analysed to compare tobacco and alcohol use by American Indian and white populations of women in South Dakota. The survey was distributed 2-6 months postpartum to 1,814 South Dakota mothers having a live birth in 2014. Prevalence of self-reported smoking and alcohol use before and during pregnancy were calculated for American Indian and white mothers and adjusted odds ratios (AORs) were determined controlling for Hispanic status, marital status, age, education, and income. Smoking among American Indian mothers was similar to white mothers before and during pregnancy (AOR = 1.60, 95% CI: 0.95-2.67 and AOR = 0.67, 95% CI: 0.37-1.21, respectively). Among smokers, a higher percentage of American Indian mothers smoked less than six cigarettes/day than white mothers (AOR = 6.79, 95% CI: 3.21-14.35, before and AOR = 4.85, 95% CI: 1.08-21.7, during pregnancy), and American Indian mothers had greater odds of quitting (AOR = 3.60, 95% CI: 1.74-7.43). No difference in relapse rates by race were found (AOR = 0.57, 95% CI: 0.19-1.72). Alcohol consumption before pregnancy was lower among American Indian than white mothers (AOR = 0.53 95% CI: 0.30-0.94), but no differences by race in drinks/week among drinkers were observed. Rates of alcohol consumption during pregnancy and topics covered by healthcare providers during prenatal visits did not differ by race. The authors note they found no differences by race in smoking rates before or during pregnancy, and American Indian mothers who smoked were more likely to smoke fewer cigarettes and quit smoking during pregnancy than white mothers. Further, they observe that the lower levels of alcohol consumption before pregnancy by American Indian mothers challenges beliefs about higher alcohol consumption among American Indians compared with other races.

## C. Level 1 Prevention

1. Driscoll, D. L., Barnes, V. R., Johnston, J. M., Windsor, R., & Ray, R. (2018). A formative evaluation of two FASD prevention communication strategies. *Alcohol and Alcoholism, 53*(4), 461-469. doi:10.1093/alcalc/agx122

This study aimed to determine if placing FASD prevention messaging in women's restrooms in alcohol-serving establishments in Alaska and Yukon was effective in promoting informed alcohol consumption decisions by women who are or may become pregnant. An FASD prevention expert advisory panel (EAP) created a final intervention poster that was affixed to pregnancy test dispensers in eight sites and posted by itself in six sites. The poster consisted of three main messages: 1) alcohol use in pregnancy can cause life-long health issues for a child; 2) the probable health outcomes associated with FASD are significant and difficult to address; and, 3) a woman should be aware of her pregnancy status before consuming alcohol. The message included referral information and a link to the research survey. Differences in alcohol consumption, and knowledge and beliefs about FASD were gathered from survey participants at baseline ( $n = 2132$ ) and six-months later at follow-up ( $n = 1182$ ). Results showed that knowledge of FASD was improved among participants at baseline and at follow-up, but those in the dispenser group scored higher than those in the poster group at both baseline and follow-up. Forty-three women reported that they learned they were pregnant from the pregnancy tests dispensed. Alcohol consumption among pregnant women was lower at follow-up than at baseline. The authors state that this study shows it is feasible to promote informed decisions about alcohol consumption among women by placing prevention messages in women's restrooms, particularly when they are paired with pregnancy test dispensers.

2. Dumas, A., Toutain, S., Hill, C., & Simmat-Durand, L. (2018). Warning about drinking during pregnancy: lessons from the French experience. *Reproductive Health, 15*, 1-1. doi:10.1186/s12978-018-0467-x

In 2007 a compulsory warning was placed on every alcohol container in France recommending abstinence during pregnancy. In this cross-sectional study, researchers investigated if women in France are aware of the warning label and of the risks associated with drinking during pregnancy or breastfeeding. Telephone interviews were conducted with a representative sample of  $n = 3603$  pregnant or postpartum women to determine factors associated with awareness of the label and with knowledge of the risks. Using a structured questionnaire, researchers measured misconception of risks and lack of awareness of the warning label. Most (92%) of the women surveyed thought that drinking one or two alcoholic drinks daily during pregnancy could be harmful to a fetus with a higher percentage of drinkers (95%) endorsing this view than non-drinkers (89%). However, more drinkers (21%) than non-drinkers (15%) thought that an occasional drink was not considered as harmful. Most women (90%) thought that one binge drinking episode during pregnancy could be harmful. Overall, women with a higher level of education were more informed of the risks of drinking during pregnancy. Regarding awareness of the warning label, only 66% of the women had noticed the label. More drinkers than non-drinkers were aware of the label (77% versus 54%,  $p < .001$ ). Awareness was higher among more educated than less educated women (69% versus 60%,  $p < .001$ ). A large majority (99%) of those who noticed the label ( $n = 2382$ ) thought that it recommended abstinence as opposed to reduction of alcohol consumption. The authors contend that there is a need for additional communications strategies and efforts beyond the warning label, in particular to improve understanding of the concept of a "standard drink."

3. Hanson, J. D., & Weber, T. L. (2018). Commentary on Montag et al (2017): The importance of CBPR in FASD prevention with American Indian communities. *Alcoholism: Clinical and Experimental Research, 42*(1), 6-8. doi:10.1111/acer.13524

The authors comment on a journal article by Montag et al. (2017) that describes the value of Community-based Participatory Research (CNPR) in general, and prescribes the framework particularly in communities where research studies failed to recognize the cultural, historical, social and political contexts, which lead to misinterpretations and overgeneralizations. They note that the Montag team used several aspects CBPR framework in the course of their FASD prevention work with American Indian and Alaska Native (AI/AN) women in Southern California. Three aspects of the framework are credited with: 1) environmental characteristics – community based using holistic data gathering; 2)

structural characteristics – being mindful that focus groups include people who are comfortable together, and making sure tribal elders were present at every meeting or task group; and, 3) group dynamic characteristics – sharing leadership and influence for study design and processes and data collection locations. The authors conclude that CBPR is necessary in order to develop sustainable and culturally appropriate interventions.

- 4. Hobin, E., Vallance, K., Zuo, F., Stockwell, T., Rosella, L., Simniceanu, A., . . . Hammond, D. (2018). Testing the efficacy of alcohol labels with standard drink information and national drinking guidelines on consumers' ability to estimate alcohol consumption. *Alcohol and Alcoholism*, 53(1), 3-11. doi:10.1093/alcalc/agx052 084.2017.1408654**

Researchers tested the efficacy of alcohol labels using standard drinks (SD) and low-risk drinking guidelines (LRDGs) compared to current use of percent alcohol by volume (%ABV) as a way for consumers to estimate alcohol intake. Using a between-groups experiment, researcher conducted an online survey where participants ( $n = 2016$ ), nearly evenly divided by male and female, looked at six different labels. They were asked to estimate: 1) the amount in a SD; 2) the number of SDs in a container; and, 3) the number of SDs one could consume to reach the daily limit in Canada's LRDGs. The protocol was completed for a wine bottle, a "tall boy" can of beer, and a spirit's bottle. Measures of socio-demographics and drinking behaviour were included. Results showed an increase in accurate estimates (from 13% to 59%) of alcohol consumption across the beverage types. Further, 72% of females and 60% of males supported listing SD on alcohol labels. A lower percentage (59% females; 51% males) believed that LRDGs on the label would make them think about the number of drinks they consume. The researchers contend that this study shows evidence for changing the information on alcohol labels to show SD and LRDGs so that consumers can better understand national drinking guidelines and better estimate their consumption.

- 5. Mialon, M., & McCambridge, J. (2018). Alcohol industry corporate social responsibility initiatives and harmful drinking: A systematic review. *European Journal of Public Health*, 28(4), 664-673.**

The authors of this systematic review sought to identify and summarize what is known about corporate social responsibility initiatives undertaken by the alcohol industry with respect to harmful drinking globally. Within the alcohol industry, these initiatives typically focus on limiting the damage caused by alcohol and emphasize responsible drinking, voluntary regulation, and philanthropy. Twenty-one studies, published between 1984 and 2017, were included in this systematic review, and the authors identified five types of corporate social responsibility initiatives that are relevant to the reduction of harmful drinking: 1) alcohol information and education provision; 2) drunk driving prevention; 3) research involvement; 4) policy involvement; and 5) the creation of social aspects organizations. The findings of this review indicate that there is no strong evidence that alcohol industry corporate social responsibility initiatives reduce harmful drinking; however, these initiatives are used to frame the nature of alcohol-related issues in line with corporate interests. The authors argue that alcohol policy measures to reduce harmful drinking are urgently needed.

- 6. Pham, C., Rundle-Thiele, S., Parkinson, J., & Li, S. (2018). Alcohol warning label awareness and attention: A multi-method study. *Alcohol and Alcoholism*, 53(1), 39-45. doi: 10.1093/alcalc/agx087**

Alcohol warning messages have been designed as a means to reduce an individual's perceived susceptibility to the harms of excessive alcohol consumption. However, there is debate regarding the effectiveness and effects of warning labels on actual alcohol consumption. Previous research has suggested that the evaluation of these labels requires more than just awareness, given that labels may not be prominent enough to draw attention. Using an experimental design with four conditions, this study investigated the attention of current market alcohol warning labels in Australia. The four experimental conditions included control, colour, size, and colour and size, and attention was measured via self-report methods and eye-tracking. Eye-tracking indicated that 60% of participants looked at the current warning labels, while 81% of participants looked at the optimized design, which was larger, and red in colour. Self-report data also supported this finding. Therefore, the current study sheds doubt on the dominant practices that have been used to evaluate alcohol warning labels, and the authors suggest that attention should be integrated as a measure in warning label effectiveness evaluations.

- 7. Subbaraman, M. S., Thomas, S., Treffers, R., Delucchi, K., Kerr, W. C., Martinez, P., & Roberts, S. C. M. (2018). Associations Between State-Level Policies Regarding Alcohol Use Among Pregnant Women, Adverse Birth Outcomes, and Prenatal Care Utilization: Results from 1972 to 2013 Vital Statistics. *Alcoholism, clinical and experimental research*, 42(8), 1511-1517. doi:10.1111/acer.13804**

This study assessed the impact of state-level policies targeting alcohol use during pregnancy on birth outcomes. The study involved secondary analyses of birth certificate data from  $n = 148,048,208$  singleton births in the USA between 1972 and 2013. The researchers looked at eight policies in effect during gestation: 1) Mandatory warning signs (MWS); 2) Priority treatment for pregnant women; 3) Priority treatment for pregnant women/Women with children; 4) Reporting requirements for data and treatment purposes; 5) Prohibitions against criminal prosecution; 6) Civil commitment; 7) Reporting requirements for child protective services purposes and 8) Considering alcohol use during pregnancy child abuse/child neglect. Six birth outcomes: 1) Low birthweight ( $<2,500$  g); 2) Premature birth ( $<37$  weeks); 3) Any prenatal care utilization (PCU); 4) late PCU; 5) inadequate PCU; and 6) Normal ( $\geq 7$ ) APGAR score). Of the eight policies, six were significantly related to worse outcomes and two were not significantly related to any outcomes. The mandatory warning signs policy was related to the most outcomes. Notably, living in a state that defined alcohol use during pregnancy as child abuse or neglect had increased odds of low birthweight ( $OR = 1.06$ , 95% CI: 1.02-1.10), having a premature birth ( $OR = 1.09$ , 95% CI: 1.04-1.14) and a lower odds of obtaining prenatal care ( $OR = 0.87$ , 95% CI: 0.76-1.00) than women in states without these policies. The authors conclude that most policies targeting alcohol use during pregnancy do not have their intended effects and are related to worse birth outcomes and less prenatal care utilization.

- 8. Yzer, M., Han, J., & Choi, K. (2018). Eye Movement Patterns in Response to Anti-Binge Drinking Messages. *Health Communication*, 33(12), 1454-1461. doi:10.1080/10410236.2017.1359032**

This research mapped viewing patterns of 50 college students (25 men and 25 women) in response to a set of anti-binge drinking print messages using eye-tracking methodology, to understand what the students attended to in the messages, and if there were gender differences. Results showed that participants primarily viewed faces of persons portrayed in the messages, as well as alcohol use cues and cryptic one-liners. The textual components of the campaign messages (e.g., information about consequences of heavy drinking) were viewed infrequently and briefly. Viewing patterns were associated with perceptions of message effectiveness, but more so for women than for men. Men viewed anti-binge drinking message components more often and longer than women. These findings suggest that when message recipients view health messages, they may attend primarily to a subset of components that do not necessarily convey the full message. The authors note that this stands in contrast to how research on health message effects commonly assumes that message recipients attend to both visual and textual components.



## D. Level 2 Prevention

1. **Andler, R., Cogordan, C., Pasquereau, A., Buyck, J.-F., & Nguyen-Thanh, V. (2018). The practices of French general practitioners regarding screening and counselling pregnant women for tobacco smoking and alcohol drinking. *International Journal of Public Health*. doi:10.1007/s00038-018-1103-9**

Researchers conducted a two-part survey with a representative sample of French general practitioners (GPs,  $n = 1414$ ) regarding alcohol and tobacco use screening and brief interventions with pregnant women. They gathered sociodemographic information about the physicians along with characteristics of their overall practice and their personal consumption of alcohol and tobacco. Researchers found 82% of GPs reported they screened for tobacco, and 61% screened for alcohol at least once with each pregnant patient. More recently trained GPs and those with higher self-efficacy in dealing with substance use issues were more likely to advise quitting substances during pregnancy. GPs who regularly consumed alcohol were less likely to screen for alcohol use. As well, GP frequency of alcohol use and status as a current or former smoker were both inversely related to recommending quitting. The authors conclude that GPs' practice related to alcohol and tobacco screening and counselling was linked to their personal consumption of alcohol and tobacco. They suggest examination of personal consumption by GPs as well as modification of their initial and ongoing professional training.

2. **Balachova, T., Sobell, L. C., Agrawal, S., Isurina, G., Tsvetkova, L., Volkova, E., & Bohora, S. (2018). Evaluating alcohol use among Russian women at risk for an alcohol-exposed pregnancy: A comparison of three measures of alcohol use. *Journal of Ethnicity in Substance Abuse*, 17(3), 324-334. doi:10.1080/15332640.2016.1201717**

Researchers conducted a secondary data analysis of three measures of alcohol use among Russian-speaking women: The reliability and absolute differences of two brief summary measures – the Quick Drinking Screen (QDS), and Alcohol Use Disorders Identification Test (AUDIT) – were compared with the Timeline Followback (TLFB), a detailed drinking measure. Data from  $n = 689$  Russian women, who were heavy drinkers, was reviewed. Results corresponded to study data from an earlier study of English-speaking women. Although there were statistically significant differences between five of the six variables of the measures, there were no major absolute differences. The researchers conclude that when detailed data about drinking cannot be obtained or is not needed, the QDS and the AUDIT can be used as a reliable and routine brief alcohol screening tool in clinical settings to improve identifying women at risk for alcohol-exposed pregnancy (AEP). Given the high risk of AEP among Russian women, clinicians now have expanded tools.

3. **Ingersoll, K., Frederick, C., MacDonnell, K., Ritterband, L., Lord, H. Jones, B., & Truwit, L. (2018). A pilot RCT of an internet intervention to reduce the risk of alcohol-exposed pregnancy. *Alcoholism: Clinical and Experimental Research*, 42(6), 1132-1144. doi: 10.1111/acer.13635**

This study compared the Contraception and Alcohol Risk Reduction Internet Intervention (CARRII) to a static patient education website regarding their effect on alcohol-exposed pregnancy risk. CARRII is a fully automated internet intervention that includes dynamic, interactive, and response elements to mimic a therapist-patient face-to-face intervention. This intervention includes six core topics: 1) Overview; 2) Your Risk of Alcohol-Exposed Pregnancy; 3) Contraception; 4) Drinking; 5) Thoughts and Decisions; and 6) Commit to It! Outcomes were measured posttreatment, and at six months follow up. Participants in the CARRII group showed significant reductions in the rate of unprotected sex (90% pretreatment to 71% posttreatment,  $p < .04$ ), risky drinking (75% pretreatment to 50% posttreatment,  $p < .02$ ), and the rate of alcohol exposed pregnancy risk (67% pretreatment to 32% posttreatment,  $p = .001$ ). The participants in the static patient education website group showed no significant changes from pretreatment to posttreatment or six-month follow-up on any of the three outcomes. The authors conclude that the results of this study demonstrate CARRII as a feasible and promising intervention to reduce the risk of alcohol-exposed pregnancies.

4. Irvine, L., Crombie, I. K., Swanson, V., Dimova, E. D., Melson, A. J., Fraser, T. M., ... Allan, S. (2018). Design and feasibility testing of a novel group intervention for young women who binge drink in groups. *PLoS One*, 13(3). <https://doi.org/10.1371/journal.pone.0193434>

This study describes the development of a group-based intervention aimed at reducing binge drinking among young women, aged 18-35, in the United Kingdom. Twenty-four friendship groups of women ( $n = 97$ ), who reported two or more episodes of binge drinking together in the previous 30 days, were recruited from the community and completed a face-to-face group intervention across three sessions: 1) promoting motivation/intention to change; 2) setting goals, developing implementation, intentions, and action plans; and 3) coping plans, relapse prevention, and habit formation. A follow-up was conducted with women four months after the intervention. The participating women engaged positively with the intervention components and made collective group decisions about cutting down their alcohol use. The findings of this study provide a novel approach for delivering alcohol interventions that may help to reduce binge drinking patterns among young women.

5. Martino, S., Ondersma, S. J., Forray, A., Olmstead, T. A., Gilstad-Hayden, K., Howell, H. B., ... Yonkers, K. A. (2018). A randomized controlled trial of screening and brief interventions for substance misuse in reproductive health. *American Journal of Obstetrics & Gynecology*, 218(322), e1-12. <https://doi.org/10.1016/j.ajog.2017.12.005>

The purpose of this study was to determine whether screening, brief intervention, and referral to treatment (SBIRT) delivered either electronically or by a clinician are more effective compared to traditional care when it comes to decreasing days of primary substance use. This study was a randomized controlled trial that assigned women to three groups: e-SBIRT ( $n = 143$ ), clinician-delivered SBIRT ( $n = 145$ ), or an educational pamphlet coupled with existing treatment resources (control condition,  $n = 151$ ). The women in this study were assessed at baseline and at one, three, and six months after baseline. Both e-SBIRT and SBIRT significantly reduced the days of primary substance use over the follow-up period compared to the control group. The findings of this study indicated that treatment use did not differ between groups, and neither the e-SBIRT or the clinician-delivered SBIRT resulted in more treatment use compared to the control condition. The results of this study highlight that the mode in which the SBIRT was delivered did not appear to influence outcomes, which reinforces existing findings that the use of SBIRT can lead to a reduction in substance use.

6. Mitchell, A. M., King, D. K., Kameg, B., Hagle, H., Lindsay, D., Hanson, B. L., ... Knapp E. (2018). An environmental scan of the role of nurses in preventing fetal alcohol spectrum disorders. *Issues in Mental Health Nursing*, 39(2), 151-158. doi: 10.1080/01612840.2017.1384873

As a trusted health professional, nurses are in an ideal position to identify and address at-risk alcohol use and to potentially prevent alcohol exposed pregnancies. The authors of this study conducted an environmental scan of resources relevant to the nursing profession and to the nurses' role in addressing alcohol misuse, which included published literature, professional association websites, and position statements. Four themes emerged from a secondary data analysis of the resources from the environmental scan: 1) Evidence for effectiveness of nursing interventions; 2) Nursing professionals' knowledge, skills, and attitudes; 3) Nursing professionals' barriers to addressing at-risk alcohol use; and 4) Identified gaps, opportunities, and implications for practice. The results of this study suggest that nursing practice guidelines, education, and the uptake of evidence-based practices are opportunities for increased focus within this professional population.

7. Moyer, C. L., Johnson, S., Klug, M. G., & Burd, L. (2018). Substance use in pregnant women using the emergency department: Undertests and overlooked? *Western Journal of Emergency Medicine*, 19(3), 579-584. doi: 10.5811/westjem.2018.1.35630

The authors of this study investigated whether pregnant women visiting the emergency department at a single community hospital in North Dakota from 2010 to 2016 were tested for substance use as frequently as non-pregnant women. Testing included blood, urine, hair, or breathalyzer readings for alcohol, amphetamines, barbiturates, benzodiazepines, cannabis, cocaine, or opioids. The authors compared rates of testing for substance use by pregnancy status for  $n = 61,222$  emergency

department visits by women of childbearing age (ages 11-50). Of the  $n = 57,360$  non-pregnant women, 4% were tested for substance use. In comparison, of the  $n = 3,862$  pregnant women, only 1% were tested for substance use. Overall, pregnant women presenting to this specific emergency department were 75% less likely to be tested for drug or alcohol use compared to non-pregnant women. The authors concluded that increased attention to the screening of pregnant women for substance use may be warranted to provide adequate care and intervention to this population.

**8. Præstegaard, C., Kesmodel, P. S., & Kesmodel, U. S. (2018). Is TWEAK a valid screening questionnaire to identify alcohol risk drinkers among pregnant women in Denmark? *Acta Obstetrica et Gynecologica Scandinavica*, 97(4), 483-490. doi:10.1111/aogs.13314**

This study tested the validity of the TWEAK screening tool to identify alcohol risk drinkers among pregnant Danish women. Women referred to two hospitals for routine antenatal care were invited to participate in the study at their first visit. The women were interviewed about their drinking periconception, their current drinking habits (average weekly alcohol consumption and binge drinking) and asked the questions in the TWEAK questionnaire. The researchers found that the sensitivity of TWEAK to identify periconception risk drinking was quite low, but its ability to identify risk drinkers during pregnancy was marginally higher. Overall, they found the following factors increased the risk of a high-risk pregnancy: older age ( $OR = 1.46$ , 95% CI: 0.95–2.23), current smoking ( $OR = 2.33$ , 95% CI: 1.63–3.33), being single ( $OR = 2.38$ , 95% CI: 1.38–4.11) and a TWEAK score with a cut-off score of  $\geq 1$  ( $OR = 2.75$ , 95% CI: 2.02–3.76). The authors conclude that In a Danish setting, TWEAK does not seem as an optimal screening tool to identify periconception risk drinkers, but it may be useful in identifying high-risk drinking during pregnancy.

**9. Reid, E., & McStay, P. (2018). Development of an alcohol liaison midwifery service in a health Trust in Northern Ireland. *British Journal of Midwifery*, 26(3), 158-163. doi:10.12968/bjom.2018.26.3.158**

This article describes the work of an alcohol liaison midwifery service in Northern Ireland, where an enhanced approach to identifying alcohol use in pregnancy was developed, in the context of new UK guidelines advising zero alcohol use in pregnancy. The authors describe how the aims of the midwifery-based service, to identify and support pregnant women with current drinking in pregnancy and past alcohol misuse were achieved through both brief and longer-term intervention/support. They also note that when coordinating care for women who drink at risk levels who have more complex needs, it was important for the service to link with a variety of health and social care organizations, including having a close working relationship between addiction and maternity services.

**10. Reid, N., Gamble, J., Creedy, D. K., & Finlay-Jones, A. (2018). Benefits of caseload midwifery to prevent fetal alcohol spectrum disorder: A discussion paper. *Women and birth: Journal of the Australian College of Midwives*. doi:10.1016/j.wombi.2018.03.002**

This paper discusses the role of caseload midwifery as part of a multi-level prevention approach. The authors draw on previous research, to make the case that caseload midwifery has potential to support the prevention of fetal alcohol spectrum disorder through continuity of care. In FASD prevention they note the importance for women of experiencing a supportive relationship with a known midwife, who has received appropriate training and can enable women to feel comfortable in discussing and addressing alcohol use.

**11. von Sternberg, K., DiClemente, C. C., & Velasquez, M. M. (2018). Profiles of behavior change constructs for reducing alcohol use in women at risk of an alcohol-exposed pregnancy. *Psychology of Addictive Behaviors*, 32(7), 749-758. doi:10.1037/adb0000417**

This study examined process of change profiles associated with reduced drinking on the part of women at risk of an alcohol-exposed pregnancy, using a subset of data from a randomized controlled trial of Project CHOICES (that tested an intervention to prevent alcohol-exposed pregnancies). Participants ( $n = 570$ ) were women at risk of an alcohol-exposed pregnancy recruited from high risk settings. Profile analyses compared end of treatment profiles for women who reduced drinking (changers) with women who continued to drink at risk levels (non-changers) at the 9-month follow-up. The

elements which were examined included: pros and cons for change, confidence to reduce drinking, and temptation to drink above risk levels. Changers reported greater pros ( $p < .001$ ) and lower cons for change ( $p = .012$ ), greater confidence ( $p = .030$ ), lower temptation ( $p < .001$ ) and greater use of the experiential ( $p < .001$ ) and behavioral processes of change ( $p < .001$ ) as described in the Transtheoretical model. A larger percentage of the women from the CHOICES intervention were in the end-of-treatment profile of the changers (48%) compared with the control condition (39%;  $p = .042$ ). The authors conclude that interventions can potentially be enhanced by clinicians' understanding what successful change 'looks like' for specific clients in terms of their process use, decisional balance, and self-efficacy, allowing for tailored interventions targeted to each client's specific strengths and deficits.

## E. Preconception interventions

1. **Goossens, J., Beeckman, D., Van Hecke, A., Delbaere, I., & Verhaeghe, S. (2018). Preconception lifestyle changes in women with planned pregnancies. *Midwifery*, 56, 112-120. doi:10.1016/j.midw.2017.10.004**

Researchers conducted a cross-sectional study to compare preconception lifestyle changes and characteristics of women attending six Flemish Hospitals (Belgium) with a planned pregnancy ending in birth in ( $n = 430$ ) using multiple regression analysis. They also wanted to identify any adverse pregnancy outcome risk factors associated with not making changes, and to assess the need for pre-conception advice. Data was obtained through participant self-report and medical records. Changes assessed were: folic acid/multivitamin intake, alcohol reduction/cessation, smoking reduction/cessation, caffeine reduction/cessation, eating more healthily, attaining a healthier weight, getting medical/health advice, or another self-reported preconception lifestyle change. Of the participants, 83% reported one or more preconception lifestyle changes. Those experiencing financial difficulties ( $OR = 0.20$ , 95% CI: 0.04-0.99) and those with lower levels of education ( $OR = 0.56$ , 95% CI: 0.32-0.99) were less likely to report preconception lifestyle changes. Previous miscarriage ( $OR = 2.44$ , 95% CI: 1.14-5.21) or nulliparity ( $OR = 2.18$ , 95% CI: 1.23-3.87) increased the likelihood of making preconception lifestyle changes. Taking folic acid or multivitamins was the most common lifestyle change (75%), and dietary and body weight changes were the least common (12-18%). Three quarters (76%) of women reported consuming alcohol before considering pregnancy, and only 45% of those stopped or reduced during the preconception period. Women of lower socio-economic status and multiparous women were less likely to report preconception lifestyle changes.

2. **Poels, M., van Stel, H. F., Franx, A., & Koster, M. P. H. (2018). The effect of a local promotional campaign on preconceptional lifestyle changes and the use of preconception care. *The European Journal of Contraception and Reproductive Health Care*, 23(1), 38-44. doi:10.1080/13625187.2018.1426744**

This study investigated the effect of a local promotional campaign on preconception lifestyle changes and the use of preconception care in a community midwifery practice in the Netherlands over a one-year period (February 2015-16). Two approaches were used: 1) a promotional campaign for couples who wish to conceive and 2) a preconception care pathway for health care providers. Questionnaires were collected from a sample of women who received antenatal care in the preintervention ( $n = 283$ ) and postintervention ( $n = 257$ ) period. Women in the intervention were significantly more likely to make at least one lifestyle change during the preconception period ( $AOR = 1.56$ , 95% CI: 1.02–2.39). In particular, they were more likely to reduce or quit their alcohol consumption ( $AOR = 1.72$ , 95% CI: 1.05–2.83). A related (although non-significant) outcome was that women who were exposed to the intervention appeared to more often prepare themselves for pregnancy by means of independently searching for preconception health information ( $AOR = 1.13$ , 95% CI: 0.77–1.65) or consulting a health care provider regarding planning to conceive ( $AOR = 1.24$ , 95% CI: 0.81–1.92). The authors conclude that exposure to a local promotional campaign targeted at preconception health was associated with improved preconception lifestyle behaviours, especially with regard to alcohol consumption, and has the potential to improve the use of preconception care.

## F. Level 3 Prevention

1. **Andrews, N. C. Z., Motz, M., Pepler, D. J., Jeong, J. J., & Khoury, J. (2018). Engaging mothers with substance use issues and their children in early intervention: Understanding use of service and outcomes. *Child Abuse & Neglect*, 83, 10-20. doi:10.1016/j.chiabu.2018.06.01**

The researchers evaluated the service use of women enrolled in an integrated, multi-sectoral intervention program for mothers with substance use issues, that employs a multi-level relational approach to build healthy relationships across all levels of service development and delivery. Women ( $n = 168$ ) were recruited from a larger longitudinal study of services at the Breaking the Cycle (BTC) program in Toronto, Canada. Of those enrolled, 98% of the women were involved with child protective services. Most reported polysubstance use with crack cocaine (33%) and alcohol (26%) reported primarily problematic, and cannabis (28%) and alcohol (26%) secondarily problematic. Study measurements included: service usage; treatment readiness; early engagement (antenatal enrolment); reason for service ending; custody at service ending; change in custody; and, counsellor ratings. Results showed duration of service was 49% 1-12 months; 25% 13-24 months; 13% 25-36 months; and 13% longer than 24 months. Women who were referred to BTC through pregnancy outreach (early engagement) attended a greater number of women-focused services ( $F(3, 91) = 3.64, p = .02$ ) and accessed a greater number of services overall ( $F(3, 156) = 6.79, p < .001$ ). Women who ended service because goals had been met had the highest duration of service. As well, they had the highest service usage of women-focused services, parent-child focused services, and group services. Custody at service ending and custody change to "mother" were related to longer duration of service and greater range of services. Authors contend these positive outcomes support a multi-level relational approach to service.

2. **Chou, J. L., Pierce, K. J., Pennington, L. B., Seiler, R., Michael, J., Namara, D. M., & Zand, D. (2018). Social Support, Family Empowerment, Substance Use, and Perceived Parenting Competency during Pregnancy for Women with Substance Use Disorders. *Substance Use & Misuse*, 53(13), 2250-2256. doi:10.1080/10826084.2018.1467456**

Although research has linked parenting self-efficacy with positive parent and child outcomes overall, little empirical data exists on parenting self-efficacy among pregnant women with substance use disorder (SUD). The authors sought to understand which factors predicted parenting self-efficacy with pregnant women entering substance use treatment. Using a quantitative cross-sectional design, the study looked at the roles of substance use, social support, and family empowerment in relation to parental self-efficacy of 71 women in a gender-specific, residential and comprehensive SUD treatment centre. The program uses a family empowerment model with enhanced services. Women were allowed to remain in the residential facility for up to 12 months with their dependent children up to age 11. Six measurement tools were administered to participants including a demographic questionnaire. No statistical correlations were found between demographic variables and independent or dependent variables in the study. Results from the Addiction Severity Index-5 showed drug severity ranged from .00 to .49 and alcohol severity ranged from .00 to .90. Further results showed positive correlations between parental efficacy and both social support ( $r = .223, p < .05$ ) and family empowerment ( $r = .328, p < .05$ ) as well as between social support and family empowerment ( $r = .256, p < .05$ ). The authors note that women who received family therapy were four times as likely to maintain abstinence. Further they state that their findings suggest that relational functioning is predictive of maternal self-efficacy. They recommend that treatment centres understand the complexities faced by women who are pregnant and use substances, and offer integrated parenting classes that include service delivery systems navigation skills.

3. **Edwards, A. C., Ohlsson, H., Svikis, D. S., Sundquist, J., Sundquist, K., & Kendler, K. S. (2018). Protective Effects of Pregnancy on Risk of Alcohol Use Disorder. *American Journal of Psychiatry*, appi.ajp.2018.2011. doi:10.1176/appi.ajp.2018.18050632**

In this study, researchers used Swedish national registries to examine the potential causal association between alcohol use disorder (AUD) and pregnancy. Using a range of analytics to clarify the association, they looked at rates of AUD in pregnant women relative to a matched population-based control. The longitudinal nature of the registries allowed for using women



as their own controls by comparing within-individual pregnancy and postpartum rates of AUD. This was done with fathers as well. Researchers also accounted for unmeasured genetic and environmental factors shared among siblings and cousins. Results showed that pregnancy is inversely associated with AUD across all the analyses. Rates of AUD were lower among pregnant women than among matched control women ( $OR = 0.32$ , 95% CI: 0.27- 0.37) and that the odds of AUD registration was reduced by 74% among pregnant women. This negative association was especially pronounced among women who became pregnant at an earlier age and those with a history of criminal behaviour. Pregnancy is associated with reduction of alcohol use among partners, and even when there exists a strong genetic component to AUD. The authors note a number of study limitations but conclude that pregnancy plays a critical motivational role in reducing AUD risk among women that can broaden possibilities for intervention in AUD treatment.

**4. Fergie, L., Campbell, K. A., Coleman-Haynes, T., Ussher, M., Cooper, S., & Coleman, T. (2018). Identifying Effective Behavior Change Techniques for Alcohol and Illicit Substance Use During Pregnancy: A Systematic Review. *Annals of behavioral medicine*. doi:10.1093/abm/kay085**

Researchers conducted a systematic review of randomized controlled trials (RCTs) in order to identify specific behaviour change techniques (BCTs) that had been used in “effective” interventions for reducing alcohol use or achieving abstinence from illicit drug use during pregnancy. The researchers were also interested in what extent psychosocial-based theories were used to design the overall intervention. An “effectiveness percentage” was calculated for identified BCTs based on the number of times it had been a component of an effective intervention divided by the total number of interventions using that BCT. Based on its theoretical underpinnings, Motivational Interviewing it was considered a theory rather than a technique in this review. Of the articles identified, following screening for duplicates and study eligibility, only nine out of 376 were included for alcohol reduction and six out of 298 were included for illicit drug abstinence. Within this qualitative synthesis, 13 potentially effective BCTs were identified for alcohol consumption behavioural change interventions; there were no effective behavioural change interventions for illicit drug use. Researchers found that some BCTs ( $n = 13$ ) could be useful in achieving reduction of alcohol consumption during pregnancy. Based on effectiveness percentages they include: 100% – action planning, behavioural contract, prompts/cues, self-talk, and offer/direct toward written material; 67% – problem solving, behavioural feedback, social support, information about health consequences, behaviour substitution, and assess current readiness/ability to reduce alcohol consumption; and 50% – goal setting, tailor interactions appropriately.

**5. Geraghty, S., Doleman, G., & De Leo, A. (2018). Midwives' attitudes towards pregnant women using substances: Informing a care pathway. *Women and birth: journal of the Australian College of Midwives*. doi:10.1016/j.wombi.2018.09.007**

Researchers in Australia conducted a mixed methods study to understand midwives' attitudes toward pregnant women who use substances and as a means to develop an integrated care plan for women whose pregnancies are complicated by substance use. Fifteen registered midwives participated in a survey (quantitative component), and eleven participated in interviews and focus groups (qualitative component) for a total of 26 participants. Findings showed that overall midwives have a neutral or positive view of women who use substances during pregnancy. Mean attitude scores were compared by demographic variables as well. The most positive attitudes towards women included: those with a bachelor degree or hospital certificate; those working in their role for 1-2 years; those in the 30–49-year age group; and those working full time. The authors conclude that this study highlights the fact that midwives see the need for screening, intervention and treatment of pregnant women using substances and that they support developing integrated care pathways in maternity services.

**6. Krahn, J., Caine, V., Chaw-Kant, J., & Singh, A. E. (2018). Housing interventions for homeless, pregnant/parenting women with addictions: A systematic review. *Journal of Social Distress and the Homeless*, 27(1), 75-88. <https://doi.org/10.1080/10530789.2018.1442186>**

Women experiencing homelessness are significantly more likely to become pregnant compared to women who are housed. Previous research has also identified that women who are homeless, including those who are pregnant or parenting, have high rates of substance use (e.g., alcohol and/or drug dependence). Housing interventions have been identified as crucial in

addressing the multifaceted needs of pregnant and/or early parenting homeless women with addictions and in improving the life outcomes of these women and their children. The authors of this systematic review aimed to identify which housing models and programs for pregnant/early parenting women produce the best outcomes (e.g., stability, mental health, substance use). Eight articles describing four distinct studies were included in this review. While there are notable limitations of the included studies, overall, improved outcomes were demonstrated for all intervention groups with models that favoured Housing First (i.e., rapid access to housing regardless of readiness) and case management approaches. Further research is needed to develop evidence-based practice guidelines to address the unique needs of this particular population.

7. **Latuskie, K. A., Leibson, T., Andrews, N. C. Z., Motz, M., Pepler, D. J., & Ito, S. (2018). Substance use in pregnancy among vulnerable women seeking addiction and parenting support. *International Journal of Mental Health and Addiction*. Advance online publication. <https://doi.org/10.1007/s11469-018-0005-7>**

See abstract above.

8. **Latuskie, K. A., Leibson, T., Andrews, N. C. Z., Motz, M., Pepler, D. J., & Ito, S. (2018). Substance use in pregnancy among vulnerable women seeking addiction and parenting support. *International Journal of Mental Health and Addiction*. Advance online publication. <https://doi.org/10.1007/s11469-018-0005-7>**

See abstract above.

9. **Myra, S. M., Ravndal, E., Torsteinsson, V. W., Øfsti, A. K. (2018). Pregnant substance abusers in voluntary and coercive treatment in Norway: Therapists' reflections on change processes and attachment experiences. *Journal of Clinical Nursing*, 27, e959-e970. doi: 10.1111/jocn.14067**

Using a qualitative discourse analysis approach, this study explored therapists' perspectives on treatment processes when working with pregnant women with substance use issues in voluntary and coercive treatment in Norway. Forty therapists from four different residential units participated in focus groups that investigated how therapists' perspectives on change processes and relationship experiences inform their clinical practice. The findings revealed that the dominant discourse among therapists was regarding how to start a "healthy" attachment process. Other identified themes included coercion, varieties of understanding attachment when the pregnant mothers had challenges with substance use, the mothers' own histories of attachment, and social and cultural challenges. The main finding of this study was that these therapists work systematically to help women develop attachment to their unborn child and that therapists' perspectives have implications for pregnant women with substance use challenges who are admitted to voluntary and coercive treatment.

10. **Polcin, D. L., Korcha, R., & Nayak, M. (2018). Development of intensive motivational interviewing (IMI) and modifications for treating women with alcohol use disorders. *Journal of Contemporary Psychotherapy: On the Cutting Edge of Modern Developments in Psychotherapy*, 48(2), 51-59. doi:10.1007/s10879-017-9370-y**

This paper describes a counselling approach for women with alcohol problems that is built on Motivational Interviewing practice. The paper integrates the literature on 1) how women have greater vulnerability to alcohol problems than men, 2) the usefulness of intensive (versus brief) motivational interviewing (IMI) with women and 3) Relational Theory as a conceptual framework for understanding IMI for women. It describes how a nine session intervention supports maximum flexibility by therapists to facilitate factors known to be important for women with substance use disorders, such as active facilitation of client-therapist collaboration, empowerment, and affirmation of strengths. The alignment with Relational Theory is that self-efficacy, self-esteem, and reduction in drinking are enhanced through interpersonal connections with others. This Intensive MI approach (IMI) initially developed for women with co-occurring methamphetamine and alcohol problems, and an ongoing longitudinal study assessing the effects of MI for women with alcohol problems is underway.

- 11. Tarasoff, L. A., Milligan, K., Le, T. L., Usher, A. M., & Urbanoski, K. (2018). Integrated treatment programs for pregnant and parenting women with problematic substance use: Service descriptions and client perceptions of care. *Journal of Substance Abuse Treatment*, 90, 9-18.  
doi:<https://doi.org/10.1016/j.jsat.2018.04.008>**

This study explored the services provided by 12 integrated treatment programs which comprehensively address the needs of pregnant and parenting women with problematic substance use, in Ontario Canada. The authors found that these integrated programs routinely provided substance use and mental health services, as well as childcare and support in women's interactions with the child welfare system. However, they differed in the range of other supportive services offered, that address other central needs of women, such as prenatal and primary care, therapeutic childcare, housing and transportation support. To gain insight into how services may or may not be promoting positive perceptions of care, the authors used survey data, to examine perceptions of care by  $n = 106$  clients within integrated treatment programs, compared to perceptions by  $n = 207$  clients in standard treatment programs, and in addition, analysed qualitative data for integrated program clients. They found that integrated treatment program clients perceive their care more positively than clients in standard treatment programs, and services provided impact on these perceptions. The authors comment on how clients specially mentioned the therapeutic relationship, non-judgmental attitudes (of both staff and other clients) and woman-centered and women-specific programming as being central to their experience.

## G. Level 4 Prevention

1. Grant, T. M., Graham, J. C., Carlini, B. H., Ernst, C. C., & Brown, N. N. (2018). Use of marijuana and other substances among pregnant and parenting women with substance use disorders: Changes in Washington state after marijuana legalization. *Journal of Studies on Alcohol and Drugs*, 79(1), 88-95. doi:10.15288/jsad.2018.79.88

The Parent-Child Assistance Program is a 3-year case management intervention program for pregnant and parenting women who use substances. In 2012, Washington State passed an initiative that allowed possession of up to one ounce of marijuana for nonmedical use for those 21 years old and over. Researchers for PCAP tested two hypotheses: 1) that an increase in marijuana use would be observed by women at 3-year exit of the program; and, 2) that marijuana use at exit would be associated with a decrease in other drug and alcohol use. Data from  $n = 1,359$  participants was included in the study consisting of Cohort 1 ( $n = 997$ ) who completed the program before legalization, and Cohort 2 ( $n = 362$ ) who completed the program after legalization. Results showed that most participants reported abstinence from alcohol and non-prescription drugs on program exit. Of those who were still using substances, women in Cohort 2 were significantly more likely to report marijuana use at program exit than women in Cohort 1. For all women – both cohorts – there was a positive association between marijuana use on exit with alcohol and illegal drug use. Moreover, independent of marijuana use, increased use of alcohol, illegal methadone, and other opioids was seen during the post-legalization period. The authors note that although the study shows an association between marijuana use and other substances, it does not conclude that marijuana leads to other substance use among this sample of women.

## H. Other – stigma, ethical issues, systemic approaches

1. **Adebiyi, B. O., Mukumbang, F. C., Cloete, L. G., & Beytell, A.-M. (2018). Exploring service providers' perspectives on the prevention and management of fetal alcohol spectrum disorders in South Africa: a qualitative study. *BMC Public Health*, 18(1), 1-18. doi:10.1186/s12889-018-6126-x**

The authors conducted a series of focus groups to gather service provider perspectives to inform the development of guidelines to improve policy development regarding the prevention and management of FASD in South Africa. Thirteen institutions that offered FASD prevention or management services were included. Within those institutions, a total of 65 study participants participated in eight focus groups. Eligible participants were members of a multidisciplinary team and had at least five years' experience in either working with individuals diagnosed with FASD, service delivery to those affected by FASD, or prevention/intervention with women and families. Data was analyzed using the Framework Method and presented under the four categories: 1) Availability (lack) of policies/guidelines on FASD; 2) Development of guideline/policy document; 3) Current practices and available interventions; and, 4) Identified policy requirements for FASD. Although various policies to address the prevention and management of alcohol-related conditions exist, there is not a comprehensive approach that is coordinated, focused and multi-sectoral. Participants recognized the need for awareness programs, and education, training and support for parents, caregivers, and professionals. The authors describe policy efforts that are working in other countries and recommend that South Africa build upon current efforts to ensure that FASD prevention and management policies are coordinated and holistic.

2. **Badry, D., Coons-Harding, K.D., Cook, J., Bocking, A. (2018). Finding answers, improving outcomes: a case study of the Canada fetal alcohol spectrum disorder research network. *Advances in Dual Diagnosis*. <https://doi.org/10.1108/ADD-05-2018-0006>**

This paper describes the work of the Canada FASD Research Network (CanFASD) to encourage cross-disciplinary research, education and knowledge translation in support of FASD policy, practice and collaborative endeavors. The Network is a non-funding body. It began as a partnership between three northwest territories and four northwest provinces to support grassroots efforts by developing an inter-jurisdictional approach to support those affected by FASD. It now connects families, practitioners, students, researchers and stakeholders from all levels of community and government, and in all sectors. Network activities and projects fall into the priority areas of that reflect its cross-disciplinary approach: Diagnostics, Prevention, Intervention, Justice, and Child Welfare. The Network is committed to including all voices in its research and strives to disseminate knowledge and research about FASD to all through a variety of means including the CanFASD website. As well, the Network serves as a model for collaborative relationships, the value of networking and focused response to a significant public health issue.

3. **Brown, Q. L. (2018). The future of research in substance use and maternal and child health: An interview with Dr Victoria Coleman-Cowger, PhD. *Drug and Alcohol Dependence*, 182, 120-121. doi:10.1016/j.drugalcdep.2017.11.001**

Dr. Victoria Coleman-Cowger has conducted qualitative and quantitative research in the areas of women's health, mental health, health disparities and substance use. She has been funded by NIDA, NIAA, and is Task Lead on CDC- and FDA-funded projects. In this interview, she discusses the intersections for maternal child health and substance use, the greatest challenges to addressing it, early mentors, and advice to new investigators working to address these challenges. She recommends keeping up with new and emerging substances in order to understand their health implications. She identifies significant challenges in punitive policies toward pregnant women and in not understanding that substance use is inextricably linked with unmet mental health needs. As well, not all substances have the same effect on maternal and child health so it is important to understand the literature. She closes the interview by emphasizing the importance of keeping in mind a woman's perspective, of multi-level collaboration, of harm reduction, and of decriminalization of substance use.

4. Corrigan, P. W., Shah, B. B., Lara, J. L., Mitchell, K. T., Simmes, D., & Jones, K. L. (2018). Addressing the public health concerns of Fetal Alcohol Spectrum Disorder: Impact of stigma and health literacy. *Drug and Alcohol Dependence*, 185, 266-270. doi:10.1016/j.drugalcdep.2017.12.027

In this study, researchers examined public stigma toward women who drink during pregnancy and biological mothers of children affected by FASD, and how stigma affects endorsement of public health FASD priorities (FASD-PHP) set out by the U.S. Center for Disease Control and Prevention. Participants ( $n = 341$ ) completed a demographic questionnaire and a 10-item health literacy questionnaire. Following a brief description of FASD, they answered questions rating differences (similar, like, comparable) between a biological mother of a child compared to the general population, as well as disdain (not good, not respected, not favorable), followed by the same rating for women who consume alcohol during pregnancy. Finally, participants were asked to rate on a 1-8 scale their agreement with public health FASD priorities. Analyses tested intercorrelations among stigma, health literacy, and public health priorities. Among the results were that women who consumed alcohol during pregnancy (at risk) were perceived as more different ( $F(1339) = 46.92, p < .001$ ) and with more disdain ( $F(1339) = 28.28, p < .001$ ) than biological mothers of children with FASD. Men were more likely to rate both biological mothers and women at risk as “different”, but no gender differences were found in disdain ratings. Those participants endorsing difference and disdain more highly supported FASD-PHP. Women more highly supported FASD-PHP than men. Higher health literacy was positively associated with disdain ratings of both groups, and those with knowledge of FASD endorsed greater stigma towards both groups. The authors recommend research on how to change stigma and the effects of public education strategies on FASD-PHP.

5. Corrigan, P. W., Shah, B. B., Lara, J. L., Mitchell, K. T., Combs-Way, P., Simmes, D., & Jones, K. L. (2018). Stakeholder perspectives on the stigma of fetal alcohol spectrum disorder. *Addiction Research & Theory*. doi:10.1080/16066359.2018.1478413

The National Academy of Sciences published a report in 2016 concluding that stigma towards people with behavioral health challenges greatly restricts their life opportunities and health decisions. The report further called for research to identify and cross-validate discrimination, stereotypes and prejudice specific to labeled conditions. A Community Based Participatory Research (CBPR) team of nine stakeholders developed a study to: 1) identify stereotypes and prejudice of children with FASD and biological mothers; and, 2) identify discrimination that hinders them particularly in health care settings. Four 90-minute focus groups were conducted with 20 participants consisting of adults with FASD, biological mothers of children with FASD, other relatives of children with FASD, and pediatric health providers. As well, three individual key-informant interviews were conducted with obstetrical health providers. Research findings mapped to the generic model that describes public stigma – stereotyping (thoughts about), prejudice (emotional reaction to) and discrimination (actions towards). Qualitative analyses from focus groups returned themes that: distinguish *stereotypes* about biological mothers ( $n = 12$ ) from stereotypes about children with FASD ( $n = 11$ ); distinguish *prejudices* towards biological mothers from those towards children; and, describe *discrimination* of the health care system ( $n = 7$ ) toward those affected by FASD (biological mothers or children), as well as discrimination specific to biological mothers ( $n = 3$ ) and to children with FASD ( $n = 4$ ). Researchers state that these findings support the need for further quantitative research with a larger sample with the goal of better understanding stigma related to FASD and its effects, as well as informing the development of anti-stigma programs.

6. Gonzales, K. L., Jacob, M. M., Mercier, A., Heater, H., Nall Goes Behind, L., Joseph, J., & 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*. doi:10.1080/13557858.2018.1495320

See abstract above



7. **Key, K. D., Ceremony, H. N., & Vaughn, A. A. (2018). Testing two models of stigma for birth mothers of a child with fetal alcohol spectrum disorder. *Stigma and Health*. Advance online publication. <http://dx.doi.org/10.1037/sah0000134>**

Biological mothers face significant stigmatizing judgement for past behaviours that have contributed to their child's FASD. This study tested the usefulness of two models, the attribution model (AM) and the stereotype content model (SCM), in understanding the stigma of being a biological mother to a child with FASD. The AM sought to explain helping behaviours, whereas the SCM sought to explain active and passive facilitation of stereotypes. Undergraduate students ( $n = 267$ ) completed an online questionnaire where they were asked to rate attributions, stereotype content, emotions, and behaviour tendencies toward a biological mother of a child with FASD in terms of how they personally viewed this group. For the AM, biological mothers who were rated as higher in controllability (i.e., responsibility, blame) elicited fewer positive emotions, which in turn elicited less help. In the SCM, biological mothers who were rated as warmer and more competent elicited more admiration, which in turn elicited more facilitation behaviours. The results of this study provide further evidence regarding societal stigmatization of biological mothers of children with FASD and highlight the need to look beyond blame in order to support women and provide them, and their children.

8. **Parnell, S. E., Riley, E. P., Warren, K. R., Mitchell, K. T., & Charness, M. E. (2018). The contributions of Dr. Kathleen K. Sulik to fetal alcohol spectrum disorders research and prevention. *Alcohol*, 69, 15-24. <https://doi.org/10.1016/j.alcohol.2017.10.008>**

This review describes the contributions of Dr. Kathleen Sulik to the field of FASD based on her 35-year career studying FAS and FASD. This paper highlights Dr. Sulik's career in the field of FASD, including her contributions to teratology, embryology, and public education and FASD prevention. For example, Dr. Sulik's seminal work conclusively demonstrated that alcohol is the causative factor in FAS. Dr. Sulik has gone on to explore and define the stage-dependent effects of early gestational alcohol exposure on both the face and the brain, as well as the effects of developmental alcohol exposure on many bodily organs (e.g., heart, ears, kidneys, and limbs).

9. **Symons, M., Pedruzzi, R. A., Bruce, K., & Milne, E. (2018). A systematic review of prevention interventions to reduce prenatal alcohol exposure and fetal alcohol spectrum disorder in indigenous communities. *BMC Public Health*, 18(1). doi:10.1186/s12889-018-6139-5**

This systematic review updates the evidence for the effectiveness of FASD prevention interventions in Indigenous populations internationally. Prevention and intervention papers published in peer-reviewed scientific journals, with results, targeting prenatal alcohol exposure and FASD in Indigenous populations were identified. In the ten included studies, the authors found a range of populations targeted, study designs and outcomes. Populations targeted included non-pregnant women of child-bearing age, pregnant women, school children and the general public. Study designs included one randomised controlled trial, five cohort studies with pre-post design, one cross-sectional study with different pre- and post-intervention groups, and four studies which collected post-intervention data. Studies assessed changes in knowledge, and/or changes in risk for prenatal alcohol exposure including self-reported alcohol consumption, use of birth control or a combination of both. One study was conducted in Australia and nine in the USA. The methodological quality of all studies was rated as 'poor'. The authors conclude that overall, there is little evidence that previous interventions aiming to reduce the risk of prenatal alcohol exposure or FASD in Indigenous populations have been effective; and that future intervention studies should address the cultural factors and historical context that are fundamental to successful work with Indigenous populations, and be designed, implemented and evaluated using rigorous methods.

10. **Yang, Y., & Tang, L. (2018). Understanding women's stories about drinking: implications for health interventions. *Health Education Research*, 33(4), 271-279. doi:10.1093/her/cyy016**

This qualitative study examined stories women told about drinking on a blog: drinkingdiariesk.com. Eighty-nine stories categorized as 'in-depth, personal and insightful essays' were analysed. The following four narratives were identified about women's drinking in different stages in their lives: youth (narrative of good girl and narrative of bad girl), adulthood

(narrative of pleasure) and old age (narrative of sin). The authors discuss how women constructed their relationships with alcohol in these different life stages, in relation to traditional gender roles (conforming with or rebelling against these traditional roles). The authors suggest that an understanding of the gendered narratives of younger and older women with drinking problems, might inform future intervention campaigns about women's drinking, as well as social support programs.

## Summary of included studies by method and country of study

**Table 2: Included studies by method, country and page number**

| #   | Author                     | Title   | Method                                    | Country      | Page |
|---|----------------------------|---|---|--------------|------|
| <b>Prevalence of Drinking During Pregnancy</b>                      |                            |   |   |              |      |
| n = 8   | Abernethy, et al.          | Determining the pattern and prevalence of alcohol consumption in pregnancy by measuring biomarkers in meconium  | Cross sectional                           | UK           | 4    |
|   | Bakhireva, et al.          | Prevalence of alcohol use in pregnant women with substance use disorder   | Cross sectional                           | USA          | 4    |
|   | Fletcher, et al.           | Attitudes toward alcohol use during pregnancy among women recruited from alcohol-serving venues in Cape Town, South Africa: A mixed-methods study       | Mixed methods                             | South Africa | 4    |
|   | Gomez-Roig, et al.         | Maternal hair testing to disclose self-misreporting in drinking and smoking behavior during pregnancy   | Cross sectional                           | Spain        | 5    |
|   | Howlett, et al.            | Assessing prevalence of alcohol consumption in early pregnancy: Self-report compared to blood biomarker analysis  | Cross sectional                           | UK           | 5    |
|   | Lamy, S., et al.           | Risk factors associated to tobacco and alcohol use in a large French cohort of pregnant women   | Cross sectional                           | France       | 6    |
|   | Latuskie, et al.           | Substance Use in Pregnancy Among Vulnerable Women Seeking Addiction and Parenting Support   | Retrospective chart review                | Canada       | 6    |
|   | Mpelo, et al.              | Prevalence and Factors Influencing Alcohol Use in Pregnancy among Women Attending Antenatal Care in Dodoma Region, Tanzania: A Cross-Sectional Study    | Cross sectional                           | Tanzania     | 6    |
| <b>Influences and factors associated with drinking in pregnancy</b> |                            |   |   |              |      |
| n = 14  | Abernethy, et al.          | Determining the pattern and prevalence of alcohol consumption in pregnancy by measuring biomarkers in meconium  | Cross sectional                           | UK           | 4    |
|   | Fletcher, et al.           | Attitudes toward alcohol use during pregnancy among women recruited from alcohol-serving venues in Cape Town, South Africa: A mixed-methods study       | Mixed methods                             | South Africa | 4    |
|   | Gonzales, et al.           | An indigenous framework of the cycle of fetal alcohol spectrum disorder risk and prevention across the generations: Historical trauma, harm and healing | Qualitative (focus groups)                | USA          | 7    |
|   | Lamy, S., et al.           | Risk factors associated to tobacco and alcohol use in a large French cohort of pregnant women   | Cohort                                    | France       | 6    |
|   | Latuskie, et al.           | Reasons for substance use continuation and discontinuation during pregnancy: A qualitative study  | Qualitative (focus groups)                | Canada       | 7    |
|   | Louw, Tomlinson, & Olivier | Unrealistic optimism with regard to drinking during pregnancy among women of childbearing age in a South African community                              | Cross sectional                           | South Africa | 8    |
|   | Lupattelli, et al.         | Personality and its relation to the use of alcohol and cigarettes during pregnancy: A multinational study   | Cross sectional                           | Norway       | 8    |
|   | Mpelo, et al.              | Prevalence and Factors Influencing Alcohol Use in Pregnancy among Women Attending Antenatal Care in Dodoma Region, Tanzania: A Cross-Sectional Study    | Cross sectional                           | Tanzania     | 6    |
|   | Pati, et al.               | Weaved into the cultural fabric: A qualitative exploration of alcohol consumption during pregnancy among tribal women in Odisha, India                  | Qualitative (Interviews and focus groups) | India        | 8    |
|   | Petersen-Williams, et al.  | Predictors of Alcohol Use during Pregnancy among Women Attending Midwife Obstetric Units in the Cape Metropole, South Africa                            | Cross sectional                           | South Africa | 9    |

| #                         | Author                           | Title   | Method                                    | Country     | Page |
|---------------------------|----------------------------------|---|---|-------------|------|
|                           | Scholin, L., et al.              | Exploring practices and perceptions of alcohol use during pregnancy in England and Sweden through a cross-cultural lens   | Qualitative (Interviews)                  | UK/ Sweden  | 9    |
|                           | Schultz, et al.                  | They Gave Me Life: Motherhood and Recovery in a Tribal Community  | Qualitative (Interviews and focus groups) | USA         | 9    |
|                           | Shrestha, Weber, & Hanson        | "But Problems Dwell so the Urge Is Constant..." Qualitative Data Analysis of the OST CHOICES Program  | Mixed methods                             | USA         | 10   |
|                           | Specker, et al.                  | Pregnancy Survey of Smoking and Alcohol Use in South Dakota American Indian and White Mothers   | Cross sectional                           | USA         | 10   |
| <b>Level 1 Prevention</b> |                                  |   |   |             |      |
| n = 8                     | Driscoll, et al.                 | A formative evaluation of two FASD prevention communication strategies  | Quasi-experimental                        | USA         | 11   |
|                           | Dumas, et al.                    | Warning about drinking during pregnancy: lessons from the French experience   | Cross sectional                           | France      | 11   |
|                           | Hanson & Weber                   | Commentary on Montag et al (2017): The importance of CBPR in FASD prevention with American Indian communities   | Commentary                                | USA         | 11   |
|                           | Hobin, et al.                    | Testing the efficacy of alcohol labels with standard drink information and national drinking guidelines on consumers' ability to estimate alcohol consumption                           | Between groups experiment                 | Canada      | 12   |
|                           | Mialon & Mccambridge             | Alcohol industry corporate social responsibility initiatives and harmful drinking: a systematic review  | Systematic review                         | UK          | 12   |
|                           | Pham, et al.                     | Alcohol warning label awareness and attention: A multi-method study   | Multi-method, experimental design         | Australia   | 12   |
|                           | Subbaraman, et al.               | Associations Between State-Level Policies Regarding Alcohol Use Among Pregnant Women, Adverse Birth Outcomes, and Prenatal Care Utilization: Results from 1972 to 2013 Vital Statistics | Correlational                             | USA         | 13   |
|                           | Yzer, Han, & Choi                | Eye Movement Patterns in Response to Anti-Binge Drinking Messages   | Experimental                              | USA         | 13   |
| <b>Level 2 Prevention</b> |                                  |   |   |             |      |
| n = 11                    | Andler, et al.                   | The practices of French general practitioners regarding screening and counselling pregnant women for tobacco smoking and alcohol drinking   | Cross sectional                           | France      | 14   |
|                           | Balachova, et al.                | Evaluating alcohol use among Russian women at risk for an alcohol-exposed pregnancy: A comparison of three measures of alcohol use  | Secondary data analysis                   | USA/ Russia | 14   |
|                           | Ingersoll, et al.                | A pilot RCT of an Internet intervention to reduce the risk of alcohol-exposed pregnancy   | RCT                                       | USA         | 14   |
|                           | Irvine, et al.                   | Design and feasibility testing of a novel group intervention for young women who binge drink in groups  | Before and after                          | UK          | 15   |
|                           | Martino, et al.                  | A randomized controlled trial of screening and brief interventions for substance misuse in reproductive health  | RCT                                       | USA         | 15   |
|                           | Mitchell, et al.                 | An environmental scan of the role of nurses in preventing fetal alcohol spectrum disorders  | Environmental scan                        | USA         | 15   |
|                           | Moyer, et al.                    | Substance Use in Pregnant Women Using the Emergency Department: Undertested And Overlooked?   | Cross sectional                           | USA         | 15   |
|                           | Præstegaard, Kesmodel & Kesmodel | Is TWEAK a valid screening questionnaire to identify alcohol risk drinkers among pregnant women in Denmark?   | Cross sectional                           | Denmark     | 16   |
|                           | Reid & Mcstay                    | Development of an alcohol liaison midwifery service in a health Trust in Northern Ireland   | Descriptive                               | Ireland     | 16   |

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|                                    | Reid, et al.                          | Benefits of caseload midwifery to prevent fetal alcohol spectrum disorder: A discussion paper   | Narrative review                                 | Australia       | 16   |
|                                    | Von Sternberg, Diclemente & Velasquez | Profiles of behavior change constructs for reducing alcohol use in women at risk of an alcohol-exposed pregnancy  | Secondary data analysis of RCT                   | USA             | 16   |
| <b>Preconception interventions</b> |                                       |   |  |                 |      |
| n = 2                              | Goossens, et al.                      | Preconception lifestyle changes in women with planned pregnancies   | Cross sectional                                  | Belgium         | 18   |
|                                    | Poels, et al.                         | The effect of a local promotional campaign on preconceptional lifestyle changes and the use of preconception care   | Interrupted time series                          | The Netherlands | 18   |
| <b>Level 3 Prevention</b>          |                                       |   |  |                 |      |
| n = 11                             | Andrews, et al.                       | Engaging mothers with substance use issues and their children in early intervention: Understanding use of service and outcomes                                  | Retrospective chart review                       | Canada          | 19   |
|                                    | Chou, et al.                          | Social Support, Family Empowerment, Substance Use, and Perceived Parenting Competency during Pregnancy for Women with Substance Use Disorders                   | Cross sectional                                  | USA             | 19   |
|                                    | Edwards, et al.                       | Protective Effects of Pregnancy on Risk of Alcohol Use Disorder   | Case control                                     | Sweden          | 19   |
|                                    | Fergie, et al.                        | Identifying Effective Behavior Change Techniques for Alcohol and Illicit Substance Use During Pregnancy: A Systematic Review                                    | Systematic review                                | Australia       | 20   |
|                                    | Geraghty, Doleman & De Leo            | Midwives' attitudes towards pregnant women using substances: Informing a care pathway   | Mixed methods (survey, interviews, focus groups) | Australia       | 20   |
|                                    | Krahn, et al.                         | Housing interventions for homeless, pregnant/parenting women with addictions: a systematic review   | Systematic review                                | Canada          | 20   |
|                                    | Latuskie, et al.                      | Substance Use in Pregnancy Among Vulnerable Women Seeking Addiction and Parenting Support   | Retrospective chart review                       | Canada          | 6    |
|                                    | Latuskie, et al.                      | Reasons for substance use continuation and discontinuation during pregnancy: A qualitative study  | Qualitative (focus groups)                       | Canada          | 7    |
|                                    | Myra, et al.                          | Pregnant substance abusers in voluntary and coercive treatment in Norway: Therapists' reflections on change processes and attachment experiences                | Qualitative (focus groups)                       | Norway          | 21   |
|                                    | Polcin, Korcha & Nayak                | Development of intensive motivational interviewing (IMI) and modifications for treating women with alcohol use disorders  | Description of an intervention                   | USA             | 21   |
|                                    | Tarasoff, et al.                      | Integrated treatment programs for pregnant and parenting women with problematic substance use: Service descriptions and client perceptions of care              | Mixed methods                                    | Canada          | 22   |
| <b>Level 4 Prevention</b>          |                                       |   |  |                 |      |
| n = 1                              | Grant, et al.                         | Use of marijuana and other substances among pregnant and parenting women with substance use disorders: Changes in Washington state after marijuana legalization | Correlational                                    | USA             | 23   |
| <b>Other</b>                       |                                       |   |  |                 |      |
| n = 10                             | Adebiyi, et al.                       | Exploring service providers' perspectives on the prevention and management of fetal alcohol spectrum disorders in South Africa: a qualitative study             | Qualitative (focus groups)                       | South Africa    | 24   |
|                                    | Badry, et al.                         | Finding answers, improving outcomes: a case study of the Canada fetal alcohol spectrum disorder research network.   | Descriptive                                      | Canada          | 24   |

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|   | Brown, et al.          | The future of research in substance use and maternal and child health: An interview with Dr. Victoria Coleman-Cowger, PhD                               | Interview                              | USA       | 24   |
|   | Corrigan, et al.       | Addressing the public health concerns of Fetal Alcohol Spectrum Disorder: Impact of stigma and health literacy  | Cross sectional                        | USA       | 25   |
|   | Corrigan, et al.       | Stakeholder perspectives on the stigma of fetal alcohol spectrum disorder   | Community based participatory research | USA       | 25   |
|   | Gonzales, et al.       | An indigenous framework of the cycle of fetal alcohol spectrum disorder risk and prevention across the generations: Historical trauma, harm and healing | Qualitative (focus groups)             | USA       | 7    |
|   | Key, Ceremony & Vaughn | Testing two models of stigma for birth mothers of a child with fetal alcohol spectrum disorder  | Correlational                          | USA       | 26   |
|   | Parnell, et al.        | The contributions of Dr. Kathleen K Sulik to fetal alcohol spectrum disorders research and prevention   | Narrative review                       | USA       | 26   |
|   | Symons, et al.         | A systematic review of prevention interventions to reduce prenatal alcohol exposure and fetal alcohol spectrum disorder in indigenous communities       | Systematic review                      | Australia | 26   |
|   | Yang, & Lang           | Understanding women's stories about drinking: implications for health interventions   | Content analysis                       | USA       | 26   |