

FASD Prevention: An Annotated Bibliography of Articles Published in 2023

Prepared by: Lindsay Wolfson, Nancy Poole, Ella Huber, Kirsten Morrison & Chantel Cole

August 2024



Executive Summary

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](#) developed 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 web meetings to discuss the implications of the findings for their work.

Search Methods

Six databases were searched using EBSCO Host for articles published between January and December 2023. All searches were limited to articles published in the English language. Articles were further screened for relevance to the FASD pNAT, 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

One hundred and four ($n = 104$) articles were included from our searches. Sixteen ($n = 16$) articles were assigned to more than one category and six ($n = 6$) were attributed to more than one country. Table 1 (pg. 4) provides an overview of the number of articles found in each topic area by country. In the past year, English-language research on FASD prevention was most often generated in the United States of America (US), Australia, Canada, South Africa, and the United Kingdom (UK).

Prevalence of, and influences and factors associated with, alcohol use in pregnancy

Thirty-two ($n = 32$) articles explored the prevalence of, and influences and factors associated with, alcohol use during pregnancy. The majority of studies were cross-sectional ($n = 18$), followed by qualitative ($n = 3$), reviews ($n = 3$), mixed methods ($n = 2$), systematic review and meta-analyses ($n = 2$), case control ($n = 1$), cohort ($n = 1$), meta-ethnography ($n = 1$) and randomized controlled trial ($n = 1$).

The prevalence of alcohol use was reported to be as high as 31.65% in Ethiopia [1] and 21.2% in the United States (US) [2]. One US study also found a 190% increase in substance related prenatal mortalities between 2010 and 2019 [3].

We continue to see a wide range of structural, informational, stress-related, social determinant of health related and preconception and pregnancy related factors associated with alcohol use during pregnancy including:

Structural Factors:

- Lack of recreational opportunities [15, 16]
- Incarceration [17, 18]
- Migration status [10, 19]
- Lack of formal employment [16]
- Normalization of alcohol use [16]
- Inadequate prenatal care [8]

Informational Factors:

- Perceptions towards alcohol use during pregnancy [13, 14]
- Later pregnancy recognition [6]

Social Determinant of Health-Related Factors:

- Family history of mental illness [4] or substance use [7]
- Marital status [4, 12]
- Socioeconomic status [8-11]
- Education status [8, 12]
- Employment status [8, 15]
- Younger age [8]
- Food insecurity [22]

Stress Related Factors:

- Depression, anxiety, or serious psychological distress [4-7]
- Interpersonal/intimate partner violence [6, 7]
- Social pressure [16]
- Parenting challenges [14]
- Interpersonal conflict [14]
- Childhood trauma [6]

Preconception and Pregnancy Related Factors:

- Higher parity [6, 8]
- Preconception substance use [11, 20]
- Smoking during pregnancy [8]
- Lower perinatal vitamin intake [21]
- Health-related issues [14]

However, there were other factors, such as stigma [20, 21], lack of prenatal alcohol screening, support and/or counselling [4, 22], and lack of affordable and accessible substance use treatment [23], that are also related to perinatal alcohol use, but were captured in the research on specific levels of the four-part prevention framework.

This year, we also saw attention to influences and factors affecting different sub-populations such as women with HIV, women who are incarcerated, migrant women, rural women, etc.

One study from South Africa found that among pregnant women living with HIV, a third of the participants reported alcohol use during pregnancy. While many women knew of the risks between perinatal alcohol use, the social pressure and normalization of alcohol use in community made it challenging to apply the public health messaging in their lives [16]. Similarly, a meta-ethnography from the UK found that among women at high risk of alcohol use during pregnancy, the pervasive social and relational nature of alcohol use made it challenging to apply the knowledge about the effects of alcohol use in pregnancy [23].

Level 1 Prevention

Eleven ($n = 11$) articles described Level 1 FASD prevention efforts. The study designs greatly varied and included cross sectional studies ($n = 5$), qualitative ($n = 3$), commentary ($n = 2$), and a primer ($n = 1$).

One Canadian study explored the perceived information needs and preferences for prenatal mHealth education. The findings revealed that people want reliable, inclusive, locally relevant, and strengths-based information and that text messaging was perceived as a simple, easy, and timely modality [24]. One study from Poland examined intergenerational differences in Polish women's knowledge on the risks of alcohol use during pregnancy. Women ages 26 – 41 had the highest level of knowledge of FASD, and 99% women from generations Y and Z knew that alcohol was a teratogen, whereas 4.4% of women ages 42 – 49 years old believed alcohol was harmless. The differences highlighted that there have been improvements in knowledge in recent years and the ongoing need for education to each generation [25].

Two studies from Australia described how to create culturally appropriate FASD prevention strategies for Aboriginal and Torres Strait Islanders. The studies emphasized how culturally relevant tools [26] and integration of place, community, culture, and family can support culturally safe, relevant, and strengths-based FASD prevention strategies [27].

Four studies from Australia described the implementation and efficacy of alcohol warning labels [28-31]. One study from Australia and New Zealand described the challenges experienced when implementing alcohol warning labels. The authors described the complicated governance structures, industry tactics, and pervasive attitudes that condone alcohol use in pregnancy that can thwart the implementation of alcohol warning labels. The authors describe the importance of public health advocacy in mobilizing the evidence, countering industry tactics, and garnering community and political support [28].

Level 2 Prevention

Twenty-four ($n = 24$) articles described Level 2 prevention efforts. Study designs included cross sectional ($n = 6$), qualitative ($n = 4$) review ($n = 4$), participatory action research ($n = 2$), commentary ($n = 1$), descriptive ($n = 1$), randomized controlled trial ($n = 1$), replication study ($n = 1$), primer ($n = 1$), position statement ($n = 1$), systematic review and meta-analyses ($n = 1$), and a pilot ($n = 1$).

Several studies explored the challenges to engaging in screening and brief intervention, including:

- Time constraints and competing priorities [32, 33]
- Lack of training [32]
- Limited awareness of alcohol guidelines [34]
- Not perceiving discussions about alcohol use as part of their role [34]
- Limited confidence to engage in brief interventions [34]
- Social taboos around alcohol use [35]
- Lack of knowledge of FASD [35]
- Pervasiveness of alcohol advertising [35]
- Stigma [33]
- Lack of space/privacy [33]

Despite the challenges, these same studies reported strategies to overcoming them. Research pointed to importance of universal screening for women in the preconception, antepartum, intrapartum, and postpartum periods as well as non-stigmatizing, patient-oriented interventions [36]. One integrative review explored the benefits of early screening for alcohol use in pregnancy and found that early screening for alcohol use indirectly led to reduced incidence of FASD when paired with targeted interventions and increased education for healthcare providers [37]. A meta-analysis found that brief interventions increased the odds of abstinence by 56% and that brief interventions were associated with a reduction in preterm birth, but no differences in birth weight [38].

One literature review synthesized preconception and prenatal alcohol prevention interventions. A total of 21 studies were included. All the included interventions used a motivational interviewing approach. The technology-assisted approaches (inclusive of text message, telephone, and computer-based approaches) also included small sample sizes but showed promising results in their impact to reduce alcohol exposed pregnancies [39, 40]. Another study piloted a comprehensive perinatal screening tool that captured pregnant women's perceived stress, relationship and family stress, domestic violence, substance use, and financial stress. The pilot found that an integrated tool can be used to encourage connection and linkages to care that improve a range of maternal and child health outcomes [41].

One study from the US examined primary care clinicians' screening and brief intervention practices. A total of $n = 1,500$ clinicians serving adults completed the survey. Among the respondents, most (94.5%) reported screening pregnant patients for alcohol use, with 67.2% reporting always screening, 15.9% screening often, 11.5% screening sometimes, and 5.4% never screening. Clinicians reported engaging in brief interventions with similar frequency. Clinicians with the highest proportion of always screening and conducting brief interventions were nurse practitioners and OB/GYNs, whereas physician assistants had the highest proportion of never screening or engaging in brief interventions. Increased clinician confidence and the use of standardized screening tools were suggested to enhance the frequency of screening and brief interventions on alcohol use in pregnancy on the part of clinicians [42].

Level 3 Prevention

Eighteen ($n = 18$) articles described Level 3 prevention efforts. Study designs included cross sectional ($n = 4$), descriptive ($n = 3$), review ($n = 3$), randomized controlled trial ($n = 2$), qualitative ($n = 2$), cohort ($n = 2$), mixed methods ($n = 1$) and commentary ($n = 1$).

Several Canadian studies described their community-based programs. One study described Mothercraft's Breaking the Cycle (BTC) program, a community-based prevention and early intervention program in Toronto for women who are pregnant, mothers, and their infants with exposure to maternal substance use and trauma. BTC uses a partnership model and focuses on early intervention with the mother, child, and mother-child dyad as three unique clients [43]. Another study described the Eastern Door Centre, which is located in

Elsipogtog First Nation. The Eastern Door Centre was the first diagnostic service to open in Atlantic Canada as a response to the Canadian Truth and Reconciliation Commission's call for more access to FASD related health services for Indigenous communities. The Centre offers culturally informed diagnosis, intervention, and prevention of FASD. The prevention program involves awareness raising about FASD, provides a support group for women who use substances and offers a program modeled on the Parent-Child Assistance Program for high-risk women [44]. A final study described the outcome of integrated supports available for pregnant women at the 2nd Floor Women's Recovery Centre at the Lakeland Centre for Fetal Alcohol Spectrum Disorder in Cold Lake, Alberta [45].

Several studies described collaborative, multidisciplinary models to supporting pregnant women with substance use concerns. One US study evaluated the reach of the Extension for Community Healthcare Outcomes (ECHO) Idaho perinatal substance use disorder (PSUD) series. Project ECHO is a telementoring model developed to increase patient access to care through better equipping rural clinicians with clinical knowledge and skills to treat specialized health conditions. The findings demonstrated that clinicians perceived the series to be beneficial and supported them in treating patients with PSUDs [46]. Another US study from the Midwest described a system-strengthening process across regional public health agencies and community-based organizations. The model strengthened collaboration and advanced strategic planning that can be further utilized among maternal child health systems [47].

One study explored the impact of COVID-19 on substance use treatment outcomes for pregnant and postpartum women. The findings suggested that mental health outcomes only improved among clients who enrolled in treatment prior to the pandemic. Nonetheless, if women enrolled before or during the pandemic, substance use decreased significantly [48].

Level 4 Prevention

Thirteen ($n = 13$) articles described Level 4 prevention efforts. Study designs included descriptive ($n = 3$), cross sectional ($n = 3$), randomized controlled trial ($n = 2$), review ($n = 2$), qualitative ($n = 2$) and mixed methods ($n = 1$).

Several studies described home management and case management models, including the Nurse-Family Partnership (NFP). One Australian study explored the impact of the NFP on First Nations mothers' self-efficacy. The program, which facilitated culturally safe relationships between women and staff, was able to sustain connections, support self-efficacy, and result in women's transformation and growth [49]. In the US, the NFP facilitated cross-sector collaboration, including between nurses, substance use treatment providers, and child welfare. Improved integration with the child welfare system was associated with participant retention and had the potential to better address the social determinants of health related to women's substance use [50].

Two studies described trauma-informed approaches to supporting parenting women who use alcohol. Effective strategies to integrating trauma-informed practice included training for staff, collaboration across service providers, peer support, and an emphasis on building relationships and trust in women's substance use responses [51, 52].

Supportive Alcohol and Child Welfare Policy

Nine ($n = 9$) articles described supportive alcohol and child welfare policy. Study types included cross sectional ($n = 3$), review ($n = 3$), qualitative ($n = 1$), mixed methods ($n = 1$) and commentary ($n = 1$).

Two studies described the relationship between alcohol policies and substance use treatment for pregnant women. One US study described nine alcohol policies on treatment admission. It found that, between 1992 and 2019, when alcohol was reported as women's primary substance, mandatory reporting was associated with higher treatment admissions. However, alcohol warning labels and priority treatment for women with substance use concerns were associated with fewer treatment admissions [53]. Another study from the US

that examined state-level policies regarding substance use screening and treatment found that only seven states had statutes related to substance use screening and treatment [17].

Other – stigma, ethical issues, and systemic approaches

Thirteen ($n = 13$) articles described other related topics, such as stigma, ethical issues, and systemic approaches. Study types included reviews ($n = 3$), commentary ($n = 2$), cross sectional ($n = 2$), editorial ($n = 1$), mixed methods ($n = 1$), qualitative ($n = 1$), systematic review and meta-analyses ($n = 1$), and a conceptual framework ($n = 1$).

One study from Australia explored how the risks of prenatal alcohol exposure are perceived. The authors identify three influencing factors, including information, sociocultural, and individual on how risk is perceived. The findings informed a conceptual model called the Pregnancy Alcohol Risk Perception, to guide understanding of risk perceptions [54]. Several papers described stigma reduction strategies including addressing stereotypes, developing interdisciplinary collaborations, adopting community-based approaches, providing education around social and environmental factors that contribute to substance use, and advocating for stigma reducing policies [55].

Another study described wine-mom culture in the US vs. the UK. American mothers were more familiar with wine-mom culture than British mothers, and engagement in/endorsement of wine-mom behaviours were associated with problematic alcohol use, parental stress, and drinking to cope. The findings suggest that further exploration is needed to see how wine-mom culture is promoting the idea that alcohol can or should be used to cope, self-medicate, or be used as a form of self-care [56]. A final study from the US consulted with people with lived experience of perinatal substance use to understand the facilitators and barriers to research engagement. Three main barriers to research engagement emerged: shame, fear of punitive responses, and mistrust of health care and research professionals. Three facilitators to engagement that emerged were: development of trust, compassion, and non-judgemental attitudes among research teams. Participants recommended that gender-concordant recovery peer support workers be included on research teams to facilitate the development of trust and to reduce fears.

In summary

Valuable evidence on FASD prevention is generated each year by researchers across the world. It is important to gather, synthesize and discuss this literature in order to guide our efforts in each of the four levels of prevention, in developing supportive alcohol and child welfare policy, and in considering ethical and destigmatizing considerations.

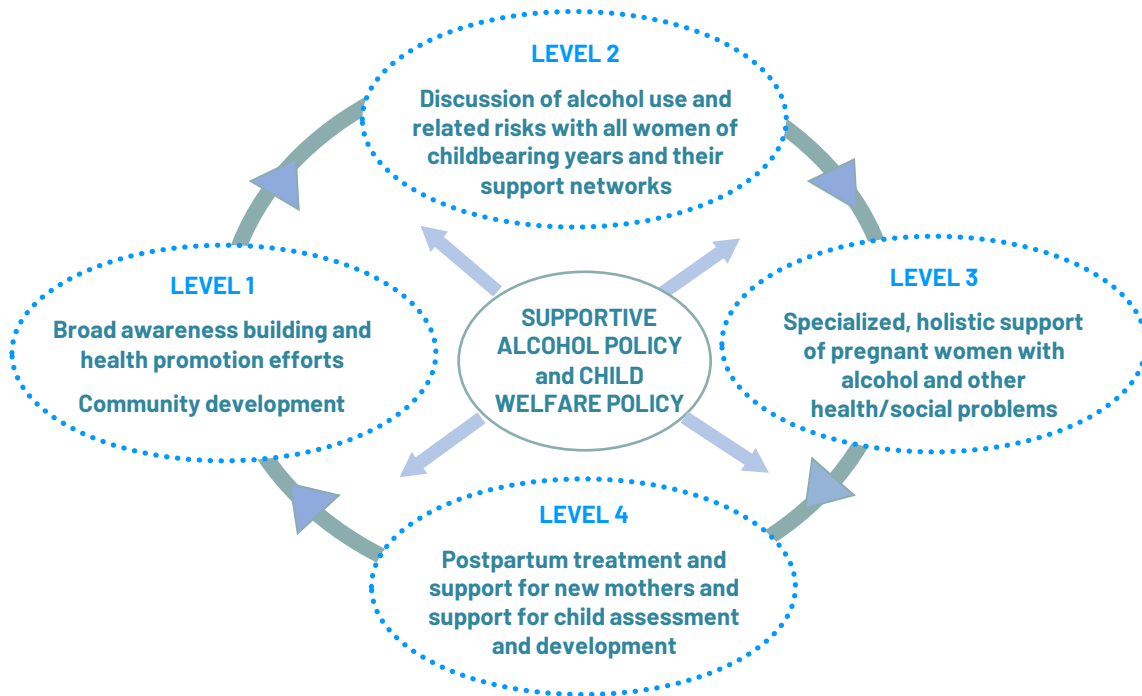
FASD Prevention Literature Search 2023

Table of Contents

<i>FASD Prevention Literature Search 2023</i>	1
<i>Introduction</i>	2
<i>Search Methods</i>	3
<i>Search Results</i>	4
A. Prevalence of, and influences and factors associated with, alcohol use in pregnancy	5
B. Level 1 Prevention	16
C. Level 2 Prevention	20
D. Level 3 Prevention	29
E. Level 4 Prevention	35
F. Supportive Alcohol and Child Welfare Policy	38
G. Other – stigma, ethical issues, and systemic approaches	41
<i>Summary of Included Studies by Method and Country of Study</i>	46

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, that describes 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 web meetings to discuss the implications of the findings for their work.



Search Methods

The following databases were searched using EBSCO Host for articles published between January and December 2023:

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

Searches of each database were conducted using the following search terms: 1)[Fetal Alcohol Spectrum Disorder OR FASD OR fetal alcohol OR foetal alcohol OR alcohol exposed pregnancy OR alcohol] + [pregnancy] + [prevention OR preventing OR preventative]; 2)[Alcohol OR drink*] + [pregnan* OR conception OR preconception OR postpartum OR prenatal OR antenatal OR perinatal or maternal] + prevention; 3)[Alcohol OR drink*] + prevention + [women OR girls OR youth OR teen* OR mother OR Aboriginal OR Indigenous OR First Nation* OR Inuit OR Métis]; 4)[Alcohol OR drink* OR FASD] + [awareness OR education OR policy] + [women OR girls OR female OR mother]; 5)[Alcohol OR drink*] + intervention* + [women OR girls OR female OR mother]; 6)[Alcohol OR drink*] + stigma + [women OR girls OR female OR mother]; 7)[Alcohol OR drink*] + [motivational interviewing OR Screening OR brief intervention OR SBIR OR SBIRT] + [women OR girls OR gender OR female OR mother OR pregnan*]; 8)[Alcohol or drink*] + [home visit* OR NICU OR neonatal intensive care unit OR midwives or midwife or midwifery]; 9)[Pregnan* OR conception OR preconception OR post-partum OR mother] + [substance use treatment OR harm reduction]; 10)[Pregnan* OR conception OR preconception OR post-partum OR mother] + [wraparound OR parent child assistant program OR PCAP OR community OR holistic OR integrated OR multidisciplinary]; 11)[Alcohol OR drink*] + [land-based OR cultur*] + [women OR girls OR youth OR teen* OR mother OR Aboriginal OR Indigenous OR First Nation* OR Inuit OR Métis];

All searches were limited to articles published in the English language. Articles were further screened for relevance to the FASD pNAT, 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

One hundred and four ($n = 104$) articles were included from our searches. Sixteen ($n = 16$) articles were assigned to more than one category and six ($n = 6$) were attributed to more than one country. Table 1 provides an overview of the number of articles found in each topic area by country. English-language research on FASD prevention was most often generated in the United States of America (US), Australia, Canada, South Africa, and the United Kingdom (UK).

Table 1: Studies identified by topic and country

Country	Prevalence	Level 1	Level 2	Level 3	Level 4	Policy	Stigma	Total
Australia	4	8	1	1	1	2	3	20
Brazil	1	0	0	0	0	0	0	1
Canada	2	2	2	6	4	1	0	17
Denmark	1	0	0	0	0	0	0	1
Egypt	1	0	0	0	0	0	0	1
Ethiopia	2	0	0	0	0	0	0	2
France	1	0	1	0	0	0	0	2
Finland	0	0	1	0	0	0	0	1
Germany	2	0	0	0	0	0	0	2
Greece	1	0	0	0	0	0	0	1
Ireland	0	0	0	0	0	0	1	1
Namibia	1	0	0	0	0	0	0	1
New Zealand	0	2	1	0	0	1	0	4
Poland	0	1	1	0	0	0	0	2
South Africa	6	0	1	2	1	1	0	11
Spain	1	0	0	0	0	0	0	1
The Netherlands	0	0	0	1	0	0	0	1
Uganda	1	0	0	0	0	0	0	1
UK	3	1	4	0	0	0	0	8
US	7	1	6	8	7	6	8	43
	34	15	18	18	13	11	12	121

A. Prevalence of, and influences and factors associated with, alcohol use in pregnancy

1. **Bete, T., Asfaw, H., Nigussie, K., Alemu, A., Eyeberu Gebrie, A., Dechasa, D. B., ... & Anbesaw, T. (2023). Alcohol consumption and associated factors among pregnant women attending antenatal care at governmental hospitals in Harari regional state, Eastern, Ethiopia. *Substance Abuse Treatment, Prevention, and Policy*, 18(1), 61. <https://doi.org/10.1186/s13011-023-00567-6>**

This Ethiopian study assessed the prevalence and associated factors of alcohol consumption among pregnant women attending antenatal care at government hospitals. A survey of $n = 589$ pregnant women attending an antenatal governmental hospital was conducted using AUDIT-C. The authors found a prevalence rate of 21.2%. Single marital status, previous history of abortion, family history of mental illness, depression, and anxiety were statistically significant and associated with consuming alcohol during pregnancy. Compared to other prevalence studies, this study found a higher prevalence of alcohol use during pregnancy. As such, it is important for future mother and child-health initiatives to address these risk factors when developing interventions.

2. **Brittain, K., Pellowski, J., Noholoza, S., Mellins, C. A., Bekker, L. G., Kagee, A., ... & Myer, L. (2023). Perinatal alcohol use among young women living with HIV in South Africa: Context, experiences, and implications for interventions. *Global public health*, 18(1), 2221732. <https://doi.org/10.1080/17441692.2023.2221732>**

This South African study examined the reasons for high rates of alcohol use during pregnancy, specifically in women living with HIV. Twenty-four women living with HIV between the ages of 16-24 were interviewed, exploring their experiences of substance use. Over one-third of participants reported drinking during their pregnancy. Reasons for alcohol use during pregnancy included living in communities where alcohol consumption is normalized leading to social pressure. While many women knew of the risks of perinatal alcohol use there was a disconnect between public health messaging and their own experiences. Further, the authors found that a lack of formal employment and opportunities for social recreation that would separate women from alcohol further contributed to high consumption rates. Study findings provide insights into reasons for perinatal alcohol use and the importance of finding community-level changes that address specific risks.

3. **Broccia, M., Hansen, B. M., Winckler, J. M., Larsen, T., Strandberg-Larsen, K., Torp-Pedersen, C., & Kesmodel, U. S. (2023). Heavy prenatal alcohol exposure and obstetric and birth outcomes: a Danish nationwide cohort study from 1996 to 2018. *The Lancet*, 8(1), e28-e35. [https://doi.org/10.1016/S2468-2667\(22\)00263-8](https://doi.org/10.1016/S2468-2667(22)00263-8)**

This Danish study explored the association between heavy prenatal alcohol exposure with 22 adverse obstetric and birth outcomes. Data from a nationwide historical cohort study that included data from singleton births between 1996 and 2018 was analyzed. Of the 1,191,295 births included in the study, 4,823 (0.40%) births were defined as heavily alcohol exposed. The remaining 1,186,472 births were categorized as a reference group. Heavily exposed births were found to more often have mothers with psychiatric diagnoses (49.8% vs. 9.6%), substance use (22.0% vs. 0.4%), tobacco use (64.3% vs. 15.8), and low educational level (64.1% vs. 17.6) compared to the reference group. For heavily alcohol exposed births, an increased odds was found for small for gestational age, preterm birth, haemorrhage in late pregnancy, and preterm prelabour rupture of membrane.

Decreased odd ratios were found for postpartum haemorrhage, gestational diabetes, planned caesarean section, pre-eclampsia and eclampsia, and abnormalities of forces of labour. Due to the association between heavy prenatal alcohol exposure and adverse obstetric and birth outcomes, there is an emphasis on the need for holistic public health programs and policy initiatives that improve preconception and antenatal care.

4. **Cabral, V. P., Moraes, C. L. D., Bastos, F. I., Abreu, A. M. M., & Domingues, R. M. S. M. (2023). Prevalence of alcohol use during pregnancy, Brazil, 2011-2012. *Cadernos de Saúde Pública*, 39, e00232422. <https://doi.org/10.1590/0102-311XPT232422>**

This Brazilian study examined the prevalence of alcohol use during pregnancy and populations that were at higher risk of prenatal alcohol use. A national cross-sectional, hospital-based study was conducted which involved interviewing $n = 23,894$ postpartum women in 2011 – 2012. Alcohol use during pregnancy was assessed using the TWEAK scale. Authors found a 14% prevalence of alcohol use and that 10% of women presented with a TWEAK score of two or greater. Characteristics associated with a higher prevalence of alcohol use in pregnancy included younger age (between 12-19), race identified as black, lower education level, lower economic class, being single, being unemployed, having three or more previous births, having an unwanted pregnancy, inadequate prenatal care, previous delivery in public services, and reported smoking during pregnancy. The findings of the study demonstrated a high prevalence of alcohol use in pregnancy among women with low social status, thus highlighting the need for public health policies to dually focus on prevent alcohol use in pregnancy and broader social service provision.

5. **Corrales-Gutierrez, I., Gomez-Baya, D., Leon-Larios, F., Medero-Canela, R., Marchei, E., Mendoza-Berjano, R., & Garcia-Algar, Ó. (2023). Alcohol Consumption Assessed by a Biomarker and Self-Reported Drinking in a Sample of Pregnant Women in the South of Europe: A Comparative Study. *Toxics*, 11(11), 930.**

This Spanish study compared the prevalence rate of alcohol consumption during pregnancy as assessed through a questionnaire and biomarkers. Pregnant women in their 20th week of pregnancy ($n = 425$) were interviewed using a questionnaire that included sociodemographic, obstetric, and alcohol use questions. Of that sample, $n = 252$ women agreed to a hair sample which tested the ethyl glucuronide metabolite (EtG). The level of metabolites and self-reported alcohol consumption were compared. The authors found the prevalence of self-reported consumption was 20.7% compared to the metabolite analysis which indicated that 20.2% of the sample consumed alcohol. 16.8% of participants who self-reported not consuming alcohol were found to have noticeable alcohol consumption. While both samples showed high and similar prevalence rates the biomarkers allow for a more accurate assumption of consumption rates compared to the questionnaire. Due to the high prevalence rates found in the study, authors suggest having tailored abstinence policies starting in the preconception period.

6. **David, A. T., Sharma, V., Bittencourt, L., Gurka, K. K., Perez-Carreño, J. G., & Lopez-Quintero, C. (2023). Exploring the associations between serious psychological distress and the quantity or frequency of tobacco, alcohol, and cannabis use among pregnant women in the United States. *Preventive Medicine*, 177, 107770. <https://doi.org/10.1016/j.ypmed.2023.107770>**

This U.S. study examined the relationship between Serious Psychological Distress (SPD) and quantity, or frequency of substance use among pregnant women. An analysis of the 2015 – 2019

National Survey on Drug Use and Health was conducted. Data from $n = 3,373$ pregnant women was analyzed to examine the association between SPD and the average number of cigarettes, binge drinking days, and days of cannabis use in the past 30 days. Approximately 6% of the sample experienced SPD in the past 30 days. Those who experienced SPD showed higher rates of cigarette use, higher rates of binge drinking, and higher cannabis use compared to pregnant woman who did not report SPD. The study demonstrates an association between SPD and frequency or quantity of cigarette, alcohol, and cannabis use and highlights the need to for interventions that address SPD in addition to substance use.

7. **ELNahas, G., & Thibaut, F. (2023). Perinatal Psychoactive Substances Use: A Rising Perinatal Mental Health Concern. *Journal of Clinical Medicine, 12(6)*, 2175. <https://doi.org/10.3390/jcm12062175>**

This international literature review written by authors from Egypt and France explored trends and consequences of psychoactive substance use in the general population and pregnant women. Research published in English and French between 2000 and 2022 was analyzed and supplemented by guidelines, meta-analyses, and reviews. Based on the data collected, it was calculated that 380,000 offspring were exposed to illicit substances, more than 500,000 were exposed to alcohol and over one million exposed to tobacco while in utero. In the United States between 2010 and 2019, there was a 190% rise in drug-related pregnancy-associated mortalities. Authors found substance use during pregnancy caused many adverse effects including risk of stillbirth, neonatal abstinence syndrome, sudden death syndrome, premature rupture of membranes, placental abruption, preterm birth, and low birth weight. Higher risk of morbidity and mortality for pregnant women was also of concern when using substances. While different substances resulted in differing maternal and neonatal outcomes, the authors note how perinatal exposure to substances put infants at risk of neurocognitive, behavioural, and emotional challenges. Authors suggest multidisciplinary prevention approaches be used to educate and mitigate substance use when pregnancy is being planned or occurs.

8. **Fletcher, T. M., Mullan, B., & Finlay-Jones, A. (2023). Intention to Engage in Alcohol Use during Pregnancy: The Role of Attitudes and Prototypes. *Substance Use & Misuse, 58(11)*, 1333-1342. <https://doi.org/10.1080/10826084.2023.2215292>**

The aim of this study was to explore alcohol use intentions during pregnancy among women in both Australia and the UK. Using the theory of planned behaviour, the prototype/willingness model, and personality variables, the authors investigated whether priming participants with exposure to prototypes describing different alcohol use behaviour would have an effect on future alcohol use intentions. Women aged 20 to 45 years old ($n = 746$) who were pregnant, previously pregnant, or intended to become pregnant and used alcohol were recruited via community Facebook posts and recruitment platforms. Women completed measures of theoretical variables, impulsivity, venturesomeness, and self-efficacy while also being prompted to think of one of two different "types" of behaviours (small level and ambiguous level of alcohol use in pregnancy). Participants were then asked whether they intended to consume alcohol when pregnant. Over half the variance in low to moderate alcohol use intentions was predicted by the final model. The most significant predictor of intentions was positive attitudes towards alcohol use in pregnancy. Authors suggest for future interventions to focus on changing the attitudes of women toward low to moderate alcohol use during pregnancy.

9. **Fletcher, T. M., Mullan, B., Novoradovskaya, E., & Finlay-Jones, A. (2023). Is 'a little' too much?: An exploration of women's beliefs about alcohol use during pregnancy. *Psychology & Health, 38*(7), 862-880. <https://doi.org/10.1080/08870446.2021.1991342>**

This Australian study identified behavioural, normative, and control beliefs regarding alcohol use during pregnancy. Women ($n = 435$) completed an online questionnaire on their beliefs on alcohol use during pregnancy. Most participants believed there was little benefit to drinking while pregnant and that most people would disprove of alcohol use during pregnancy. However, the perceived risk of different levels of alcohol use and perceptions of those who drink while pregnant differed among participants. This study adds to the understanding of women's beliefs about alcohol consumption during pregnancy and can help inform non-stigmatizing public health messaging on alcohol use and pregnancy.

10. **Green, V. R., Kennedy-Hendricks, A., Saloner, B., & Bandara, S. (2024). Substance use and treatment characteristics among pregnant and non-pregnant females, 2015-2019. *Drug and alcohol dependence, 254*, 111041. <https://doi.org/10.1016/j.drugalcdep.2023.111041>**

This U.S. study examined substance use and treatment characteristics among pregnant women and those of child-bearing age. Data from a sample of $n = 97,830$ women between the ages of 15 and 44 from the National Survey on Drug Use and Health was used. Past-month alcohol and drug use and past-year substance use disorder were examined. Pregnant women showed lower prevalence rates of past month illicit substance use, cannabis use, binge drinking, and past year substance use disorder. Among women with a substance use disorder, fewer than 13% received treatment regardless of their pregnancy status. However, pregnant women reported higher treatment use. While the study showed a lower prevalence rate of substance use in participants who were pregnant, the low treatment rates suggest barriers for all women of child-bearing age. Interventions should focus on reducing stigma and creating affordable and accessible treatment options.

11. **Hamutenya, S., & Nghitanwa, E. M. (2023). Practices of pregnant women regarding tobacco and alcohol use during pregnancy at one primary health care clinic in Southern Namibia. *Journal of Public Health in Africa, 14*(12). <https://doi.org/10.4081/jphia.2023.2652>**

This Namibian study investigated the use of tobacco and alcohol during pregnancy. Pregnant women ($n = 211$) ages 18+ who attended an antenatal clinic were recruited. The majority of participants (88.15%) were in their third trimester, between the ages of 18 - 24 (43.6%) and single (73%). Most participants (70.14%) had good practices towards alcohol use and 90% had good practices towards tobacco use during pregnancy. Among those who used alcohol during pregnancy, 87.3% were classified as low-to-moderate drinkers and 12.7% were classified as heavy drinkers. Educational levels were significantly associated with alcohol use during pregnancy, and marital status was significantly associated with the severity of alcohol use. The authors recommend that health facilities implement awareness campaigns about alcohol and tobacco use during pregnancy.

12. **Hanson, J. D., Sarche, M., & Buchwald, D. (2023). Alcohol consumption and pregnancy in American Indian and Alaska Native women: A scoping review of the literature. *Women's Health, 19*, 17455057231175799. doi: [10.1177/17455057231175799](https://doi.org/10.1177/17455057231175799)**

This scoping review from authors in the US describes how generalized findings about alcohol use in pregnancy and the preconception period among American Indian and Alaska Native women have perpetuated misconceptions. Studies ($n = 19$) from the U.S. were identified that largely used retrospective data collection to determine prenatal or preconception alcohol use among American Indian and Alaska Native women. The authors also assessed from whom data were collected and identified two groups: studies on higher-risk women and studies that focused on American Indian and Alaska Native women in specific geographic areas. The authors articulate how restricting data collection to higher-risk women or conducting small studies in specific geographic areas has led to an incomplete and inaccurate representation of American Indian and Alaska Native who consume alcohol and in general. This inaccuracy can lead to an overestimation of prevalence rates of drinking during pregnancy among American Indian and Alaska Native women and highlights the need for more research that more accurately captures alcohol use in order to develop effective intervention and prevention strategies.

13. **Hasken, J. M., de Vries, M. M., Marais, A. S., Kalberg, W. O., Buckley, D., Parry, C. D., ... & May, P. A. (2023). Maternal dietary intake among alcohol-exposed pregnancies is linked to early infant physical outcomes in South Africa. *Reproductive Toxicology*, 121, 108467. <https://doi.org/10.1016/j.reprotox.2023.108467>**

This South African study examined the dietary intake of pregnant women in communities with high rates of FASD. Two, 24-hour dietary recalls were completed by $n = 196$ women. The majority of women were below the recommended amount for vitamins such as A, C, D, E, choline, calcium, magnesium, zinc, and potassium in pregnancy. Those who consumed alcohol had a lower intake of calcium and three saturated fatty acids while having a higher intake of two monounsaturated fatty acids. While infants in the study were under the 40th percentile on length, weight, and head circumference at 6 months regardless of alcohol consumption, there were at least 20 nutrients correlated with drinks per drinking day, number of drinking days per week, and/or total drinks per week. For example, low calcium intake was correlated with all three drinking measures. Additional analyses indicated that twelve nutrients were associated with infant length, weight, and/or head circumference among infants with prenatal alcohol exposure. While inadequate intake of vitamins and minerals have a demonstrated effect on infants' length, weight, and/or head circumference, alcohol exposure can increase these risks and increase the likelihood of FASD.

14. **Hernandez, M., von Sternberg, K., Castro, Y., & Velasquez, M. M. (2023). Reasons and obstacles for changing risky drinking behavior among Latinas at risk of an alcohol-exposed pregnancy. *Journal of Ethnicity in Substance Abuse*, 22(2), 387–401. <https://doi.org/10.1080/15332640.2021.1952127>**

This study from the U.S. examined the reasons for, and obstacles to, changing risky alcohol use among Latina adults at risk of having an alcohol-exposed pregnancy, and the role of acculturation in changing behaviours. The study analyzed data from the CHOICES Plus intervention, which targeted risky alcohol and tobacco use among women at risk of having an alcohol-exposed pregnancy in primary care settings. The overall intervention included $n = 131$ women, and this part of the study focused on $n = 59$ Latina women. Women cited health-related issues, parenting, interpersonal conflict, control, and risk of harm as reasons for risky alcohol use. However, the obstacles to behaviour change included social elements, the belief that alcohol use during pregnancy is not risky, and the use of alcohol to manage mood. Acculturation was associated with heavy drinking days, but not the number of drinking days. Most Latina participants endorsed

health-related concerns as their reason for not wanting to change their risky alcohol use, thus highlighting the importance of addressing such health-related problems.

15. **Jordan, B., Rashied, N., & Venter, M. (2023). Rethinking Local Economic Development for Fetal Alcohol Spectrum Disorder in Renosterberg Local Municipality, South Africa. *International Journal of Environmental Research and Public Health*, 20(5), 4492. doi: 10.3390/ijerph20054492**

This aim of this study was to investigate the drinking culture and motives in two South African towns with a high FASD prevalence. The study also evaluated how the two towns include FASD, binge, and risky drinking in its municipal economic strategy. The results indicated that 57% of respondents expressed concerns about the drinking culture, and that this could be attributed to unemployment-related hopelessness and the lack of hobbies and recreational opportunities. The findings were analyzed through Ryder's eight-stage policy development process. The findings suggested that the policy development process has not been open to the public and that incidence of FASD has been neglected from policy discourse. It is suggested that a dedicated alcohol consumption census study be conducted to understand alcohol consumption patterns that can inform public health policy.

16. **Kim, S. B., White, B., Roberts, J., & Day, C. A. (2023). Substance use among pregnant women in NSW prisons. *International Journal of Drug Policy*, 122, 104256. <https://doi.org/10.1016/j.drugpo.2023.104256>**

This Australian study explored the prevalence and characteristics of incarcerated women with substance use histories who were in a New South Wales prison when pregnant. Medical health records were retrospectively analyzed for $n = 141$ pregnant women entering custodial settings in 2020 and 2021. The most common substances reported were (meth)amphetamine, cannabis, and opioids. There were discrepancies between self-report drug history at time of entry to prison compared to drug and alcohol assessment while incarcerated. At reception, 55% of pregnant women reported substance use, but at a two-week follow-up with a drug and alcohol specialist, 84% reported recent use of one or more substance. At reception 6% of women reported using alcohol, however 23% of women reported using alcohol at the two-week follow-up. Most women reported their pregnancy as unplanned and about half were unaware of their pregnancy before entering prison. The findings highlight the high rate of substance use among incarcerated pregnant women and emphasize the need for assessment and treatment of substance use related concerns in order to minimize harm to both mother and child.

17. **Lange, A. E., Mahlo-Nguyen, J., Pierdant, G., Allenberg, H., Heckmann, M., & Ittermann, T. (2023). Antenatal Care and Health Behavior of Pregnant Women—An Evaluation of the Survey of Neonates in Pomerania. *Children*, 10(4), 678. doi: 10.3390/children10040678**

This German study investigated the influence of socioeconomic factors on pregnant women's health behaviours and medical checkups. Data from the Survey of Neonates in Pomerania was analyzed. Below standard antenatal care was found most among women with unplanned pregnancies, who had less education, and lower income. The risk of below standard antenatal care increased among women who smoked during pregnancy and used alcohol. Higher income was negatively correlated with smoking during pregnancy but positively associated with alcohol use during pregnancy. While results showed a high participation rate of medical checkups during

pregnancy, targeted preventive measures may address some of the socioeconomic factors and health behaviours that are associated with reduced antenatal care.

18. **May, P. A., Hasken, J. M., de Vries, M. M., Marais, A. S., Abdul-Rahman, O., Robinson, L. K., ... & Hoyme, H. E. (2024). Maternal risk factors for fetal alcohol spectrum disorders: Distal variables. *Alcohol: Clinical and Experimental Research*, 48(2), 319-344.**
<https://doi.org/10.1111/acer.15246>

This South African study examined potential distal influences on FASD risk. Interviews were conducted with mothers of first-grade students ($n = 2,515$) who were evaluated for risk for FASD. The topics included physical/medical status, childbearing history, demographics, mental health, domestic violence, and trauma. Despite individual variations in distal maternal risk patterns among the mothers of children with FASD, there were patterns that differentiated risk between mothers whose children had FASD and those that did not. Mothers of children with FASD were significantly smaller physically, had higher gravidity and parity, experienced more miscarriages and stillbirths, were less likely to be married, reported later pregnancy recognition, more depression, and lower formal educational achievement. Additionally, they were less religious, less happy, suffered more childhood trauma and interpersonal violence, were more likely to drink alone or with a partner, and drank to deal with anxiety, tension, and to be part of a group. Predictor variables explained the majority of diagnostic variance of FAS (57.5%), PFAS (30.1%), and ARND (46.4%). Distal variables explained smaller but still significant percentages of the variance in diagnoses. Results highlight the need to quantify risk for FASD to inform prevention/intervention strategies.

19. **Petersen Williams, P., Erasmus, J., Myers, B., Nadkarni, A., & Fuhr, D. C. (2023). Community-based counselling programme for pregnant women with alcohol problems in Cape Town, South Africa: A qualitative study of the views of pregnant women and healthcare professionals. *Frontiers in Psychiatry*, 14, 1203835-1203835.**
<https://doi.org/10.3389/fpsy.2023.1203835>

This South African study explored the acceptability, feasibility, and appeal of a community-based counselling programme for women with alcohol problems. Twenty-eight interviews were conducted with pregnant women who drink, Community Health Workers (CHWs), and antenatal service providers (ASPs) to explore their perceptions. Factors contributing to alcohol use during pregnancy reported by women and CHWs included financial stress, intimate partner violence, ambivalence about pregnancy, and lack of knowledge about the risks of alcohol use during pregnancy. Women reported stigmatizing interactions with healthcare providers and discomfort in seeking care at antenatal clinics, and ASPs reported late initiation in antenatal care and/or irregular attendance by pregnant women who drink alcohol. ASPs also reported using fear tactics to elicit disclosure of alcohol use by pregnant women. Brief intervention and referral by CHWs and ASPs were offered only if alcohol use was disclosed. Women themselves reported receiving little to no information on alcohol use during pregnancy. All participants perceived a community-based counselling program would be feasible and acceptable. Women thought that partners or family members should be included and that there should be a focus on early linkage to antenatal services. There were mixed views about whether the intervention should target all pregnant women or just those who report alcohol use. Challenges to implementation were raised, including existing relationships between CHWs and ASPs, lack of space and staff capacity, high demand, financial burdens associated with travel to the clinic, discomfort, lack of privacy, and staff attitudes. Challenges at the community level included crime, lack of privacy, competing interests in the home, fear of violence, and stigma and discrimination from other community members.

Suggestions for overcoming challenges included providing individual sessions as opposed to groups, using WhatsApp groups for support, peer support, and providing vouchers and refreshments. The inclusion of content related to breastfeeding, family planning, pregnancy termination, exercise, nutrition, and life skills was also suggested. The authors propose elements of a community-based alcohol programme based on what all three groups of stakeholders considered relevant, appropriate, and feasible. These findings provide crucial information about implementation needs for a community-based counselling intervention in the South African context.

20. **Römer, P., Kemmerich, R., Petermann, F., Mathes, B., & Zierul, C. (2023). Alcohol and Nicotine Consumption during Pregnancy. *Sucht*. <https://doi.org/10.1024/0939-5911/a000815>**

This German study examined how socioeconomic factors relate to alcohol and nicotine use during pregnancy. A cross-sectional analysis was conducted using data from the Bremer Initiative to Foster Early Child Development, a longitudinal intervention project. Women had below-average income, migration backgrounds, and/or faced other social and cultural challenges. Of the total sample ($n = 260$), 45% of participants consumed alcohol and/or nicotine during pregnancy. However, 92.3% quit drinking and 62.8% stopping smoking following confirmation of pregnancy. Factors that increased likelihood of alcohol consumption included better social support and higher age, while lower level of education increased likelihood of smoking, and unplanned pregnancies increased the likelihood of both. Preventative strategies should take these factors into account in the preconception period.

21. **Ruyak, S., Roberts, M. H., Chambers, S., Ma, X., DiDomenico, J., De La Garza, R., & Bakhireva, L. N. (2023). The effect of the COVID-19 pandemic on substance use patterns and physiological dysregulation in pregnant and postpartum women. *Alcohol: Clinical and Experimental Research*, 47(6), 1088-1099. <https://doi.org/10.1111/acer.15077>**

This U.S. study aimed to 1) explore changes in substance use among pregnant and postpartum women during the COVID-19 pandemic and 2) examine the associations between momentary substance use and ambulatory heart rate variability (HRV) measures in pregnant and postpartum women. Pregnant and postpartum women were identified through a prospective cohort study. Over a 14-day period, momentary substance use was assessed three times daily and HRV measurements were captured via wearable electronics. The sample included $n = 49$ pregnant and $n = 22$ postpartum women. From baseline and 14-day surveys, 21.2% of participants reported alcohol use, 16.9% reported marijuana use, and 8.5% reported nicotine use. Momentary alcohol use was associated with a decrease in HRV showing a dysregulation in the autonomic nervous system. Findings emphasize the negative effect of COVID-19 on the psychological health of pregnant and postpartum women, and the possible contribution to substance use disorders.

22. **Ruyak, S. L., Roberts, M. H., Chambers, S., Ma, X., DiDomenico, J., De La Garza, R., & Bakhireva, L. N. (2023). Impulsivity and Alcohol Use during Pregnancy and Postpartum: Insights from Novel Methodological Approaches within the Context of the COVID-19 Pandemic. *Behavioral Sciences*, 13(7), 600. <https://doi.org/10.3390/bs13070600>**

This U.S. study evaluated the association between emotion regulation difficulties and substance use in relation to the COVID-19 pandemic among pregnant and postpartum women. Participants completed a phone survey about COVID-19 related experiences and were assessed over a 14-day

period, for impulsivity and substance use. There was a between-subject association between momentary impulsivity scores higher than average group scores and subsequent momentary reports of marijuana use. There was a within-subject association between higher than average momentary impulsivity scores and subsequent reports of momentary alcohol use. Results highlight that impulsivity varies based on individual situations such as stress related to the COVID-19 pandemic, which can lead to substance use among pregnant and postpartum women. Findings can help inform prevention strategies to mitigate substance use during pregnancy especially during times of high levels of stress.

23. **Schmidt, R. A., Wey, T. W., Harding, K. D., Fortier, I., Atkinson, S., Tough, S., ... & Bocking, A. (2023). A harmonized analysis of five Canadian pregnancy cohort studies: exploring the characteristics and pregnancy outcomes associated with prenatal alcohol exposure. *BMC Pregnancy and Childbirth*, 23(1), 128. <https://doi.org/10.1186/s12884-023-05447-2>**

This Canadian study pooled data from multiple Canadian birth cohorts to identify the sociodemographic characteristics associated with alcohol consumption during pregnancy and assess the impact of different patterns of alcohol use on birth outcomes. Data was consolidated from a sample of $n = 11,448$. The authors found women's alcohol use during pregnancy (both any use and binge drinking) was associated with drinking prior to pregnancy, smoking during pregnancy, and white ethnicity. Higher income level was associated with any drinking during pregnancy. However, neither drinking during pregnancy nor binge drinking during pregnancy was associated with preterm delivery or low birth weight for gestational age. Despite a large sample size, the results highlight the need for greater consistency in data gathered on alcohol consumption, frequency, and timing in order to enhance compatibility and re-usability of data.

24. **Stanton, A. M., Hornstein, B. D., Musinguzi, N., Dolotina, B., Orrell, C., Amanyire, G., ... & META Study Team. (2023). Factors associated with changes in alcohol use during pregnancy and the postpartum transition among people with HIV in South Africa and Uganda. *Journal of the International Association of Providers of AIDS Care*, 22, 23259582231161029. doi: 10.1177/23259582231161029**

This South African and Ugandan study identified the factors associated with alcohol use changes during pregnancy to improve interventions for people with HIV. Pregnant people with HIV receiving antiretroviral therapy completed two assessments six months apart on self-reported alcohol consumption that included the categories of "no use", "new use", "quit", and "continued use". Most participants (68%) reported "no use"; however, 12% reported "continued use", 11% "quit," and 9% "new use". Living with a partner was associated with a lower risk of "continued use". Food insecurity was associated with a higher risk of "new use" while HIV-related stigma reduced the likelihood of quitting. Results highlight the need to focus on the areas of cohabitation, food security, and stigma when thinking about prevention and intervention studies around alcohol use during pregnancy.

25. **Steely Smith, M. K., Wilson, S. H., & Zielinski, M. J. (2023). An integrative literature review of substance use treatment service need and provision to pregnant and postpartum populations in carceral settings. *Women's Health*, 19, 17455057221147802. <https://doi.org/10.1177/17455057221147802>**

This review from the U.S. described what is known about substance use among incarcerated pregnant and postpartum people, available substance use treatment programs and care practices,

and recommendations for increasing access to treatment for incarcerated populations. A search of seven databases was conducted and 33 articles were included in the review. The findings demonstrated that there was limited research on prevalence rates among incarcerated pregnant women. However, while the research was limited and dated, the studies demonstrated that between 30% and 96% of women who enter prison report using substances during pregnancy, which is much higher than the rates of perinatal substance use found in community-samples. The authors report that enhanced perinatal services are greatly needed. Further, substance use treatment is not readily available for this population. However, community-partnerships can help increase the feasibility of treatment programs for pregnant and parenting incarcerated women. Additional research is needed to understand substance use and treatment programs among pregnant women in carceral settings. Implementation of substance use treatment during incarceration can provide benefits for both maternal and infant health while also facilitating a smooth transition back into the community.

26. **Stevenson, K., Fellmeth, G., Edwards, S., Calvert, C., Bennett, P., Campbell, O. M., & Fuhr, D. C. (2023). The global burden of perinatal common mental health disorders and substance use among migrant women: a systematic review and meta-analysis. *The Lancet Public Health*, 8(3), e203–e216. [https://doi.org/10.1016/S2468-2667\(22\)00342-5](https://doi.org/10.1016/S2468-2667(22)00342-5)**

This systematic review and meta-analysis produced by authors from the UK examined the global prevalence of and risk factors for perinatal mental health disorders or substance use among women who are migrants. Seven databases were searched for data from inception until July 2022. 135 studies with data from $n = 621,995$ migrant women who were pregnant or postpartum were included. Most studies were conducted in high-income countries with participants were from South America, the Middle East, and North Africa. Studies investigating perinatal depression ($n = 111$) and alcohol consumption or substance use during pregnancy ($n = 27$) were most common. The prevalence of perinatal depressive disorders was 24.2% among all migrants, 32.5% among forced migrants, and 13.7% among economic migrants. Prevalence of perinatal anxiety disorders was 19.6% and the prevalence rate of perinatal PTSD was 8.9% among all migrants and 17.1% among forced migrants. Predictors for perinatal depression included being a recently arrived immigrant, having poor social support, and having a poor relationship with one's partner. The prevalence of alcohol use during pregnancy was 8% among all migrants and there was a pooled prevalence of alcohol and substance use during pregnancy (5.1%). The results highlight the need for mental health and alcohol use screening for migrant communities to reduce harm.

27. **Sujan, A. C., Alexeeff, S. E., Slama, N., Avalos, L. A., Adams, S. R., Conway, A., ... & Young-Wolff, K. C. (2023). Patterns of substance use during early pregnancy and associations with behavioural health characteristics. *Journal of addiction medicine*, 17(3), e141–e147. <https://doi.org/10.1097/ADM.0000000000001090>**

This U.S. study identified patterns of early pregnancy substance use and examined how the patterns relate to behavioural health conditions. A retrospective observational study using self-reported data and toxicology tests was used to identify patterns of prenatal substance use. Four latent groups were identified with different patterns of substance use: (1) predominantly alcohol use and no other substances (9.30%), (2) predominantly cannabis and no other substances (4.88%), (3) predominately nicotine and some pharmaceutical opioids (1.09%), and (4) high-polysubstance (0.36%). These groups were compared to a no prenatal substance use group. The prevalence of all behavioural health conditions was elevated in all substance use groups compared to the no substance use group. Depressive and anxiety disorders, intimate partner violence and family drug

use history were greater in the high-polysubstance group than the alcohol and cannabis groups. The results emphasize a need for screening on substance use early in pregnancy prioritizing those with polysubstance use to reduce potential harm to both mother and foetus.

28. **Taylor, A., Whittaker, A., Chandler, A., & Carnegie, E. (2023). Accounts of women identified as drinking at 'high risk' during pregnancy: A meta-ethnography of missing voices. *The International Journal on Drug Policy*, 117, 104061. <https://doi.org/10.1016/j.drugpo.2023.104061>**

This meta-ethnography from researchers in the UK explored women's perspectives on 'high-risk' drinking during pregnancy. The authors synthesized qualitative studies that included women's accounts of alcohol use, including why they drank during pregnancy, how current services are working from women's perspectives, and what types of responses may be needed to address the needs of this population. Ten databases were searched for qualitative studies published since 2000 that included accounts of women who described themselves, or were diagnosed, as drinking at 'high-risk'. Nine studies were included, and three themes were identified. The themes exemplified the social and relational nature of alcohol use; how knowledge about the effects of alcohol use in pregnancy is not always enough; and the impact of multiple adversities. The themes demonstrate that alcohol use does not occur in isolation and how more research on the perspectives of women, particularly in the 'high-risk' context are needed. Further, the study highlights the need for policy responses that address the interconnected social and structural determinants of health. The inclusion of women in policymaking is crucial to ensure that the voices of people with lived and living experience are reflected in decision-making processes.

29. **Thomson, K. C., Greenwood, C. J., Letcher, P., Spry, E. A., Macdonald, J. A., McAnally, H. M., ... & Olsson, C. A. (2023). Continuities in maternal substance use from early adolescence to parenthood: Findings from the intergenerational cohort consortium. *Psychological Medicine*, 53(5), 2136-2145. doi:10.1017/S0033291721003925**

This Australian study explored if prospective reporting of preconception binge drinking, tobacco use, and cannabis use during adolescence and young adulthood was predictive of substance during pregnancy. Data from two intergenerational cohort studies: The Australian Temperament Project Generation 3 Study and the Victorian Intergenerational Health Cohort Study were pooled. Alcohol, tobacco and cannabis use was assessed in adolescence, young adulthood, and those transitioning to parenthood. Frequent preconception binge drinking, tobacco use and cannabis use in adolescence and young adulthood were strong predictors of continued use post-conception, before and after pregnancy recognition, and at one year postpartum. Substance use in young adulthood predicted continued use post-conception. The results highlight the need for early interventions and reducing substance use in the adolescence and young adulthood years continuing through the perinatal period.

30. **Tigka, M., Metallinou, D., Tzeli, M., & Lykeridou, K. (2023). Maternal tobacco, alcohol and caffeine consumption during the perinatal period: A prospective cohort study in Greece during the COVID-19 pandemic. *Tobacco Induced Diseases*, 21. doi: 10.18332/tid/166109**

This Greek study examined maternal tobacco, alcohol and caffeine consumption during the COVID-19 pandemic. A questionnaire was administered to $n = 283$ postpartum women in five Greek maternity hospitals between January and May 2020. Smoking rates decreased from the preconception period (32.9%) to the pregnancy (12.4%) and breastfeeding (5.6%) periods. Alcohol

consumption was significantly lower during pregnancy (5.7%), lactation (5.5%), and after breastfeeding cessation (5.2%) compared to the pre-pregnancy period (21.9%). Women who consumed alcohol during lactation were less likely to wean. Caffeine intake decreased during pregnancy compared to preconception period while in lactating women it remained at low rates until the three-month follow-up. Overall, tobacco, alcohol and caffeine consumption decreased in the perinatal period and showed a downtrend compared to studies conducted before the pandemic. COVID-19 restrictions and fear of potential illness may have contributed to these rates. The results show the importance of prevention messages and that early intervention programs are still needed to increase effectiveness.

31. **Washio, Y., Raines, A. L., Lv, M., Pei, S., Taylor, S. N., & Zhang, Z. (2023). The association of maternal smoking and drinking changes during pregnancy and postpartum breastfeeding pattern and duration. *Breastfeeding Medicine*, 18(6), 449–461. doi: 10.1089/bfm.2022.0130**

This U.S. study examined how changes in smoking and drinking during pregnancy impact status of any breastfeeding and breastfeeding duration in a national cohort. Data from the Pregnancy Risk Assessment Monitoring System (PRAMS), 2009 – 2017, was analyzed. A dose-dependent inverse relationship was found, whereby women who smoked the same, more, or resumed smoking during pregnancy showed the lowest likelihood and shortest duration of breastfeeding. However, women with a history of alcohol use were significantly more likely to breastfeed compared with women without a history of alcohol use. These findings indicate the need to implement and sustain evidence-based interventions for prenatal smoking and prenatal alcohol use.

32. **Wogayehu, B., Demissie, T., Wolka, E., Alemayehu, M., & Daka, K. (2023). The epidemiology of khat (*Catha edulis*) chewing and alcohol consumption among pregnant women in Ethiopia: a systematic review and meta-analysis. *PLoS Global Public Health*, 3(9), e0002248.**

This systematic review from Ethiopian explored the risk factors associated with khat and alcohol use during pregnancy and its pooled prevalence. Six databases were searched for articles published between 2000 and 2023. Twenty-three studies were included. The pooled prevalence of khat was 26.6% and alcohol was 31.65%. Partner khat use was an associated factor of khat use during pregnancy. Low educational level, pre-pregnancy alcohol use, unplanned pregnancy, history of abortion, poor social support, and mental distress were all associated factors for alcohol consumption during pregnancy. The results demonstrated the high prevalence of both alcohol and khat use among pregnant women. Interventions are needed, such as community-based health education and point-of-sale warnings to help address the high rates.

B. Level 1 Prevention

1. **Doyle, M. F., Perry, J., Bower, C., Conigrave, K. M., & Hamilton, S. (2023). Fetal alcohol spectrum disorder and Aboriginal and Torres Strait Islander men: A discussion to be had. *Drug and Alcohol review*, 42(7), 1601–1605. <https://doi.org/10.1111/dar.13743>**

This Australian commentary offers ideas for how Aboriginal and Torres Strait Islander men can support FASD research, prevention, care, and support. The authors emphasize the need for FASD prevention efforts, such as health promotion and including men in prenatal appointments, to better target and include men. The authors also highlight the need for culturally relevant screening tools,

and a greater understanding of what types of brief interventions and pathways to care are most effective with Indigenous fathers. Collaboration is crucial, and co-designed FASD prevention initiatives are encouraged to better engage Indigenous men in this work.

2. **Heenan, M., Shanthosh, J., Cullerton, K., Jan, S. (2022) Influencing and implementing mandatory alcohol pregnancy warning labels in Australia and New Zealand, *Health Promotion International*, 38(3). <https://doi.org/10.1093/heapro/daac022>**

This study from Australia and New Zealand describes the challenges experienced when implementing alcohol warning labels, and the role of public health advocacy groups in overcoming the barriers. Some of the challenges discussed include complicated governance structures, the industry tactics including lobbying against alcohol in pregnancy warning labels, limited knowledge of the harms of alcohol use during pregnancy, and pervasive attitudes that condone alcohol use in pregnancy. In 2020, mandatory pregnancy warning labels for alcohol products were introduced in Australia and New Zealand. The authors describe the importance of public health advocacy groups and how they mobilized to build the evidence, counter industry tactics, test consumer messaging, and garnered community and political support. The strategies used in Australia and New Zealand may be relevant to other countries seeking to implement national mandatory alcohol and pregnancy warning labels.

3. **Lyall, V., Egert, S., Reid, N., Moritz, K., & Askew, D. (2023). "Our mothers have handed that to us. Her mother has handed that to her": Urban Aboriginal and Torres Strait Islander yarning about community wellbeing, healthy pregnancies, and the prevention of Fetal Alcohol Spectrum Disorder. *International Journal of Environmental Research and Public Health*, 20(9), 5614. <https://doi.org/10.3390/ijerph20095614>**

This study from Australia examined local perspectives, experiences, and priorities for supporting healthy and alcohol-free pregnancies in order to create a culturally appropriate urban Aboriginal and Torres Strait Islander FASD prevention strategies. Ten community members, who have held multiple roles as mothers, grandmothers, aunts, fathers, and grandfathers, and in health and social service provision, provided insight on Indigenous ways of knowing and being, including cultural approaches to pregnancy and parenting. The findings highlight the centrality of place, community, culture and family for supporting women's health during pregnancy, along with some of the stressors that can be present for Indigenous families. Participants highlighted the need for self-reflexive practices that untangle biases towards Indigenous people and that limit care to Western concepts of health and wellbeing. Indigenizing and decolonizing FASD prevention strategies to support culturally safe, relevant, and strengths-based services have critical implications for all health and social professionals and can contribute to Aboriginal and Torres Strait Islander peoples' justice, recovery, and healing from colonization.

4. **Murray, J. B., Sharp, A., Munro, S., & Janssen, P. A. (2023). Expectant Parents' Preferences for teaching by texting: Development and usability study of SmartMom. *JMIR Formative Research*, 7, e44661. <https://doi.org/10.2196/44661>**

This Canadian study explores the perceived information needs and preferences for prenatal mHealth education, in order to develop SmartMom. SmartMom is an evidence-based prenatal education program that is designed to overcome barriers to prenatal class attendance, including rural or remote location, cost, stigma among participants, lack of instructors, and cessation of classes during the COVID-19 pandemic by providing information via text messaging. People enrolled

or eligible for SmartMom participated in a focus group to understand information-seeking behaviours, how people wanted to receive information, and if the program was meeting their information needs. The findings revealed that people want reliable, inclusive, locally relevant, and strengths-based information. Text messaging was perceived as a simple, easy, and timely modality. SmartMom met participant needs for prenatal education and was more convenient than using apps. While the shift towards digital prenatal education was accelerated by the COVID-19 pandemic, there needs to be a greater effort in the area to ensure that this form of prenatal education is evidence-based and meets the needs of diverse populations.

5. **Panton, K. R., Fitzpatrick, J. P., & Pestell, C. F. (2023). An evaluation of a multi-site fetal alcohol spectrum disorder models of care project. *Frontiers in Public Health, 11*, 1195484. <https://doi.org/10.3389/fpubh.2023.1195484>**

This Australian study examines the success of national FASD prevention, assessment, and diagnostic efforts across 6 sites. The project aimed to increase knowledge of FASD and diagnostic capacity across Australia. Six sites were identified to form a national consortium, delivering training clinics, diagnostic clinics, and community education sessions. Using clinic feedback and a confidence and knowledge survey, the authors found that the number of people diagnosed with FASD increased across the country. There was also an influx of community education, which was successful in increasing knowledge of FASD. Increasing local knowledge and capacity has the potential to increase FASD prevention efforts. The findings showcase the benefits of a coordinated approach to prevention, assessment, diagnosis and training in FASD.

6. **Pettigrew, S., Booth, L., McCausland, T., Kennington, K., & Keric, D. (2023). Evaluation outcomes of a Western Australian campaign designed to reduce alcohol use in pregnancy. *Australian and New Zealand Journal of Public Health, 47*(6), 100102. <https://doi.org/10.1016/j.anzjph.2023.100102>**

The aim of this Australian study was to assess the effectiveness of the 'One Drink' campaign, a mass media campaign dedicated to communicating the potential harms associated with consuming alcohol in pregnancy and changes in intentions to use alcohol during pregnancy after campaign exposure. Using a before- and after- study, Western Australians of child-bearing age were invited to complete an online survey. Among those in the follow-up sample, 76% reported awareness of the campaign. Females, and those with a certificate/diploma were more likely to recall the campaign, while those in the 40 – 45 age range were less likely to report campaign awareness. Participants in the follow-up sample had an increased awareness of harms of alcohol during pregnancy as well as intentions to abstain from alcohol during pregnancy. The study demonstrates that investment in FASD prevention campaigns can be a worthwhile approach to reduce alcohol-related harms.

7. **Pettigrew, S., Booth, L., McCausland, T., Kennington, K., Miller, M., Bowden, J., & Stafford, J. (2023). Evaluation outcomes of an alcohol and pregnancy campaign targeting multiple audiences. *Drug and Alcohol Review, 42*(1), 36–45. <https://doi.org/10.1111/dar.13541>**

The aim of this Australian study was to evaluate the effectiveness of 'One Drink', a mass media campaign about the harms of prenatal alcohol exposure. An online survey was administered to Western Australians to identify demographic characteristics, types of alcohol use, campaign perceptions, and behavioural changes. The majority of respondents reported having seen/heard the campaign and considered the campaign to be believable (89%), clear (88%), trustworthy (87%)

and memorable (82%). Following campaign exposure, most (85%) participants expressed increased concern about alcohol use during pregnancy and 83% of female respondents reported being much less likely to use alcohol during pregnancy. Campaign effectiveness was associated with confidence to abstain, lower socioeconomic status, and living in a metropolitan area. The results highlight that well-designed campaigns can be effective in increasing the intention to refrain from alcohol use during pregnancy.

8. **Piotrkowicz, E., Kowalik, I., & Szymusik, I. (2023). The changes in the level of knowledge about the effects of alcohol use during pregnancy among three last generations of women in Poland. *International Journal of Environmental Research and Public Health*, 20(3), 2479. <https://doi.org/10.3390/ijerph20032479>.**

This study compared three generations of Polish women's knowledge on the risks of alcohol consumption during pregnancy, to assess the efficacy of prenatal education regarding FASD. An online survey of women of reproductive age was conducted, and level of knowledge was assessed based on the number of correct answers. The majority of participants were Generation Y (26 – 41 years old), followed by Generation Z (15 – 25 years old) and Generation X (42 – 49 years old). Generation Y produced the highest average of correct scores (7.55 out of 9) and Generation X had the lowest number of correct answers (6.96 out of 9). Further, more than 99% of women from the younger two generations knew that alcohol was a teratogen, while up to 4.4% of participating Generation X women thought alcohol was harmless. The differences in knowledge between Generation X and the younger two generations was statistically significant ($p = 0.047$), as was the difference in alcohol consumption ($p = 0.031$). Despite improvements in knowledge, the findings demonstrate that education regarding FASD in recent years has been less effective. Further awareness raising is needed, including amongst the youngest generation of women.

9. **Popova, S., Charness, M. E., Burd, L., Crawford, A., Hoyme, H. E., Mukherjee, R. A. S., Riley, E. P., & Elliott, E. J. (2023). Fetal alcohol spectrum disorders. *Nature Reviews. Disease Primers*, 9(1), 11-11. <https://doi.org/10.1038/s41572-023-00420-x>**

This primer from Canadian, USA, New Zealand, UK, and Australian authors outlined the epidemiology, mechanisms/pathophysiology, diagnosis, screening and prevention, management, quality of life, and areas for further research or practice improvement related to FASD. In the epidemiology section, the prevalence of alcohol use during pregnancy is estimated at 10% worldwide, with the highest prevalence in Europe (25.5%). Issues related to subpopulations are mentioned, including binge drinking in conjunction with unprotected sex and lack of pregnancy recognition among young women; and higher rates of alcohol use during pregnancy among Indigenous populations in Australia, South Africa, and Canada related to the negative and ongoing effects of colonization. As to mechanisms and pathophysiology, the dose, pattern, timing and duration of exposure, fetal and maternal genetics, maternal nutrition, concurrent substance use, and epigenetics are identified as important factors that can contribute to harm from prenatal alcohol exposure. The authors highlight that no safe level of alcohol use during pregnancy has been established. Large-scale population-based screening programmes, barriers to screening, and the importance of non-judgemental brief interventions are discussed, as well as the four levels of FASD prevention. Recommendations for future research are provided, including a focus on cultural contexts and stigma reduction.

10. **Sapru, S., Mitchell, K., & McFadden, T. (2023). Combining physician expertise and women's lived experience to educate health professionals about preventing fetal alcohol**

spectrum disorders. *Maternal and Child Health Journal*, 10.1007/s10995-023-03786-2.
Advance online publication. <https://doi.org/10.1007/s10995-023-03786-2>

This study from the U.S evaluated a FASD education program for health care providers. The program was led by physician-champions from the American College of Obstetricians and Gynecologists (ACOG) and trained speakers from FASD United, who have given birth to a child with FASD. The presenters co-presented FASD as a biological and social problem in which stigma prevents women from accessing the help that they need. A qualitative evaluation was conducted with 10 ACOG champions and nine FASD United speakers to understand how the co-presentations can further enhance healthcare provider knowledge and understanding of FASD and ways to address stigma associated with alcohol use during pregnancy. Both champions and speakers emphasized the need for non-judgmental practice and safe spaces that facilitate an open dialogue. They reported that residents were moved by mothers' personal stories and were encouraged to understand alcohol use during pregnancy and provide supports. Combining physician expertise with mothers' personal stories is an effective modality at reaching residents, as it facilitates empathy-based approaches to learning that help dismantle stigma surrounding women's alcohol use. Further collaborations are encouraged nationally.

11. **Sträuli, B., Davies, T., Jan, S., Booth, L., Laznik, N., Taylor, F., & Pettigrew, S. (2023). Uptake of mandated pregnancy warnings in the Australian alcoholic ready-to-drink beverage market. *Drug and Alcohol Review*, 43(1), 165–169. <https://doi.org/10.1111/dar.13758>**

The aim of this Australian study was to analyse the extent to which a mandatory pregnancy warning labels had been applied to ready-to-drink (RTD) alcohol products two-years after they were mandated in Australia and New Zealand. RTD products ($n = 491$) sold in three liquor stores in Sydney, Australia were sampled. Their included warning labels were categorized as mandated, an industry-developed warning label (DrinkWise), or 'other'. Almost all the sample products had some form of pregnancy warning, but only 36% included the mandatory warning label. Of the non-mandatory warning labels, 72% were DrinkWise warnings (42% of total sample), and 27% were other warning labels (15% of total sample). There was not a clear relationship between the alcohol content and likelihood of displaying the mandatory warning label. The study demonstrates that there has been a slow uptake to the mandatory warning labels. Continued monitoring will be required to determine whether the alcohol industry meets its obligations to include the warning label within the three-year implementation period and beyond.

C. Level 2 Prevention

1. **Association of Women's Health, Obstetric and Neonatal Nurses (AWHONN). (2023). Prevention of fetal alcohol spectrum disorders. *Journal of Obstetric, Gynecologic, and Neonatal Nursing*, 52(6), e5-e7. <https://doi.org/10.1016/j.jogn.2023.06.003>**

In this position statement, the US Association of Women's Health, Obstetric and Neonatal Nurses (AWHONN) discussed FASD prevention. The position statement recommended universal and ongoing screening for alcohol use during the preconception, antepartum, intrapartum, and postpartum periods using a validated tool. They encouraged early referral to interventions and treatments that are non-stigmatizing and are patient and family focused. Further, they comment on the role of the nurse in providing respectful, equitable, culturally sensitive, and nonjudgmental

care and education on the risks of alcohol use during pregnancy. The position statement offers several recommendations for nurses, including the use of motivational interviewing with patients, as well as policy recommendations.

2. **Board, A., D'Angelo, D. V., von Essen, B. S., Denny, C. H., Miele, K., Dunkley, J., Park, Y., & Kim, S. Y. (2023). The postpartum period: An opportunity for alcohol screening and counseling to reduce adverse health impacts. *Journal Of Addiction Medicine, 17(5), 528–535.* <https://doi.org/10.1097/ADM.0000000000001169>**

This study from the U.S. identifies prevalence of alcohol consumption among a sample of postpartum people with a recent live birth, and whether they reported receiving alcohol screening and brief intervention (SBI) or counselling by their providers. Using data from the 2019 Pregnancy Risk Assessment Monitoring System (PRAMS), a population-based surveillance system designed to capture pregnancy-related information before, during, and after birth, a sample of individuals with a recent live birth were contacted. Data was collected from $n = 1,790$ postpartum participants from six states. Among the respondents, 53.1% reported consuming alcohol postpartum, 70.8% of whom reported being asked about alcohol use by a healthcare provider. Slightly more than half of respondents who drank postpartum and were either trying to get pregnant (52.4%) or were not using birth control (59.8%) reported being asked about alcohol use. Approximately 25% of respondents who drank alcohol postpartum were advised about risky alcohol levels by a healthcare provider. A small proportion of respondents who drank alcohol postpartum and were pregnant or trying to get pregnant at the time of the survey were advised to reduce or stop drinking alcohol (10.6% and 2.3%, respectively). The findings of this study suggest there are further opportunities to integrate alcohol SBI in the postpartum period, as to help prevent alcohol-exposed pregnancies.

3. **Chang G. (2023). Reducing Prenatal Alcohol Exposure and the Incidence of FASD: Is the Past Prologue?. *Alcohol research: current reviews, 43(1), 02.* <https://doi.org/10.35946/arcr.v43.1.02>**

This literature review from a U.S. author synthesized outcomes of clinical and randomized controlled trials aimed to reduce preconception and prenatal alcohol exposure. Six databases were searched, and an additional two literature searches were completed. A total of 21 studies were included that described technology-assisted interventions ($n = 10$), preconception efforts to reduce alcohol-exposed pregnancies ($n = 5$), case management programs ($n = 4$), and motivational interviewing, screening, brief intervention, and referral to treatment ($n = 2$). All of the included interventions included a motivational interviewing approach, regardless of if they were included in the 'motivational interviewing, screening, brief intervention, and referral to treatment' category. The preconception interventions were based on Project CHOICES and had a similar outcome of increased contraception. The two studies selected on motivational interviewing and brief intervention did not demonstrate efficacy but were small (< 200 participants combined) and with low levels of alcohol use reported at baseline. The technology-assisted approaches (inclusive of text message, telephone, and computer-based approaches) also included small sample sizes but showed promising results in their impact to reduce alcohol exposed pregnancies. These findings may inform the future of clinical practice surrounding FASD prevention.

4. **Chu, W. E. C., Carroll, J. A., Aladenika, A. T., Kalista, S. T. & Pajarillo, E. Y. J. (2023). The value of early screening in pregnant women who consume alcohol: An integrative review. *Journal of Nursing Practice Applications & Reviews of Research, 13(1).* <https://doi.org/10.13178/jnparr.2023.13.01.1308>**

The aim of this integrative review from authors from the U.S. was to identify and examine qualitative and quantitative studies on the benefits of early screening for alcohol use in pregnancy. Eight databases were searched for articles published between 2017 and 2022 that explored how early screening can be used as an FASD prevention tool. Nine of the 11 articles included in the integrative review indicated that early screening for alcohol use indirectly led to a result in reduced incidence of FASD when paired with targeted interventions. The other two articles emphasized the importance of provider education and of alcohol warning signs, respectively. The findings highlight the role of early screening and how it can be a cost-effective and timely means of identifying women at risk of having an alcohol exposed pregnancy.

5. **Dozet, D., Burd, L., & Popova, S. (2023). Screening for alcohol use in pregnancy: A review of current practices and perspectives. *International Journal of Mental Health and Addiction*, 21(2), 1220–1239. <https://doi.org/10.1007/s11469-021-00655-3>**

This narrative review by Canadian authors presented the evidence on prenatal alcohol use screening strategies, including the clinical utility of validated alcohol use screening tools. The authors categorized screening strategies by three levels: 1) clinician-directed questions in prenatal care encounters; 2) validated alcohol use screening instruments; and 3) lab-based screening tools for prenatal alcohol exposure. The authors note that, during clinical encounters, if healthcare providers do not consistently and thoroughly screen for alcohol use, women at risk of having alcohol-exposed pregnancies may not be identified. However, of the 14 validated alcohol use screening tools available, only five have been developed and/or validated for pregnant women (i.e., T-ACE, TWEAK, AUDIT-C, the 4P's Plus, and the 1-Question Screen). These challenges, in addition to time constraints, competing priorities of prenatal care providers, and lack of training are identified as barriers to screening for alcohol use during prenatal appointments. Prenatal screening for alcohol use can be an important FASD prevention strategy, that can be integrated with motivational interviewing and supportive dialogue on the part of healthcare providers.

6. **Dyson, J., Onukwugha, F., Howlett, H., Combe, K., Catterick, M., & Smith, L. (2023). Midwives and service users' perspectives on implementing a dialogue about alcohol use in antenatal care: A qualitative study. *Journal of Advanced Nursing*, 79(8), 2955–2966. <https://doi.org/10.1111/jan.15622>**

The aim of this British study was to identify the barriers to engaging in prenatal conversations about alcohol use by midwives. Midwives ($n = 14$) and service users ($n = 6$) were invited to participate in virtual focus groups to co-create strategies to address the barriers to engaging in discussions about alcohol use during pregnancy. Barriers included: a lack of awareness of guidelines, not having the skills or confidence to navigate difficult conversations, lack of knowledge of the existing evidence, not seeing discussions about alcohol use as part of their role, and women not listening to midwives' advice. Co-created strategies to address these barriers were diverse and included: training that was inclusive of mothers of children with FASD, midwifery champions, service user questionnaires about alcohol use completed prior to the consultation, and additional questions and a structured appraisal tool added to the maternity data capture (in order to collect consistent information on prenatal alcohol use, while also having a means of auditing their discussions with women). Co-creation is an important strategy to help further midwifery practice and address barriers to service delivery.

7. **Green, C., George, N., Park, Y., Denny, C. H., Weber, M. K., Meaney-Delman, D., & Kim, S. Y. (2023). Screening and brief interventions for alcohol use during pregnancy: practices**

among US primary care clinicians, *DocStyles 2019. Preventing Chronic Disease, 20, E25.*
<https://doi.org/10.5888/pcd20.220226>

The aim of this U.S. study was to examine primary care clinicians' current screening and brief intervention practices with pregnant patients. Five questions were asked on screening and brief interventions for alcohol use in pregnancy in the 2019 DocStyles 2019 survey. A total of $n = 1,500$ clinicians serving adults completed the survey. Among the respondents, most (94.5%) reported screening pregnant patients for alcohol use, with 67.2% reporting always screening, 15.9% screening often, 11.5% screening sometimes, and 5.4% never screening. Clinicians reported engaging brief interventions with similar frequency. 66% reported always engaged in brief interventions, 18.8% reported often, 10.1% reported sometimes, and 5.1% reported never conducting brief interventions. Clinicians with the highest proportion of always screening and conducting brief interventions were nurse practitioners and OB/GYNs, whereas physician assistants had the highest proportion of never screening or engaging in brief interventions. Many clinicians (64%) reported using a tool that met the US Preventive Services Task Force criterion. Increased clinician confidence and the use of standardized screening tools may enhance the frequency of screening and brief interventions on alcohol use in pregnancy on the part of clinicians.

8. **Harriett, L. E., Eary, R. L., Prickett, S. A., Romero, J., Maddrell, R. G., Keenan-Devlin, L. S., & Borders, A. E. B. (2023). Adaptation of screening tools for social determinants of health in pregnancy: A pilot project. *Maternal and Child Health Journal, 27(9), 1472–1480.***
<https://doi.org/10.1007/s10995-023-03732-2>

The aim of this pilot study was to develop a comprehensive perinatal screening tool with a primary care clinic in Chicago. The Social Determinants of Health in Pregnancy Tool (SIPT) combined existing validated screening tools, including questions from the Perceived Stress Scale-4, Prenatal Psychosocial Profile, McFarlane questionnaire, NIDA Quick Screen ASSIST V1.0, and the abbreviated Hager hunger scale. By combining elements from these screeners, the authors were able to capture questions on perceived stress, relationship and family stress, domestic violence, substance use, and financial stress. Pregnant patients ($n = 135$) from an urban Federally Qualified Health Center completed the SIPT. Ninety-one percent of patients scored positive on at least one screener and 54% scored positive to three or more screeners. Despite the importance of the social determinants of health, no universal screening tool has been developed. This pilot demonstrated an adapted tool that can be used to screen and encourage connection to linkages to care to improve maternal and child health outcomes.

9. **Hebert, L. E., Vera, M. R., & Sarche, M. C. (2023). Prenatal alcohol counseling among American Indian and Alaska Native women and non-Hispanic White Women in the Pregnancy Risk Assessment Monitoring System. *Women's Health Issues, 33(5), 515–523.***
<https://doi.org/10.1016/j.whi.2023.06.003>

The aim of this study from the U.S. was to assess the differences in provision of prenatal alcohol counselling with American Indian/Alaskan Native (AI/AN) and non-Hispanic White (NHW) women. Using Pregnancy Risk Assessment Monitoring System (PRAMS) data from 2014 – 2015 from the four states with the highest number of births to AI/AN women, the authors estimated the prevalence of prenatal alcohol use, the associated risk factors, and provision of prenatal alcohol counselling. The findings indicated that AI/AN women were counselled on prenatal alcohol use more frequently than

NHW women (77% vs. 67%, $p < .05$), despite similar odds of prenatal alcohol use. The likelihood of prenatal drinking increased with age, education, and income in both groups. Among AI/AN women, higher education levels were significantly associated with a lower likelihood of receiving prenatal alcohol counselling. Among NHW women, living above the Federal Poverty Level was also associated with a lower likelihood of receiving prenatal alcohol counselling, compared to women living below the federal poverty line. The findings demonstrate that, despite there being no differences in the prevalence of prenatal alcohol use, AI/AN women were more likely to receive prenatal alcohol counselling. Further efforts are needed to encourage the provision of universal counselling.

10. **Henderson, E. M. A., Tappin, D., Young, D., Favretto, D., & Mactier, H. (2023). Assessing maternal alcohol consumption in pregnancy: Does phosphatidylethanol measured from day 5 newborn blood spot cards have any value? an observational, population-based study. *Archives of Disease in Childhood*, 108(1), 36-41. <https://doi.org/10.1136/archdischild-2022-324394>**

This UK study investigated whether infant Phosphatidylethanol (PEth) concentration, a metabolite of alcohol, was correlated with postnatal maternal self-reports of alcohol use during pregnancy. PEth was measured in dried blood spot (DBS) cards on day 5 as part of routine newborn screening at a large maternity unit in Glasgow, Scotland. Of the $n = 908$ eligible mothers approached, 840 agreed to participate and 510 DBS samples were obtained, of which 502 were analyzed. The findings showed that PEth samples could not reliably identify women who self-reported modest alcohol use after 36 weeks' gestation. The authors conclude that PEth measured retrospectively is not recommended for identifying prenatal alcohol exposure, which is required in the diagnosis of FASD.

11. **Jolma, M., Koivu-Jolma, M., Niemelä, O., Autti-Rämö, I., & Kahila, H. (2023). Rapid urine screening for ethyl glucuronide from pregnant women as a tool for detecting prenatal alcohol exposure. *BMC Pregnancy and Childbirth*, 23(1), 464-464. <https://doi.org/10.1186/s12884-023-05789-x>**

This Finnish study evaluated the potential for rapid screening of ethyl glucuronide (EtG), an alcohol metabolite, from urine samples of pregnant women to detect prenatal alcohol exposure. Urine samples were collected from pregnant women ($n = 505$) at five prenatal clinics. The clinic types included: a tertiary specialist antenatal clinic for pregnant women with problematic substance use, a hospital antenatal clinic, a prenatal screening unit, and two community maternity clinics. All samples were screened using rapid EtG test strips. An EtG cut-off of 300 ng/mL, suggesting heavy alcohol drinking, was exceeded by 7.4% of the samples from the tertiary specialist clinic, 1.9% of the samples from the hospital antenatal clinic, and 0.9% from the community maternity clinics. However, 17.6% of samples from the tertiary specialist clinic, 7.5% from the hospital antenatal clinic, and 6.7% from the community maternity clinics exceeded a cut off of 100 ng/mL. No false negatives or false positives were found, however, 57 (11.3%) were deemed uncertain. Of the samples with EtG exceeding 300 ng/mL, 73% were also positive of cotinine, indicating the co-occurrence of smoking with alcohol use. The authors conclude that rapid EtG tests are an effective method for screening for alcohol use among pregnant women during routine prenatal visits.

12. **Kaufman, C. E., Asdigian, N. L., Reed, N. D., Shrestha, U., Bull, S., Begay, R. L., Shangreau, C., Howley, C. T., Vossberg, R. L., & Sarche, M. (2023). A virtual randomized controlled trial**

of an alcohol-exposed pregnancy prevention mobile app with urban American Indian and Alaska Native young women: Native WYSE CHOICES rationale, design, and methods. *Contemporary Clinical Trials*, 128, 107167.
<https://doi.org/10.1016/j.cct.2023.107167>

This study from the U.S. described the rationale, design, and methods for a CHOICES-based culturally tailored mobile app. Native WYSE (women, young, strong, empowered) CHOICES (NWC) was designed for American Indian and Alaskan Native (AI/AN) women from urban areas across the U.S. NWC's mobile app included 6 sessions, covering topics such as alcohol use, contraception, FASD, risk assessment, goal setting, and sustaining choices. Each session contains various methods of engagement including quizzes, vignettes, balance and readiness to change exercises, and strategizing options for support and resilience. Eligible participants complete a baseline survey and are randomized to the app's intervention or comparison arm, both of which provide 3 hours of content. Follow-up data are collected at 1, 6, and 12-months post-baseline. This study offers a template for reaching the population, including in hybrid or virtual capacities. Similar approaches may be beneficial in reaching harder-to-reach populations in the future.

13. **Klie, K., Nagle-Yang, S., Zhao, L., & Fringuello, M. (2024). Integrated care for pregnant and parenting people with substance use. *Clinical Obstetrics and Gynecology*, 67(1), 200-221. doi: 10.1097/GRF.0000000000000831**

This chapter presented by U.S. authors described information for clinicians who support pregnant people with substance use concerns. The authors include information about evidence-based practice for screening, intervention, for ongoing support for pregnant people and their families. Substance-specific treatment and counselling considerations that are recommended for dyad care include alcohol withdrawal management, the use of folic acid, thiamine, and prenatal vitamins, naltrexone, and discussing the risks of FASD. The authors recommend clinicians visit the ACOG guidance and toolkit for FASD prevention to increase their knowledge and access resources about FASD.

14. **Kurtz, T., & Smid, M. C. (2023). Office-based management of perinatal substance use and substance use disorder for the general obstetrician-gynecologist. *Obstetrics and Gynecology Clinics of North America*, 50(3), 609-627.**
<https://doi.org/10.1016/j.ogc.2023.03.010>

This review from U.S. authors provides an overview of the prevalence of perinatal substance use, maternal and neonatal risks, and treatment approaches for commonly used substances, for the intended audience of generalist obstetrician-gynecologists. The authors present updated terminology for substance use, misuse, disorder, and recovery, types of stigma, and destigmatizing language. Screening considerations include adherence to the universal screening recommendations from ACOG, including the use of a universal non-judgmental screener before further adoption of the AUDIT-C or T-ACE, both of which are validated in pregnancy. Urine toxicology is discouraged in lieu of screening, and that these tools be used with patient consent only if the results will impact substance use support strategies. The authors encourage screening for IPV, mood disorders, and STBBIs and encourage familiarity with maternal, fetal, and neonatal risks and strategies to mitigate risks related to substance use during pregnancy. Improving care for patients with substance use concerns required a multi-disciplinary patient-centered approach that can be led by OB-GYNs.

15. **Leruste, S., Delfarguiel, L., Doray, B., Loubaresse, C., Sennsfelder, L., Maillard, T., Marimoutou, C., & Spodenkiewicz, M. (2023). The role of general practitioners in reunion in detecting alcohol use in pregnant women and identifying fetal alcohol spectrum disorder: A qualitative study. *Archives of Public Health, 81*(1), 210-210. <https://doi.org/10.1186/s13690-023-01221-0>**

This French qualitative study aimed to understand how general practitioners (GPs) in Réunion Island identify patients with FASD. Interviews with $n = 20$ GPs were conducted. Several barriers were discussed, including: social taboos around alcohol use and the pervasiveness of alcohol advertising, lack of knowledge and experience in their medical training on FASD, highly variable symptomatology, ambiguous classification, and the multidisciplinary and time needs for diagnosis. GPs reported comfort in identifying neurodevelopmental disorders of any cause, but expressed concern about wait times to access specialized care and emphasized the need for coordinated care pathways. The authors offer recommendations for practice including training for GPs on talking with patients about alcohol use and raising awareness about the risks of alcohol use during pregnancy, especially among young women.

16. **Okulicz-Kozaryn, K., Segura-García, L., Bruguera, C., Braddick, F., Zin-Sędek, M., Gandin, C., Słodownik-Przybyłek, L., Scafato, E., Ghirini, S., Colom, J., & Matrai, S. (2023). Reducing the risk of prenatal alcohol exposure and FASD through social services: promising results from the FAR SEAS pilot project. *Frontiers in Psychiatry, 14*, 1243904. <https://doi.org/10.3389/fpsy.2023.1243904>**

This study described the FAR SEAS pilot project, a multi-component evidence-based community intervention that was implemented and evaluated in Mazovia (Poland) with the aim of preventing alcohol-exposed pregnancies. Multi-disciplinary professionals recruited women of childbearing age and screened for alcohol risk. Participants ($n = 411$) were distributed into groups for low-risk (70%), moderate (23%), or high (7%) risk of having an alcohol exposed pregnancy, in order to provide tailored interventions. Follow-up data (collected from 93% of participants) indicated positive changes for risky alcohol consumption (decrease of 81%), contraception use (increase of 15%), and gynecologist visits (increase of 39%). There was also a decrease in psychosocial risk factors, including cigarette and substance use, domestic violence, and depressive symptoms. There was no change in frequency of visits to other services. The most prominent changes were observed in the moderate risk group. The pilot demonstrated the importance of tailoring interventions to population-group needs.

17. **Onukwugha, F., Dyson, J., Howlett, H., Combe, K., Catterick, M., Cohen, J., & Smith, L. (2023). Reflections of maternity service users and midwives' on the co-creation of interventions to support midwives addressing alcohol during antenatal care. *Patient Education and Counseling, 115*, 107896. <https://doi.org/10.1016/j.pec.2023.107896>**

This study from the U.K. evaluated the co-creation of an intervention to support midwives' discussions around alcohol use during pregnancy with pregnant women. Thirteen midwives and six recent maternity service users participated in five workshops on Zoom. Data was analyzed using core values of co-creation, including equality, inclusivity, positivity, transparency, iterative, and sustainability. The findings indicated that the co-creation process was productive and rewarding, leading to unexpected positive outcomes for service users. The findings demonstrate how co-

creation can support stigma reduction; but can require additional time and resource considerations.

18. **Park, Y., Dang, E. P., Board, A., Gilboa, S. M., Ondersma, S. J., Smid, M. C., Shakib, J. H.,... & Kim, S. Y. (2023). Polysubstance use in pregnancy: Surveillance, interventions, and next steps. *Journal of Women's Health (2002)*, 32(9), 899–904. <https://doi.org/10.1089/jwh.2023.0341>**

This commentary from the U.S. provided an overview of the surveillance activities and polysubstance prenatal screening and prevention initiatives led by the National Center on Birth Defects and Developmental Disabilities (NCBDDD; hosted by the Centers for Disease Control and Prevention) and their partners. Surveillance findings, such as those from National Survey on Drug Use and Health and the Pregnancy Risk Assessment Monitoring System, have helped tailor prevention initiatives across jurisdictions. The commentary highlighted how, despite the importance of early identification of polysubstance use during pregnancy, the lack of validated polysubstance use screening tools for the pregnant population, stigma and punitive policies, present clinical barriers to screening. The authors offered suggestions to enhance screening and brief intervention through e-health initiatives. The combined efforts of the NCBDDD and partners can improve clinical care and improve the health of pregnant people and their children.

19. **Petersen Williams, P., Erasmus, J., Myers, B., Nadkarni, A., & Fuhr, D. C. (2023). Community-based counselling programme for pregnant women with alcohol problems in Cape Town, South Africa: A qualitative study of the views of pregnant women and healthcare professionals. *Frontiers in Psychiatry*, 14, 1203835–1203835. <https://doi.org/10.3389/fpsy.2023.1203835>**

See above (Prevalence of, and influences and factors associated with, alcohol use in pregnancy).

20. **Popova, S., Charness, M. E., Burd, L., Crawford, A., Hoyme, H. E., Mukherjee, R. A. S., Riley, E. P., & Elliott, E. J. (2023). Fetal alcohol spectrum disorders. *Nature Reviews. Disease Primers*, 9(1), 11-11. <https://doi.org/10.1038/s41572-023-00420-x>**

See above (Level 1 prevention).

21. **Popova, S., Dozet, D., Pandya, E., Sanches, M., Brower, K., Segura, L., & Ondersma, S. J. (2023). Effectiveness of brief alcohol interventions for pregnant women: A systematic literature review and meta-analysis. *BMC Pregnancy and Childbirth*, 23(1), 61-17. <https://doi.org/10.1186/s12884-023-05344-8>**

This systematic review and meta-analysis from Canadian authors aimed to investigate the effectiveness of brief interventions in reducing the consumption of alcohol during pregnancy and adverse neonatal outcomes due to prenatal alcohol exposure, as well as the cost-effectiveness of brief interventions. Randomized control trials and quasi-experimental studies published between 1987 to 2021 were included. The comparison group was no/minimal intervention when alcohol use was reported. Twenty-six studies met inclusion criteria, all from high income countries. Among those that included alcohol abstinence as an outcome (12 studies, $n = 2,620$), there was a modest effect of brief interventions, which were found to increase the odds of abstinence by 56%. There were no statistically significant effects on reducing mean drinks per week or AUDIT scores. Among

seven studies (n = 740) that reported neonatal outcomes, brief interventions were associated with a modest reduction in preterm birth, but no differences were found for birth weight. No eligible studies explored cost-effectiveness. The authors concluded that brief interventions are moderately effective in increasing abstinence during pregnancy and preventing preterm birth, but more studies on effectiveness from low- and middle-income countries are needed, as well as studies with more diverse populations in terms of age and ethnicity.

22. **Reese, S. E., Glover, A., Fitch, S., Salyer, J., Lofgren, V., & McCracken III, C. T. (2023). Early insights into implementation of universal screening, brief intervention, and referral to treatment for perinatal substance use. *Maternal and Child Health Journal*, 27(Suppl 1), 58-66. <https://doi.org/10.1007/s10995-023-03842-x>**

The objective of this US pilot study was to assess the implementation of universal screening, brief intervention, and referral to treatment (SBIRT) in an outpatient obstetric clinic setting that served a high rate of rural and Indigenous patients. A clinical pathway was developed which mandated that all patients complete the 5Ps screening tool at three time points. If they screened positive (answered yes to at least one question), providers were to engage them in a discussion about their answer and refer them to a tele-health care manager who would connect them with services. In the first year of implementation, screening was completed with 26.5% of eligible visits and 463 (48.5%) patients completed screening at least once during the perinatal period. Of the patients who completed the screening at least once, 195 (42%) screened positive. The authors concluded that universal SBIRT is feasible in this obstetric setting and offered several recommendations for practice, including: the implementation of universal SBIRT simultaneously with perinatal mood and anxiety disorders, use of an implementation framework, investment in resources for ongoing provider training, and tracking of the frequency and fidelity of brief interventions.

23. **Shrestha, U., Boland, S. E., Howley, C., Reed, N. D., Tuitt, N. R., Asdigian, N. L., Bull, S., Sarche, M. C., & Kaufman, C. E. (2023). Centering culture in an mHealth adaptation of an alcohol-exposed pregnancy prevention program for American Indian youth. *Journal of Ethnicity in Substance Abuse*, 1-17. <https://doi.org/10.1080/15332640.2023.2223160>**

This qualitative study explored the relevance of culture in a health intervention with a national sample of urban American Indian and Alaska Native (AIAN) women. The objective was to inform Native Women Young Strong and Empowered CHOICES, an adaptation of American Indian Youth-CHOICES, an intervention aimed to reduce the risk of alcohol-exposed pregnancy, for urban AIAN women in a mHealth delivery model. A group of 12 leaders, researchers, and urban Native young women formed the Urban Community Advisory Board to assist with all phases of the project. Three iterative rounds of interviews were conducted with a total of 29 AIAN women between 16-20 years of age. Three main themes emerged: (1) a high interest in receiving culturally informed health interventions; (2) a diversity of cultural practices and willingness to learn about many AIAN cultures; and (3) the overall importance of culture in the participants' lives. The authors highlighted the importance of centring these community voices in the adaptation of NWC, with a key learning being the incorporation of stories, symbols and values from many AIAN cultures, with opportunities for participants to make connections with their own tribal cultures.

24. **von Sternberg, K., Parrish, D., Castro, Y., & Velasquez, M. M. (2023). Processes of change in preventing alcohol-exposed pregnancy: Replication of a mediation analysis. *Journal of Consulting and Clinical Psychology*, 91(5), 301-312. <https://doi.org/10.1037/ccp0000793>**

This U.S. study aimed to understand the mechanisms of change of the CHOICES intervention for reducing the risk of alcohol-exposed pregnancy by replicating analyses from previous research using data ($n = 252$) from the CHOICES Plus trial. CHOICES Plus is a shortened version of the intervention that targets risky alcohol use, cigarette smoking, and ineffective contraception use, with the overall aim of reducing the risk of alcohol- and tobacco-exposed pregnancies. Two previous mechanisms were identified as a transtheoretical model of change: 1) an experiential process of change, which involves thought processes, feelings, and unique situational experiences, and (2) a behavioural process of change, which is action-oriented and involves behavioural change strategies. The previous study identified that indirect paths from the intervention to experiential processes at 3 months and behavioural processes at 9 months. Greater use of behavioural process for alcohol was not related to reduced risk of AEP at 9 months. A greater use of the experiential process at 3 months was indirectly related to ineffective contraception and reduced risk of AEP at 9 months. The study replicated the prior indirect effects on target risk behaviours. The findings support the use of processes of change to inform health behaviour change.

D. Level 3 Prevention

1. **Allen, L., Wodtke, L., Hayward, A., Read, C., Cyr, M., & Cidro, J. (2022). Pregnant and early parenting Indigenous women who use substances in Canada: A scoping review of health and social issues, supports, and strategies. *Journal of Ethnicity in Substance Abuse*, 22(4), 827–857. <https://doi.org/10.1080/15332640.2022.2043799>**

This review from Canadian authors synthesized the literature on Indigenous women who are pregnant and parenting and using substances, to understand the scope of knowledge and ways to best support this population socially, psychologically, and culturally. Ten databases were searched for relevant studies published between 1995 and 2021 from Canada, Australia, New Zealand, and the U.S. Forty-nine ($n = 49$) journal articles and $n = 7$ grey literature documents were included for analysis. Identified themes from the studies included: 1) cyclical repercussions of state removal of Indigenous children from their families; 2) compounding barriers and inequities; 3) prevalence and different types of substance use; and 4) intervention strategies. The intervention strategies, ranging from smoking cessation and substance use treatment to wraparound support, indicated the need for trauma-informed, culturally safe, holistic supports overall. The authors note how services that meet Indigenous women with compassion can better improve uptake and women's health outcomes.

2. **Bondi, B. C., Leslie, M., & Motz, M. (2023). Breaking the Cycle: Applying a Partnership-based, Three-client, Early Intervention Model within a Child Welfare Framework to Care for Children Exposed Prenatally to Substances. *Child Welfare*, 101(3), 107+. <https://link.gale.com/apps/doc/A773841938/HRCA?u=ubcolumbia&sid=summon&xid=d6f8d57>**

This Canadian study described Mothercraft's Breaking the Cycle (BTC) program, a community-based prevention and early intervention program for women who are pregnant, mothers, and their infants with exposure to maternal substance use and trauma. The authors outlined BTC's partnership and early intervention model of care that focuses on the mother, child, and mother-child dyad as three unique clients; neurodevelopmental outcomes of children at BTC; the ways in which the model of care can be adapted within a child welfare framework; and challenges,

limitations, and future directions of the BTC program. The findings of this study provide insight as to how to support attachment-based prevention programming.

3. **Chou, J. L., Noel, J. G., Williams, C., Spruell, S., Nixon, K., Riedel, E., & Zaarur, A. (2023). Residential substance use treatment outcomes for pregnant and postpartum women: Distinct patterns for women enrolled before versus during the COVID-19 pandemic. *Journal of Nursing Scholarship, 55*(3), 730-738. <https://doi.org/10.1111/jnu.12803>**

This U.S. study evaluated the outcomes of substance use treatment for pregnant and postpartum women before and during the COVID-19 pandemic. Outcome data from $n = 136$ women participating in the Healthy Families Program (HFP), a comprehensive program for pregnant and postpartum women located within a gender-specific, live-in SUD treatment facility, were analyzed. Outcomes related to substance use, mental health symptoms, and functioning were examined. Significant improvements in family functioning and daily functioning were reported from treatment intake to the 6-month follow-up assessment, as well as reduced days of substance use. As treatment intake declined during the COVID-19 pandemic, the authors found that mental health indicators improved only for clients who enrolled in treatment before the pandemic. Regardless of if women enrolled before or during the pandemic, substance use decreased significantly. The authors highlight the need for added support for co-occurring mental health symptoms and family stress and emphasize the role of nurses in identifying and addressing these concerns in specialized treatment programming for pregnant and parenting women with SUDs.

4. **Cox, L. V. (2023). The Eastern Door Center: Re-balancing the wheel-a two-eyed seeing approach to FASD and other disorders related to transgenerational adversity. *Frontiers in Sociology, 8*, 910153-910153. <https://doi.org/10.3389/fsoc.2023.910153>**

This study described the Eastern Door Centre, located in Elsipogtog First Nation in Atlantic Canada. The authors offered the history and evolution of the Eastern Door Centre and the success and challenges experienced in practice. The Eastern Door Centre was the first diagnostic service to open in Atlantic Canada as a response to the Canadian Truth and Reconciliation Commission's call for more access to FASD related health services for Indigenous communities. The Centre offers culturally informed diagnosis, intervention, and prevention of FASD. The prevention program involves awareness raising of FASD and provides a support group for women who use substances, and a program modeled on the Parent-Child Assistance Program for high-risk women. As the first diagnostic team in Atlantic Canada, Eastern Door Centre served as a demonstration for both diagnostic models in New Brunswick, Canada, as well as Indigenous communities regionally and nationally.

5. **Flannigan, K., Murphy, L., & Pei, J. (2023). Integrated supports for women and girls experiencing substance use and complex needs. *Substance Abuse: Research and Treatment, 17*, 11782218231208980-11782218231208980. <https://doi.org/10.1177/11782218231208980>**

In this Canadian study, the authors reported on an integrated program for pregnant women, girls, and gender diverse people experiencing substance use and other complexities. Data ($n = 393$) from the 2nd Floor Women's Recovery Centre at the Lakeland Centre for Fetal Alcohol Spectrum Disorder was analyzed with the following aims: (1) to describe clients characteristics and needs, (2) to

identify factors associated with program completion, and (3) to examine resources, wellbeing, and social and behavioural outcomes after treatment. The program was successfully completed by 63.4% of clients and was more likely to be completed by those with had stable housing and a possible or confirmed diagnosis of FASD. Clients who completed the program reported high levels of wellbeing and connection with health care and community resources post-treatment, which was maintained at 1-year follow-up. Clients also reported improvements in social and behavioural functioning at 1-year follow-up, with many reporting employment or engagement in volunteering, stable home environments, reduced substance use and legal involvement, and active involvement in the parenting of their children. The authors highlight that the findings from 2nd Floor program can offer important insights for supporting women, children, families, and communities.

6. **Massi, L., Hickey, S., Maidment, S.-J., Roe, Y., Kildea, S., & Kruske, S. (2023). "This has changed me to be a better mum": A qualitative study exploring how the Australian Nurse-Family Partnership Program contributes to the development of First Nations women's self-efficacy. *Women and Birth: Journal of the Australian College of Midwives*, 36(6), e613-e622. <https://doi.org/10.1016/j.wombi.2023.05.010>**

This Australian study explored the impact of the Nurse-Family Partnership (NFP) program on first-time First Nations mothers' self-efficacy. The study was conducted at two sites within an Aboriginal community health service in Meanjin (Brisbane), Australia. Twenty-six first time mothers who had accessed the program were interviewed, as well as a family member and two Elders. Interviews were conducted either face-to-face or by telephone, using a yarning method, to explore women's experiences and perceptions. Three main themes were identified: 1) sustaining connections and relationships; 2) developing self-belief and personal skills; and 3) achieving transformation and growth. The authors interpreted that when a program facilitates culturally safe relationships with staff and peers, it enables behaviour change, skill development, personal goal setting and achievement, leading to self-efficacy. The findings demonstrate how the Australian NFP program facilitate self-efficacy, growth, and empowerment.

7. **May, P. A., Marais, A., Kalberg, W. O., de Vries, M. M., Buckley, D., Hasken, J. M., Snell, C. L.,... & Parry, C. D. H. (2023). Multifaceted case management during pregnancy is associated with better child outcomes and less fetal alcohol syndrome. *Annals of Medicine*, 55(1), 926-945. <https://doi.org/10.1080/07853890.2023.2185808>**

This South African study investigated the outcomes of children born to mothers who participated in a multifaceted case management (MCM) program to prevent FASD. Women who were identified as high-risk drinkers (AUDIT score ≥ 8) were recruited from antenatal clinics and participated in 18 months of MCM during the prenatal and immediate postpartum period to reduce or stop alcohol use. The MCM program involved motivational interviewing, community reinforcement, and nutritional supplementations. There were 41 women who completed the program and 55 women who received standard antenatal care who comprised the comparison group. At age five follow-up, it was found that more children of women who participated in MCM did not meet criteria for FASD (34%) compared to children of women in the comparison group (22%). Further, significantly fewer children (24%) of MCM women were diagnosed with FAS compared to controls (49%). Significantly improved physical outcomes from the MCM group included lower total dysmorphology scores, larger head circumferences, longer palpebral fissures, and higher midfacial measurements. However, neurodevelopmental outcomes were mixed. The authors conclude that MCM is an effective program to that can improve child outcomes and prevent FASD.

8. **Milligan, K., Tarasoff, L. A., Rodrigues, E. R., Iwajomo, T., Gomes, T., de Oliveira, C., ... & Urbanoski, K. A. (2023). Neonatal outcomes of pregnant women attending integrated and standard substance use treatment programs in Ontario, Canada. *Birth, 51*(2), 284–294. <https://doi.org/10.1111/birt.12784>**

This Canadian study examined the effects of treatment type on neonatal outcomes. Integrated ($n = 564$) and standard ($n = 320$) substance use treatment programs were compared. The findings suggested that neonatal outcomes did not significantly differ between treatment type suggesting no significant impact of treatment type. While rates of adverse neonatal outcomes were higher in the studied population compared to the general population, those that engaged in integrated treatment presented with more risk factors which may have masked the influence of treatment type. The study findings emphasize the need for more nuanced research and investment in services to support maternal and neonatal health.

9. **Moore, J. D., Casanova, M. P., Ryu, S., Smith, L. H., & Baker, R. T. (2023). Examining ECHO Idaho's perinatal substance use disorder program. *Journal of Rural Mental Health, 47*(1), 10–19. <https://doi.org/10.1037/rmh0000219>**

This U.S. study used a mixed methods approach to evaluate the reach of the Extension for Community Healthcare Outcomes (ECHO) Idaho perinatal substance use disorder (PSUD) series in rural areas as well as clinicians' perceived benefits. Project ECHO is a telementoring model developed to increase patient access to care through better equipping rural clinicians with clinical knowledge and skills to treat specialized health conditions. Two subsequent years of the ECHO Idaho PSUD series were examined. A total of 290 clinicians (year 1 $n = 154$, year 2 $n = 136$) participated in the ECHO Idaho PSUD. The findings demonstrated that clinicians perceived the series to be beneficial and supported them in treating patients with PSUDs. They believed that the series increased their knowledge, improved their awareness of state and local resources, and supported them to apply the acquired knowledge in clinical practice. The authors conclude that ECHO Idaho PSUD was effective in increasing the knowledge and abilities of rural clinicians. Similar approaches may be useful to improve the care of perinatal patients with substance use disorder in rural areas.

10. **Morton Ninomiya, M. E., Almomani, Y., Dunbar Winsor, K., Burns, N., Harding, K. D., Ropson, M., Chaves, D., & Wolfson, L. (2023). Supporting pregnant and parenting women who use alcohol during pregnancy: A scoping review of trauma-informed approaches. *Women's Health, 19*, 17455057221148304. <https://doi.org/10.1177/17455057221148304>**

This scoping review from Canadian researchers synthesized the literature on trauma-informed approaches to working with pregnant and parenting women who use alcohol. Thirty-six studies were identified that reported on trauma-informed practice in different care modalities including live-in treatment settings, case coordination/management, integrated and wraparound support services, and outreach programs. The authors reported on how the principles of trauma-informed practice, including 1) trauma awareness, 2) safety and trustworthiness, 3) choice, collaboration, and connection, and 4) strengths-based approach and skill-building were applied and articulated in the included studies. The findings indicate the role of relationships and trust in furthering trauma-informed practice, and the need to consider the unique stigma attached to alcohol use during pregnancy and when parenting. This review advances and highlights the importance of

understanding trauma-informed practice and the approaches that can be used to better support a reduction of alcohol-exposed pregnancies.

11. **Rotheram-Borus, M. J., Tomilson, M., Worthman, C. M., Norwood, P., le Roux, I., & O'Connor, M. J. (2023). Maternal depression, alcohol use, and transient effects of perinatal paraprofessional home visiting in South Africa: Eight-year follow-up of a cluster randomized controlled trial. *Social Science & Medicine*, 324, 115853, <https://doi.org/10.1016/j.socscimed.2023.115853>**

This South African study examined maternal outcomes of women 5- and 8-years post-birth who participated in the Philani Intervention Program (PIP). PIP was a randomized controlled trial of a prenatal home visiting program that continued to 6 months post birth. At 5- and 8-years post-birth, maternal benefits were limited. The prevalence of alcohol use reemerged in the first year and approached or exceeded pre-pregnancy levels by 8 years. While previous findings had indicated reduced depression at 3 years, the depression prevalence declined from 35.1% prenatally to 5.5% at 8 years, independent of their involvement in PIP. These findings indicate the challenges of sustaining outcomes from short-term programming when there are high rates of community deprivation and compounding social-cultural factors.

12. **Schmidt, C. N., Patel, D., Alpers, B. S., Spaulding, M., Ocegueda, L., Thomas, M., Sammann, A., & Briscoe, H. (2023). Facilitating Integrated Perinatal Care for Families Affected by Substance Use. *Journal of addiction medicine*, 17(1), 1-3. <https://doi.org/10.1097/ADM.0000000000001016>**

This commentary described the development and initial testing of Plans of Safe Care that engage American patients and their providers in perinatal care coordination. The Plans of Safe Care approach facilitates conversations with clients around delivery planning and aligns resources to support families with substance use disorders. The authors note that while federal legislation requires states to develop Plans of Safe Care to address families' health and substance use treatment needs, few have developed comprehensive and systematic approaches to provide perinatal support to parents and infants. Without such comprehensive systemic approaches, many families face barriers to accessing prenatal care and substance use treatment services that would prevent or reduce child protection systems involvement.

13. **Simon, J., Guynn, I., Thompson, M., Hambright, S., Jones, C., & Lich, K. H. (2023). Strengthening the system supporting perinatal people with substance use disorder in the Midwest using group model building. *Maternal & Child Health Journal*, 27, 128-142. <https://doi.org/10.1007/s10995-023-03751-z>**

This U.S. study described a system-strengthening process with a regional collaborative of health care providers, state public health agencies, and community-rooted organizations (SUPper Club) working with those with substance use disorders in the perinatal period in the Midwest. The National Maternal and Child Health Workforce Development Center facilitated a two-day group model building workshop with 20 participants and conducted two semi-structured interviews. Two primary trends were identified as priorities for change: 1) Perceptions/experiences of stigma; and 2) The SUPper Club's reach and influence. To facilitate the group model development, three causal loop diagrams were created to capture the interconnected dynamics of the perinatal substance use system, including: 1) the influence of stigma on maternal and infant health outcomes, 2) the role of clinic, organizational, and state policies, and 3) the impact of workforce education and

evidence-based practices on care. From the diagrams, four priorities for action emerged: 1) align and promote shared mental models across stakeholders, 2) expand education and training opportunities for the perinatal SUD workforce, 3) strengthen systems infrastructure to support care navigation for patients and providers, and 4) collaboratively identify evidence-based practices that meet regional needs. The authors noted that the group model building process strengthened collaboration and advanced strategic planning for the SUPper Club and can be further utilized among maternal child health systems to create shared mental models and accelerate collaborative planning efforts.

14. **Steely Smith, M. K., Wilson, S. H., & Zielinski, M. J. (2023). An integrative literature review of substance use treatment service need and provision to pregnant and postpartum populations in carceral settings. *Women's Health*, 19, 17455057221147802. <https://doi.org/10.1177/17455057221147802>**

See above (Prevalence of, and influences and factors associated with, drinking during pregnancy).

15. **Sternberger, L., Sorensen-Alawad, A., Prescott, T., Sakai, H., Brown, K., Finklestein, N., Salomon, A., Schiff, D. M. (2023). Lessons learned serving pregnant, postpartum, and parenting people with substance use disorders in Massachusetts: The Moms Do Care Program. *Maternal and Child Health Journal*, 27 (Suppl 1), 67-74. <https://doi.org/10.1007/s10995-023-03775-5>**

This U.S. study described the design and implementation of a multidisciplinary, integrated approach to supporting pregnant, postpartum, and parenting people (PPPP) and their families affected by substance use disorders. Between 2015 and 2022, the Moms Do Care (MDC) Program established or expanded 11 co-located medical and behavioural health teams across Massachusetts. The teams provided trauma-informed primary and obstetric health, substance use treatment and recovery, parenting support, and case management for $n = 1,048$ PPPP with a substance use disorder. MDC created a network of support for PPPP with substance use disorders. However, there was a continued need to invest in staff training to foster teambuilding, improve integrated service delivery, uplift peer recovery coaches, and improve engagement, evaluation and access to services. This model can be considered for those working in multidisciplinary, integrated health systems.

16. **Stoner, S. A., Graham, C. J., & Grant, T. M. (2023). Evaluating outcomes of a three-year case management program for mothers with prenatal substance use according to race/ethnicity, Washington State, 2006 – 2017. *BMC Public Health*, 23(1832). <https://doi.org/10.1186/s12889-023-16670-z>**

This study from U.S. authors examined if there were racial/ethnic differences in the intake, retention, and outcomes of a three-year intensive case management intervention. Using self-reported data from $n = 3,165$ women enrolled in the Parent-Child Assistance Program (PCAP) in Washington State between 2006 and 2017, this study examined racial/ethnic group differences. Despite racial/ethnic differences at enrollment, there were no differences in outcomes among those who finished the program and completed an exit interview. However, the findings did suggest that American Indian/Alaskan Native women were less likely to finish the program (Adjusted OR: 0.66). Further work is needed to understand why this population was less likely to finish the program, in order to address and close this service gap.

17. **Wagjo, M., Crone, M., Zwicht, B. B., van Lith, J., Billings, D. L., & Rijnders, M. (2023). Contributions of CenteringPregnancy to women's health behaviours, health literacy, and health care use in the Netherlands. *Preventive Medicine Reports*, 35, 102244-102244. <https://doi.org/10.1016/j.pmedr.2023.102244>**

This randomized controlled trial investigated the health outcomes of CenteringPregnancy (CP), a group antenatal care model offered in the Netherlands. Women ($n = 2,132$) recruited from 13 primary care midwifery centres completed questionnaires at 12 weeks, 28 weeks, 36 weeks gestation as well as at 6 weeks postpartum. Health behaviour, health literacy, psychological outcomes, health care use, and satisfaction with care were analyzed for the group and independently. Participation in CP was associated with lower alcohol consumption after giving birth, healthy eating and physical activity, and increased knowledge about pregnancy. Compared to the control group, CP participants reported higher rates of health care use and satisfaction. Multiparous CP participants consumed less alcohol after giving birth compared to controls, whereas nulliparous women in CP reported better compliance to healthy eating and physical activity. The authors highlight that CP has a positive impact on postpartum health behaviours.

18. **Williams, V. N., McManus, B., Brooks-Russell, A., Yost, E., Olds, D. L., & Tung, G. J. (2023). Cross-sector collaboration between public health, healthcare and social services improves retention: Findings from a nurse home visiting program. *Prevention Science*, 24(6), 1209-1224. <https://doi.org/10.1007/s11121-023-01538-w>**

This U.S. study examined the association between cross-sector collaboration among 9 community provider types involved in the Nurse-Family Partnership (NFP) and participant retention. The authors linked the dataset from the 2018 NFP Collaboration Survey to the 2014–2018 NFP program implementation data ($n = 36,900$). They found that stronger relational coordination between nurses and substance use treatment providers (OR: 1.177, 95% CI: 1.09–1.26) and greater structural integration with child welfare (OR: 1.062, CI: 1.04–1.09) were positively associated with participant retention at birth. Structural integration with child welfare remained significantly associated with participant retention at 12-month postpartum (OR: 1.032, CI: 1.01–1.05). Further, visits by a nurse with a master's degree, agency rurality, and healthcare systems that implement the program were associated with participant retention. A negative association was found between participant retention at birth and stronger structural integration between other home visiting programs and supplemental nutrition for women, infants, and children (OR: 0.985, CI: 0.97–0.99). Clients who were unmarried, African American, or visited by nurses who ceased to be employed by NFP prior to their infant's birth were more likely to drop out of the NFP program, while older clients and high school graduates were more likely to remain in NFP. The authors conclude that cross-sector collaboration that bridges healthcare and addresses social determinants of health in a home visiting setting has the potential to improve participant retention. This study sets the groundwork for future research to explore the implications of collaborative activities between preventive services and community providers.

E. Level 4 Prevention

1. **Allen, L., Wodtke, L., Hayward, A., Read, C., Cyr, M., & Cidro, J. (2022). Pregnant and early parenting Indigenous women who use substances in Canada: A scoping review of health and social issues, supports, and strategies. *Journal of Ethnicity in Substance Abuse*, 22(4), 827–857. <https://doi.org/10.1080/15332640.2022.2043799>**

See above (Level 3 prevention).

2. **Bondi, B. C., Leslie, M., & Motz, M. (2023). Breaking the Cycle: Applying a Partnership-based, Three-client, Early Intervention Model within a Child Welfare Framework to Care for Children Exposed Prenatally to Substances. *Child Welfare, 101(3)*, 107+. <https://link.gale.com/apps/doc/A773841938/HRCA?u=ubcolumbia&sid=summon&xid=c6f8d57>**

See above (Level 3 prevention).

3. **Bosak, J., Messersmith, L., Bryer, C., Drainoni, M., Goodman, D., Adams, M., Barry, T., Flanagan, C., Flanagan, V., Wolff, K., & Declercq, E. (2023). "They just looked at me like I was human": The experiences of parenting women and providers with substance use disorder treatment. *Journal of Substance Use and Addiction Treatment, 157*, 209240. <https://doi.org/10.1016/j.josat.2023.209240>**

The aim of this U.S. study was to identify barriers and facilitators to engagement and retention in live-in substance use treatment for pregnant and parenting women. The study conducted semi-structured interviews with parenting women with lived experience ($n = 13$) and treatment providers ($n = 19$) to elicit participants' experiences either receiving or providing care. The authors analyzed data in NVivo-12 using the six principles of trauma informed care. The study identified four major themes: 1) peer relationships provide inspiration and diminish shame; 2) providing individuals safe space to stumble in recovery creates opportunities for growth and builds self-efficacy; 3) reasonable, clear boundaries create a structured, protective environment for early recovery; 4) nonjudgmental connections facilitate engagement and build trust. The authors identified small pivotal moments along the continuum of care that showed how the elements in the four themes enhanced engagement and retention in treatment; and they noted how the research increases understanding of the interplay of the structural and relational barriers and facilitators to engagement and retention in treatment. They conclude that improvement strategies that integrate women's lived experience and collaboratively co-design a more patient-centered system are critical steps to improving engagement in substance use treatment and more equitable substance use treatment services.

4. **Chou, J. L., Noel, J. G., Williams, C., Spruell, S., Nixon, K., Riedel, E., & Zaarur, A. (2023). Residential substance use treatment outcomes for pregnant and postpartum women: Distinct patterns for women enrolled before versus during the COVID-19 pandemic. *Journal of Nursing Scholarship, 55(3)*, 730-738. <https://doi.org/10.1111/jnu.12803>**

See above (Level 3 prevention).

5. **Cox, L. V. (2023). The Eastern Door Center: Re-balancing the wheel-a two-eyed seeing approach to FASD and other disorders related to transgenerational adversity. *Frontiers in Sociology, 8*, 910153-910153. <https://doi.org/10.3389/fsoc.2023.910153>**

See above (Level 3 prevention).

6. **Jirikowic, T., Graham, J. C., & Grant, T. (2023). A trauma-informed parenting intervention model for mothers parenting young children during residential treatment for substance use disorder. *Occupational Therapy in Mental Health, 39(2)*, 156-183. <https://doi.org/10.1080/0164212X.2022.2089315>**

This U.S. study described the Trauma Informed Parenting (TIP) intervention model for mothers parenting young children while participating in live-in substance use treatment. The TIP intervention was guided by principles and practices from occupational therapy, trauma-informed care, and relationship-focused early interventions. The article describes the development, implementation and short-term outcomes of the intervention, characteristics of mothers ($n = 150$) and children ($n = 96$), and discuss lessons learned. Prior to implementation, nearly half (42.6%) of mothers were involved in the child welfare system or had a child protection court order. In the 30 days prior to intake, 50.7% of women had received outpatient treatment for a physical health problem, 19.3% had received outpatient treatment for mental health difficulties and 32% had received emergency room care. During implementation, a TIP therapist supported mothers and children while in live-in treatment. Each mother, on average, received 4.8 sessions. TIP therapists guided problem-solving and introduced positive parenting strategies. Training and consultation for staff on trauma-informed principles were also embedded in implementation, to extend services beyond individual care. The authors see that such parenting supports are critical for mothers with substance use disorders (SUD) in treatment and recovery, and that early intervention is a vital protective factor for children with developmental and behavioral challenges due to prenatal substance exposure and early adversity.

7. **Lowell, A. F., DeCoste, C., Dalton, R., Dias, H., Borelli, J. L., Martino, S., McMahon, T. J., & Suchman, N. E. (2023). Mothering from the Inside Out: Results of a community-based randomized efficacy trial testing a mentalization-based parenting intervention for mothers with addictions. *Infant Mental Health Journal, 44(2)*, 142-165. <https://doi.org/10.1002/imhj.22043>**

This U.S. study evaluated the efficacy of the Mothering from the Inside Out (MIO) intervention when delivered by community-based clinicians in one U.S. state. Mothering from the Inside Out (MIO) is a 12-week individual parenting psychotherapy program designed to help address challenges common among mothers experiencing substance use disorders. Mothers ($n = 94$) caring for children 11 – 60 months old were randomly assigned to participate in 12 sessions of either MIO or a standard psychotherapy session. Participation in MIO was associated with mothers' increased certainty about their children's mental states and decreased depression, as well as increased clarity of cues from children. MIO delivery from community-based clinicians was not associated with the same degree of improvement that was observed when MIO was delivered by research clinicians. However, when delivered by community-based clinicians, MIO may be protective against a decline in mothers' caregiving capacity. The authors note that the drop in efficacy of MIO in this trial raises questions about intervention-intervenor fit and that research should examine such factors influencing MIO effectiveness, to inform research to practice.

8. **Massi, L., Hickey, S., Maidment, S.-J., Roe, Y., Kildea, S., & Kruske, S. (2023). "This has changed me to be a better mum": A qualitative study exploring how the Australian Nurse-Family Partnership Program contributes to the development of First Nations women's self-efficacy. *Women and Birth: Journal of the Australian College of Midwives, 36(6)*, e613-e622. <https://doi.org/10.1016/j.wombi.2023.05.010>**

See above (Level 3 prevention).

9. **Morton Ninomiya, M. E., Almomani, Y., Dunbar Winsor, K., Burns, N., Harding, K. D., Ropson, M., Chaves, D., & Wolfson, L. (2023).** Supporting pregnant and parenting women who use alcohol during pregnancy: A scoping review of trauma-informed approaches. *Women's Health, 19*, 17455057221148304. <https://doi.org/10.1177/17455057221148304>

See above (Level 3 prevention).

10. **Rotheram-Borus, M. J., Tomilson, M., Worthman, C. M., Norwood, P., le Roux, I., & O'Connor, M. J. (2023).** Maternal depression, alcohol use, and transient effects of perinatal paraprofessional home visiting in South Africa: Eight-year follow-up of a cluster randomized controlled trial. *Social Science & Medicine, 324*, 115853, <https://doi.org/10.1016/j.socscimed.2023.115853>

See above (Level 3 prevention).

11. **Sternberger, L., Sorensen-Alawad, A., Prescott, T., Sakai, H., Brown, K., Finklestein, N., Salomon, A., Schiff, D. M. (2023).** Lessons learned serving pregnant, postpartum, and parenting people with substance use disorders in Massachusetts: The Moms Do Care Program. *Maternal and Child Health Journal, 27* (Suppl 1), 67–74. <https://doi.org/10.1007/s10995-023-03775-5>

See above (Level 3 prevention).

12. **Stoner, S. A., Graham, C. J., & Grant, T. M. (2023).** Evaluating outcomes of a three-year case management program for mothers with prenatal substance use according to race/ethnicity, Washington State, 2006 – 2017. *BMC Public Health, 23*(1832). <https://doi.org/10.1186/s12889-023-16670-z>

See above (Level 3 prevention).

13. **Williams, V. N., McManus, B., Brooks-Russell, A., Yost, E., Olds, D. L., & Tung, G. J. (2023).** Cross-sector collaboration between public health, healthcare and social services improves retention: Findings from a nurse home visiting program. *Prevention Science, 24*(6), 1209–1224. <https://doi.org/10.1007/s1121-023-01538-w>

See above (Level 3 prevention).

F. Supportive Alcohol and Child Welfare Policy

1. **Berglas, N. F., Subbaraman, M. S., Thomas, S., & Roberts, S. C. M. (2023).** Pregnancy-specific alcohol policies and admissions to substance use disorder treatment for pregnant people in the USA. *Alcohol and Alcoholism, 58*(6), 645–652. <https://doi.org/10.1093/alcalc/agad056>

This study from the U.S. examined the relationships between pregnancy-specific alcohol policies and substance use treatment admissions for pregnant people in the US. Pooling policy and treatment admissions data from 1992 and 2019, the authors examined the effects of nine-specific alcohol policies on the number of admissions of pregnant women where alcohol was reported as the primary, secondary, or tertiary substance related to treatment admission ($n = 1,331$). When alcohol was reported as the primary substance, mandatory reporting was associated with greater treatment admissions. Alcohol warning labels and priority treatment for pregnant women were associated with fewer treatment admissions. No other policies were associated with treatment admissions. The findings suggest that pregnancy-specific policies related to greater treatment admissions are related to mandated, rather than voluntary treatment. As such, it is important to consider the ethics and effectiveness of these policy approaches.

2. **Desai, A., DeMatteo, D., Heilbrun, K., Holliday, R., Lankford, C., & Rotrosen, J. (2023). Public perception on policies to address prenatal substance use: Recommendations regarding maternal criminal prosecution and child welfare. *Psychology, Public Policy, and Law*, 29(3), 402–415. <https://doi.org/10.1037/law0000387>**

This U.S. study examined public perceptions on policies to address prenatal substance use. Participants from a larger study examining the general public and judges' legal recommendations in prenatal substance use cases were sampled. U.S. citizens ($n = 467$) were presented with four hypothetical case vignettes of a newborn who presented with symptoms consistent with substance withdrawal shortly after delivery. The details of the vignettes remained consistent, except for the type of substance reported (alcohol, benzodiazepine, prescription opioid, and heroin). There were no statistically significant differences between the type of substance and criminal prosecution recommendations. However, participants were more likely to recommend child removal for prenatal heroin use and were most likely to recommend criminal prosecution for prenatal alcohol use. Secondary analyses revealed a relationship between participant political affiliation and criminal prosecution recommendations. Further, female participants and those who have been pregnant were more likely to recommend loss of custody. The findings provide insight into public opinions that may inform policy, legal, and clinical interventions.

3. **Greene, M. Z., Gillespie, K. H., & L Dyer, R. (2023). Contextual and Policy Influences on the Implementation of Prenatal Care Coordination. *Policy, politics & nursing practice*, 24(3), 187–197. <https://doi.org/10.1177/15271544231159655>**

This study from the U.S. described the contextual factors that influenced the implementation of Prenatal Care Coordination (PNCC), a program that provides Medicaid reimbursements to mothers and infants at risk for adverse outcomes. The authors conducted semi-structured and observational interviews with all PNCC staff at two sites in Wisconsin. Participants believed in the potential of PNCC and endorsed the goals but noted that the external policy environment limited their impacts. As such, participants developed local strategies. Increased collaboration among policy stakeholders, and increased reimbursement would enable PNCC providers to better meet the complex needs of clients. Further, expanded postpartum coverage would support the PNCC goals. The findings support the need to study the implementation of public and community health interventions and consider the role of health in all policies.

4. **Heenan, M., Shanthosh, J., Cullerton, K., Jan, S. (2022) Influencing and implementing mandatory alcohol pregnancy warning labels in Australia and New Zealand, *Health Promotion International*, 38(3). <https://doi.org/10.1093/heapro/daac022>**

See above (Level 1 prevention).

5. **Jordan, B., Rashied, N., & Venter, M. (2023). Rethinking Local Economic Development for Fetal Alcohol Spectrum Disorder in Renosterberg Local Municipality, South Africa. *International Journal of Environmental Research and Public Health*, 20(5), 4492. doi: 10.3390/ijerph20054492**

See above (Prevalence of, and influences and factors associated with, drinking during pregnancy).

6. **Kenny, M.C., Mathews, B. & Pathirana, M. (2023) Responses to prenatal opioid and alcohol abuse: A review of US and Australian mandatory reporting laws. *Child Abuse Review*, 32(1), e2775. <https://doi.org/10.1002/car.2775>**

This review analyzed the legal duty to report prenatal alcohol and opioid use in the U.S. and Australia. The authors identified variations in the laws regarding duty to report and what is indicated as child abuse or neglect. For example, in the U.S., fewer than half of states have policies that consider prenatal substance use to be abuse or neglect. In Australia, only one state requires duty to report prenatal substance use exposure, but six states have provisions that allow report for postnatal supports. Inconsistencies in laws should be explored to understand the differences in approaches and how legal reforms can be made to improve provision of support.

7. **Steely Smith, M. K., Zielinski, M. J., Sufrin, C., Kramer, C. T., Benning, S. J., Laine, R., & Schlafer, R. J. (2023). State Laws on Substance Use Treatment for Incarcerated Pregnant and Postpartum People. *Substance Abuse: Research and Treatment*, 17, 11782218231195556. <https://doi.org/10.1177/11782218231195556>**

This systematic search from U.S. examined state policies related to the provision of substance use screening and treatment by searching the WestLaw legal research database through the end of the 2020 legislative session. Forty-three states identified as having at least one statute pertaining to pregnant or postpartum incarcerated people. However, only seven states had statutes related to substance use screening and treatment, including screening, treatment, diversion programs, program eligibility, aftercare and release programming, and funding appropriations. The findings highlight how the majority of U.S. states lack legislation to support substance use screening and treatment among incarcerated perinatal populations. Future legislative work could help increase access to essential care.

8. **Stritzel H. (2023). Substance Use-Associated Infant Maltreatment Report Rates in the Context of Complex Prenatal Substance Use Policy Environments. *Child maltreatment*, 10775595231213404. Advance online publication. <https://doi.org/10.1177/10775595231213404>**

This U.S. study investigated how access-promoting and punitive prenatal substance use policies are associated with substance-use associated maltreatment reports in infants. Using data from the National Child Abuse and Neglect Data System, which includes case-level data on each child maltreatment report, the authors that found that in states with punitive policies, access-promoting policies (e.g., those that expand access to substance use treatment for pregnant people) were associated with smaller decreases in maltreatment reports than in states without punitive policies. Further, in some cases, where punitive policies were present, access-promoting policies were

associated with an increased number of maltreatment reports. The findings indicate that unintended and counterproductive outcomes can emerge for maternal and child health, as such may be important to decouple substance use and child abuse policies as to better protect the health of women and their children.

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

This review from Canadian authors analyzed alcohol policies as they relate to the Four-Part Model of FASD Prevention. Using a subset of data from a larger review that described the state of global FASD prevention literature from 2015 to 2021 and an annotated bibliography of FASD prevention literature published in 2021, the authors described the range of alcohol policies and their impact. The majority of policies available were centred around alcohol in pregnancy guidelines – including their knowledge and uptake – and alcohol warning labels. Several American studies described shifts in alcohol and pregnancy policies, including the shift towards punitive approaches that criminalize women's substance use and/or prompt child removal. The findings indicate that more attention could be paid to the role of alcohol policy in FASD prevention and promoting women's and fetal health. Future policy actions should consider the social and structural factors that contribute to women's alcohol use during pregnancy.

G. Other – stigma, ethical issues, and systemic approaches

1. **Barber, C. M., & Terplan, M. (2023). Principles of care for pregnant and parenting people with substance use disorder: The obstetrician gynecologist perspective. *Frontiers in Pediatrics, 11*, 1045745–1045745. <https://doi.org/10.3389/fped.2023.1045745>**

This review from US-based authors provided the obstetrician gynecologist perspective on principles to support pregnant and parenting people with substance use disorders. The authors discussed the barriers to care for pregnant-capable persons with a substance use disorder, including underdiagnosis of SUD among pregnant and parenting persons, stigma, lack of treatment, lack of provider training to screen and treat SUDs, punitive policies and disproportionate effects on Black, Indigenous, and other families of colour. The authors review treatment options for the most commonly used substances including alcohol. The obstetrician gynecologist perspective to care is offered, which includes caring for the dyad and using person-centred language and current medical terminology. The authors conclude that evidence-based and person-centered approaches that reflect both science and human rights and dignity, would be more appropriate to support those who are pregnant and have substance use concerns.

2. **Erng, M. N., Reid, N., Moritz, K. M., & van Driel, M. (2023). Prenatal alcohol exposure risk perception dimensions and influencing factors: A systematic review and conceptual model. *Australian and New Zealand Journal of Public Health, 47*(3), 100047. <https://doi.org/10.1016/j.anzjph.2023.100047>**

This systematic review conducted by Australian authors explored how risks regarding prenatal alcohol exposure are perceived. Fifteen articles – nine quantitative and six qualitative, were included for thematic analysis. The authors found three dimensions of risk perceptions: perceived susceptibility, perceived severity, and affective risk perception. The identified dimensions had

three influencing factors: information (e.g., consistency, confirmation bias, strength of the evidence and perceived relevance), sociocultural (e.g., social inclusivity, cultural context, and risk interpretation), and individual (e.g., benefits vs. risk, controllability, and experience). From the identified dimensions and influencing factors, a conceptual model was proposed called Pregnancy Alcohol Risk Perception (PARP). PARP provides a framework to guide understanding of risk perceptions. With the help of stakeholders, the model can be used to inform interventions and prevention materials.

3. **Evans, S. (2023). Women with alcohol dependence and FASD prevention. *Drug and Alcohol Review*, 42(1), 33-35. <https://doi.org/10.1111/dar.13516>**

In this commentary, an Australian-based author outlined the harmful connotations that “FASD is entirely preventable” can have. The author articulated how this message exacerbates barriers for among women with alcohol dependence. Further, they highlighted how the prevalence of alcohol, conflicting and misinformation about the risks of alcohol use during pregnancy, unplanned pregnancies, and delay to pregnancy recognition all act as contributors for alcohol use in pregnancy. Thus, “FASD is preventable” poses challenges for women with alcohol dependence, who experience stigma and fear of child protection involvement, and does not reflect the non-linear trajectory of recovery. Future messaging should reflect these considerations.

4. **Frew, J. R. (2023). Reducing the stigma of perinatal substance use disorders: The time is now. *Archives of Women's Mental Health*, 26(3), 411- 413. <https://doi.org/10.1007/s00737-023-01322-3>**

In this short communication, a US-based author described the recent progress in raising awareness of, addressing, and reducing the stigma toward perinatal mental health concerns and perinatal substance use disorder (SUD). The author emphasized the lack of screening for substance use disorders and the continued stigma surrounding perinatal substance use. Non-judgmental screening and linkage to comprehensive treatment is called for by the author, who is a practicing psychiatrist working in an integrated treatment program for pregnant and parenting women with SUDs. The author reflected on the outcomes of the treatment program, including increased engagement in treatment, reduced preterm birth, and increased employment for women with substance use disorders.

5. **Hill, E. M., & Mazurek, M. E. (2024). Wine-mom culture, alcohol use, and drinking motives: A descriptive study and cross-cultural exploration of American and British mothers. *Substance use & Misuse*, 59(3), 439-449. <https://doi.org/10.1080/10826084.2023.2275572>**

The aim of this study was to describe wine-mom culture and associated alcohol-related outcomes, parenting experiences, and drinking motives in the US compared to the UK. Questionnaires were completed by $n = 233$ American and $n = 233$ British mothers (ages 23-70) to understand their perceptions of and engagement with wine-mom culture and assess their alcohol use, parental stress, and drinking motivations. American mothers were found to be more familiar with wine-mom culture than British mothers, however associations with outcomes were similar for both groups. Engagement in and endorsement of wine-mom culture behaviours and perceptions were associated with problematic alcohol use measured through the Alcohol Use Disorders Identification Test (AUDIT), parental stress, and drinking to cope. The authors call for more

research to examine the role of wine-mom culture in promoting the idea that alcohol can or should be used to cope and self-medicate or that drinking is a form of “self-care”.

6. **Hilliard, F., Goldstein, E., Nervik, K., Croes, K., Ossorio, P. N., & Zgierska, A. E. (2023). Voices of women with lived experience of substance use during pregnancy: A qualitative study of motivators and barriers to recruitment and retention in research. *Family & Community Health, 46*(1), 1-12. <https://doi.org/10.1097/FCH.0000000000000349>**

This qualitative study from the U.S. consulted with people with lived experience of substance use during pregnancy to investigate their perspectives of facilitators and barriers to research engagement. Participants were engaged through individual interviews ($n = 10$) and two focus groups ($n = 7$) and asked questions developed by clinical, research, bioethics, and legal experts, as well as a group of diverse stakeholders. Three main barriers to research engagement emerged: shame, fear of punitive responses, and mistrust of health care and research professionals. Three facilitators to engagement that emerged were: development of trust, compassion, and non-judgemental attitudes among research teams. Participants recommended that gender-concordant recovery peer support workers be included on research teams to facilitate the development of trust and to reduce fears. This study provides considerations for how to engage people with lived experience of substance use during pregnancy in research and on research teams.

7. **Lipsett, M., Wyant-Stein, K., Mendes, S., Berger, E., Berkman, E. T., Terplan, M. & Cioffi, C. C (2023). Addressing stigma within the dissemination of research products to improve quality of care for pregnant and parenting people affected by substance use disorder. *Front Psychiatry, 14*. <https://doi.org/10.3389/fpsy.2023.1199661>**

This U.S. study examined features of research dissemination that further generate or uphold stigma for pregnant and parenting individuals affected by substance use disorder and their children. The authors presented stigma reduction strategies, including 1) address research stereotypes, prejudice, and misconceptions of pregnant and parenting people with substance use disorder, 2) engage in interdisciplinary collaborations, 3) use community-based approaches, 4) address stigmatizing language in science communication, 5) provide contextualizing information about social and environmental factors that contribute to substance use during pregnancy and parenting, and 6) advocate for stigma reducing policies. The findings from this study can inform research and knowledge translation efforts that better support pregnant and parenting women, and their children, affected by substance use disorder.

8. **Mills, C. (2023). Protecting the future child: Foetal alcohol spectrum disorder, easy rescue and the regulation of maternal behaviour. *Bioethics, 37*(8), 771-778. <https://doi.org/10.1111/bioe.13214>**

This Australian study examined the social contexts of ‘gestators’ and what elements of inequality and injustice must be considered when discussing the ethics of gestational harm and responsibility when alcohol use during pregnancy and FASD are a concern. The author critiqued the notions of “protecting the future child” and the obligation of “easy rescue” using a feminist perspective, denoting how these arguments can be used to justify increased legal interventions and regulation of maternal behaviour. The author expresses that the social contexts that frame FASD prevention reinforce social injustices relating to colonialism, socio-economic inequality, and racism and emphasizes that FASD prevention is a social justice issue as well as a public health issue.

9. **Mitchell, J. M., Keenan, O., Fakhoury, A., Fitzgerald, D., Mohamad, M. M., & Imcha, M. (2023). Is perinatal substance abuse falling through the cracks? *Irish Journal of Psychological Medicine*, 40(4), 584-587. <https://doi.org/10.1017/ipm.2023.22>**

This Irish study assessed the knowledge and attitudes of healthcare professionals (HCPs) regarding perinatal substance use in order to identify opportunities for enhanced care and stigma reduction. A total of $n = 172$ HCPs working in a tertiary maternity unit including nurses, consultants, non-consultant hospital doctors, social workers, midwives, and student midwives were surveyed. Most HCPs were not confident in antenatal perinatal substance use management (75.6%) or postnatal perinatal substance use management (67.5%). More than half of HCPs reported a lack of knowledge of referral pathways (53.5%), including when to make a referral to the Child and Family Agency (32%) or who is considered responsible for making such a referral. When asked about the prevalence of alcohol use during pregnancy and FASD, 21.5% were aware that Ireland had one of the highest global FASD prevalence rates. Most HCPs reported that they routinely ask about perinatal substance use; however, 96.5% reported that further training would be beneficial, as would a drug liaison midwife (94.8%). A majority of HCPs surveyed felt that perinatal substance use should be considered child abuse (54.1%) and that a mother should be held responsible for the harm caused to her child (58.7%). The authors conclude that there is an urgent need for training on perinatal substance use to reduce stigma and enhance care, and they strongly recommend drug liaison midwives and dedicated clinics be implemented in hospitals.

10. **Morehouse, E., Ingoldsby, E., Newburg-Rinn, S., Bertrand, J., & Usher, K. (2023). Knowledge, training, and support needs for identification and appropriate care of children with prenatal alcohol and other drug exposures in the child welfare system. *Child Welfare*, 101(3), 51-76.**

This U.S. study investigated child welfare professionals' and caregivers' knowledge of perinatal substance exposure to better understand their training and support needs. The study was conducted in 22 child welfare agencies across five states. Data was collected from surveys ($n = 271$) and interviews ($n = 171$) with child welfare professionals and focus groups with caregivers ($n = 44$). When child welfare professionals self-reported their knowledge level, most reported at least an intermediate level of knowledge about the effects of prenatal substance exposure (71%) and prenatal alcohol exposure (68%). While only 24% correctly answered that alcohol was the most harmful substance, other true or false questions related to alcohol type, timing and amount of alcohol use during pregnancy, and treatability of FASD were largely answered correctly. Most professionals reported receiving training in prenatal substance exposure, but fewer received training specific to prenatal alcohol exposure. A theme that emerged through the interviews was an emphasis on opioids and a lack of training on alcohol-related impacts, which contributed to assumptions about impacts of both alcohol and other substances. Data from caregivers revealed that 43% reported receiving training on prenatal substance exposure as part of their orientation from child welfare agencies and of those who stated they had cared for a child with prenatal substance exposure, 33% reported felt that they were not at all prepared. Both professionals and caregivers expressed an interest and need for information on indicators and impacts of substance exposure as well as knowledge of available services and interventions for substance exposed children. Professionals also identified a need for readily available educational materials to provide to caregivers. The authors conclude by highlighting the widespread misconceptions about prenatal substance exposure in child welfare and their likely effect on practice. They emphasize that the findings can be used to inform training and ultimately improve developmental outcomes for

children and family functioning, reduce child maltreatment, and out-of-home foster care placements.

11. **Puccio, J. (2023). They will never forget how you made them feel: Implementing harm reduction in the perinatal setting. *Maternal and Child Health Journal*, 27(Suppl 1), 122-127. <https://doi.org/10.1007/s10995-023-03795-1>**

This commentary from a US-based author explored harm reduction approaches for the perinatal setting. The author described that perinatal harm reduction can involve goals of abstinence, decreased use, safer use, or goals unrelated to substance use, such as housing or employment. A flow chart is provided to demonstrate how healthcare providers can integrate harm reduction principles into their service delivery. The authors discuss how, despite evidence of effectiveness, misconceptions about perinatal harm reduction are common, harm reduction programs are rare, and punitive treatment is more common. Recommendations for providers, health systems, and policymakers are provided, which include the elimination of harmful practices, respecting the autonomy of people who use substances, supporting patient goals and timelines, and an increased focus on improving social determinants of health and addressing the root causes of perinatal substance use. Perinatal harm reduction is framed as crucial for reproductive justice.

12. **Sapru, S., Mitchell, K., & McFadden, T. (2023). Combining physician expertise and women's lived experience to educate health professionals about preventing fetal alcohol spectrum disorders. *Maternal and Child Health Journal*, 10.1007/s10995-023-03786-2. Advance online publication. <https://doi.org/10.1007/s10995-023-03786-2>**

See above (Level 1 prevention).

13. **Tuitt, N. R., Wexler, L. M., Kaufman, C. E., Whitesell, N. R., Rink, E., Anastario, M., Ivanich, J. D., Belone, L., Moore, R. S., Huh, D., Campbell, T. E., & Allen, J. (2023). Unsettling settler colonialism in research: Strategies centering Native American experience and expertise in responding to substance misuse and co-occurring sexual risk-taking, alcohol-exposed pregnancy, and suicide prevention among young people. *Adversity and Resilience Science*, 4(4), 389-400. <https://doi.org/10.1007/s42844-023-00100-5>**

This study presented a conceptual framework developed by authors in the US to illustrate the impact of colonialism on health equity research and methods focused on addressing disparities experienced by Indigenous people in relation to substance use, alcohol exposed pregnancy (AEP), sexual risk-taking, and suicide. The authors identified opportunities to disrupt and resist structural barriers and the research status quo, including within curriculum and training development, funding and incentive structures, and the development of publications. Examples from the NIH-funded Intervention Research to Improve Native American Health (IRINAH) research program are provided, including the Native Women, Young, Strong, and Empowered (WYSE) CHOICES project, which developed culturally appropriate AEP prevention programming to support young American Indian and Alaska Native (AIAN) women in urban areas. Native WYSE CHOICES involved urban AIAN-serving organizations, NA scholars, and engaged with AIAN women on social media. The authors conclude by calling on researchers and leaders of academic institutions, editorial boards, and funding agencies to unsettle colonialism in health equity research with young Indigenous people, using the entry points described in the conceptual framework and the actionable practices demonstrated in IRINAH studies.

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
Prevalence of, and influences and factors associated with, drinking in pregnancy					
n = 32	Bete et al.	Alcohol consumption and associated factors among pregnant women attending antenatal care at governmental hospitals in Harari regional state, Eastern, Ethiopia	Cross Sectional	Ethiopia	5
	Brittain et al.	Perinatal alcohol use among young women living with HIV in South Africa: Context, experiences, and implications for interventions	Qualitative	South Africa	5
	Broccia et al.	Heavy prenatal alcohol exposure and obstetric and birth outcomes: a Danish nationwide cohort study from 1996 to 2018	Cross Sectional	Denmark	5
	Cabral et al.	Prevalence of alcohol use during pregnancy, Brazil, 2011-2012	Cross Sectional	Brazil	6
	Corrales-Gutierrez et al.	Alcohol Consumption Assessed by a Biomarker and Self-Reported Drinking in a Sample of Pregnant Women in the South of Europe: A Comparative Study	Cross Sectional	Spain	6
	David et al.	Exploring the associations between serious psychological distress and the quantity or frequency of tobacco, alcohol, and cannabis use among pregnant women in the United States	Cross Sectional	US	6
	ELNahas & Thibault	Perinatal Psychoactive Substances Use: A Rising Perinatal Mental Health Concern	Review	Egypt & France	7
	Fletcher et al.	Intention to Engage in Alcohol Use during Pregnancy: The Role of Attitudes and Prototypes	Randomized Controlled Trial	Australia & UK	7
	Fletcher et al.	Is 'a little' too much?: An exploration of women's beliefs about alcohol use during pregnancy	Cross Sectional	Australia	8
	Green et al.	Substance use and treatment characteristics among pregnant and non-pregnant females, 2015-2019	Cross Sectional	Canada	8
	Hamutenya & Nghitanwa	Practices of pregnant women regarding tobacco and alcohol use during pregnancy at one primary health care clinic in Southern Namibia	Mixed Methods	Namibia	8
	Hanson et al.	Alcohol consumption and pregnancy in American Indian and Alaska Native women: A scoping review of the literature	Scoping Review	US	9
	Hasken et al.	Maternal dietary intake among alcohol-exposed pregnancies is linked to early infant physical outcomes in South Africa	Cross Sectional	South Africa	9
	Hernandez et al.	Reasons and obstacles for changing risky drinking behavior among Latinas at risk of an alcohol-exposed pregnancy	Qualitative	US	9
	Jordan et al.	Rethinking Local Economic Development for Fetal Alcohol Spectrum Disorder in Renosterberg Local Municipality, South Africa	Mixed Methods	South Africa	10
	Kim et al.	Substance use among pregnant women in NSW prisons	Cross Sectional	Australia	10
	Lange et al.	Antenatal Care and Health Behavior of Pregnant Women-An Evaluation of the Survey of Neonates in Pomerania	Cross Sectional	Germany	10
	May et al.	Maternal risk factors for fetal alcohol spectrum disorders: Distal variables	Case Control	South Africa	11
	Petersen Williams	Community-based counselling programme for pregnant women with alcohol problems in Cape Town, South Africa: a qualitative study of the views of pregnant women and healthcare professionals	Qualitative	South Africa	11
	Römer et al.	Alcohol and nicotine consumption during pregnancy: Prevalence and predictors among women in Bremen, Germany	Cross Sectional	Germany	12
Ruyak et al.	The effect of the COVID-19 pandemic on substance use patterns and physiological dysregulation in pregnant and postpartum women	Cross Sectional	US	12	
Ruyak et al.	Impulsivity and Alcohol Use during Pregnancy and Postpartum: Insights from Novel Methodological Approaches within the Context of the COVID-19 Pandemic	Cross Sectional	US	12	
Schmidt et al.	A harmonized analysis of five Canadian pregnancy cohort studies: exploring the characteristics and pregnancy outcomes associated with prenatal alcohol exposure	Cross Sectional	Canada	13	

	Stanton et al.	Factors Associated With Changes in Alcohol Use During Pregnancy and the Postpartum Transition Among People With HIV in South Africa and Uganda	Cross Sectional	South Africa & Uganda	13
	Steely Smith et al.	An integrative literature review of substance use treatment service need and provision to pregnant and postpartum populations in carceral settings	Review	US	13
	Stevenson et al.	The global burden of perinatal common mental health disorders and substance use among migrant women: a systematic review and meta-analysis	Systematic Review	UK	14
	Sujan et al.	Patterns of Substance Use During Early Pregnancy and Associations with Behavioral Health Characteristics	Cross Sectional	US	14
	Taylor et al.	Accounts of women identified as drinking at 'high risk' during pregnancy: A meta-ethnography of missing voices	Meta-Ethnography	UK	15
	Thomson et al.	Continuities in maternal substance use from early adolescence to parenthood: Findings from the intergenerational cohort consortium	Cohort	Australia	15
	Tigka et al.	Maternal tobacco, alcohol and caffeine consumption during the perinatal period: A prospective cohort study in Greece during the COVID-19 pandemic	Cross Sectional	Greece	15
	Washio et al.	The Association of Maternal Smoking and Drinking Changes During Pregnancy and Postpartum Breastfeeding Pattern and Duration	Cross Sectional	US	16
	Wogayehu et al.	The epidemiology of khat (catha edulis) chewing and alcohol consumption among pregnant women in Ethiopia: A systematic review and meta-analysis	Systematic Review	Ethiopia	16
Level 1 Prevention					
n = 11	Doyle et al.	Fetal alcohol spectrum disorder and Aboriginal and Torres Strait Islander men: A discussion to be had	Commentary	Australia	16
	Heenan et al.	Influencing and implementing mandatory alcohol pregnancy warning labels in Australia and New Zealand	Commentary	Australia & New Zealand	17
	Lyll et al.	Our Mothers Have Handed That to Us. Her Mother Has Handed That to Her: Urban Aboriginal and Torres Strait Islander Yarning about Community Wellbeing, Healthy Pregnancies, and the Prevention of Fetal Alcohol Spectrum Disorder	Qualitative	Australia	17
	Murray et al.	Expectant Parents' Preferences for Teaching by Texting: Development and Usability Study of SmartMom	Qualitative	Canada	17
	Panton et al.	An evaluation of a multi-site fetal alcohol spectrum disorder models of care project	Cross Sectional	Australia	18
	Pettigrew et al.	Evaluation outcomes of a Western Australian campaign designed to reduce alcohol use in pregnancy	Cross Sectional	Australia	18
	Pettigrew et al.	Evaluation outcomes of an alcohol and pregnancy campaign targeting multiple audiences	Cross Sectional	Australia	18
	Piotrkowicz et al.	The Changes in the Level of Knowledge about the Effects of Alcohol Use during Pregnancy among Three Last Generations of Women in Poland	Cross Sectional	Poland	19
	Popova et al.	Fetal alcohol spectrum disorders	Primer	Australia, Canada, New Zealand, UK & US	19
	Sapru et al.	Combining physician expertise and women's lived experience to educate health professionals about preventing fetal alcohol spectrum disorders	Qualitative	US	20
	Sträuli et al.	Uptake of mandated pregnancy warnings in the Australian alcoholic ready-to-drink beverage market	Cross Sectional	Australia	20
Level 2 Prevention					
n = 24	Association of Women's Health, Obstetric and Neonatal Nurses	Prevention of Fetal Alcohol Spectrum Disorders	Position Statement	US	20
	Board et al.	The Postpartum Period: An Opportunity for Alcohol Screening and Counseling to Reduce Adverse Health Impacts	Cross Sectional	US	21
	Chang et al.	Reducing prenatal alcohol exposure and the incidence of FASD: Is the past prologue?	Literature Review	US	21

	Chu et al.	The Value of Early Screening in Pregnant Women Who Consume Alcohol: An Integrative Review	Literature Review	US	22
	Dozet et al.	Screening for Alcohol Use in Pregnancy: a Review of Current Practices and Perspectives	Narrative Review	Canada	22
	Dyson et al.	Midwives and service users' perspectives on implementing a dialogue about alcohol use in antenatal care: A qualitative study	Qualitative	UK	22
	Green et al.	Screening and Brief Interventions for Alcohol Use During Pregnancy: Practices Among US Primary Care Clinicians, DocStyles 2019	Cross Sectional	US	23
	Harriett et al.	Adaptation of screening tools for social determinants of health in pregnancy: A pilot project	Cross Sectional	US	23
	Hebert et al.	Prenatal alcohol counseling among American Indian and Alaska Native women and non-Hispanic White women in the pregnancy risk assessment monitoring system	Cross Sectional	US	23
	Henderson et al.	Assessing maternal alcohol consumption in pregnancy: does phosphatidylethanol measured from day 5 newborn blood spot cards have any value? An observational, population-based study	Cross Sectional	UK	24
	Jolma et al.	Rapid urine screening for ethyl glucuronide from pregnant women as a tool for detecting prenatal alcohol exposure	Cross Sectional	Finland	24
	Kaufman et al.	A virtual randomized controlled trial of an alcohol-exposed pregnancy prevention mobile app with urban American Indian and Alaska Native young women: Native WYSE CHOICES rationale, design, and methods	Randomized Controlled Trial	US	25
	Klie et al.	Integrated Care for Pregnant and Parenting People with Substance Use	Descriptive	US	25
	Kurtz & Smid	Office-Based Management of Perinatal Substance Use and Substance Use Disorder for the General Obstetrician-Gynecologist	Review	US	25
	Leruste et al.	The role of general practitioners in Reunion in detecting alcohol use in pregnant women and identifying fetal alcohol spectrum disorder: a qualitative study	Qualitative	France	26
	Okulicz-Kozaryn et al.	Reducing the risk of prenatal alcohol exposure and FASD through social services: promising results from the FAR SEAS pilot project	Participatory Action Research	Poland	26
	Onukwugha et al.	Reflections of maternity service users and midwives' on the co-creation of interventions to support midwives addressing alcohol during antenatal care	Participatory Action Research	UK	26
	Park et al.	Polysubstance Use in Pregnancy: Surveillance, Interventions, and Next Steps	Commentary	US	27
	Petersen Williams	Community-based counselling programme for pregnant women with alcohol problems in Cape Town, South Africa: a qualitative study of the views of pregnant women and healthcare professionals	Qualitative	South Africa	11
	Popova et al.	Fetal alcohol spectrum disorders	Primer	Australia, Canada, New Zealand, UK & US	19
	Popova et al.	Effectiveness of brief alcohol interventions for pregnant women: a systematic literature review and meta-analysis	Systematic Review	Canada	27
	Reese et al.	Early insights into implementation of universal screening, brief intervention, and referral to treatment for perinatal substance use	Pilot	US	28
	Shrestha et al.	Centering culture in an mHealth adaptation of an alcohol-exposed pregnancy prevention program for American Indian Youth	Qualitative	US	28
	Von Sternberg et al.	Processes of change in preventing alcohol-exposed pregnancy: Replication of a mediation analysis	Replication Study	US	29
Level 3 Prevention					
n = 18	Allen et al.	Pregnant and early parenting Indigenous women who use substances in Canada: A scoping review of health and social issues, supports, and strategies	Scoping Review	Canada	29
	Bondi et al.	Breaking the Cycle: Applying a Partnership-based, Three-client, Early Intervention Model within a Child Welfare	Descriptive	Canada	29

		Framework to Care for Children Exposed Prenatally to Substances			
	Chou et al.	Residential substance use treatment outcomes for pregnant and postpartum women: Distinct patterns for women enrolled before versus during the COVID-19 pandemic	Cross Sectional	US	30
	Cox	The Eastern Door Center: re-balancing the wheel-a Two-Eyed Seeing approach to FASD and other disorders related to transgenerational adversity	Descriptive	Canada	30
	Flannigan et al.	Integrated Supports for Women and Girls Experiencing Substance Use and Complex Needs	Cross Sectional	Canada	30
	Massi et al.	This has changed me to be a better mum: A qualitative study exploring how the Australian Nurse-Family Partnership Program contributes to the development of First Nations women's self-efficacy	Qualitative	Australia	31
	May et al.	Multifaceted case management during pregnancy is associated with better child outcomes and less fetal alcohol syndrome	Cohort	South Africa	31
	Milligan et al.	Neonatal outcomes of pregnant women attending integrated and standard substance use treatment programs in Ontario, Canada	Cohort	Canada	32
	Moore et al.	Examining ECHO Idaho's perinatal substance use disorder program	Mixed Methods	US	32
	Morton Ninomiya et al.	Supporting pregnant and parenting women who use alcohol during pregnancy: A scoping review of trauma-informed approaches	Scoping Review	Canada	32
	Rotheram-Borus et al.	Maternal depression, alcohol use, and transient effects of perinatal paraprofessional home visiting in South Africa: Eight-year follow-up of a cluster randomized controlled trial	Randomized Controlled Trial	South Africa	33
	Schmidt et al.	Facilitating Integrated Perinatal Care for Families Affected by Substance Use	Commentary	US	33
	Simon et al.	Strengthening the System Supporting Perinatal People with Substance Use Disorder in the Midwest Using Group Model Building	Commentary	US	33
	Steely Smith et al.	An integrative literature review of substance use treatment service need and provision to pregnant and postpartum populations in carceral settings	Review	US	13
	Sternberger et al.	Lessons learned serving pregnant, postpartum, and parenting people with substance use disorders in Massachusetts: The moms do care program	Descriptive	US	34
	Stoner et al.	Evaluating outcomes of a three-year case management program for mothers with prenatal substance use according to race/ethnicity, Washington State, 2006-2017	Cross Sectional	US	34
	Wagjio et al.	Contributions of CenteringPregnancy to women's health behaviours, health literacy, and health care use in the Netherlands	Randomized Controlled Trial	The Netherlands	35
	Williams et al.	Cross-sector collaboration between public health, healthcare and social services improves retention: Findings from a nurse home visiting program	Cross Sectional	US	35
Level 4 Prevention					
n = 13	Allen et al.	Pregnant and early parenting Indigenous women who use substances in Canada: A scoping review of health and social issues, supports, and strategies	Scoping Review	Canada	29
	Bondi et al.	Breaking the Cycle: Applying a Partnership-based, Three-client, Early Intervention Model within a Child Welfare Framework to Care for Children Exposed Prenatally to Substances	Descriptive	Canada	29
	Bosak et al.	Residential substance use treatment outcomes for pregnant and postpartum women: Distinct patterns for women enrolled before versus during the COVID-19 pandemic	Qualitative	US	26
	Chou et al.	Residential substance use treatment outcomes for pregnant and postpartum women: Distinct patterns for women enrolled before versus during the COVID-19 pandemic	Cross Sectional	US	30
	Cox	The Eastern Door Center: re-balancing the wheel-a Two-Eyed Seeing approach to FASD and other disorders related to transgenerational adversity	Descriptive	Canada	30

	Jirikowic et al.	A Trauma-Informed Parenting Intervention Model for Mothers Parenting Young Children During Residential Treatment for Substance Use Disorder	Mixed Methods	US	37
	Lowell et al.	Mothering from the Inside Out: Results of a community-based randomized efficacy trial testing a mentalization-based parenting intervention for mothers with addictions	Randomized Controlled Trial	US	37
	Massi et al.	This has changed me to be a better mum: A qualitative study exploring how the Australian Nurse-Family Partnership Program contributes to the development of First Nations women's self-efficacy	Qualitative	Australia	31
	Morton Ninomiya et al.	Supporting pregnant and parenting women who use alcohol during pregnancy: A scoping review of trauma-informed approaches	Scoping Review	Canada	32
	Rotheram-Borus et al.	Maternal depression, alcohol use, and transient effects of perinatal paraprofessional home visiting in South Africa: Eight-year follow-up of a cluster randomized controlled trial	Randomized Controlled Trial	South Africa	33
	Sternberger et al.	Lessons learned serving pregnant, postpartum, and parenting people with substance use disorders in Massachusetts: The moms do care program	Descriptive	US	34
	Stoner et al.	Evaluating outcomes of a three-year case management program for mothers with prenatal substance use according to race/ethnicity, Washington State, 2006-2017	Cross Sectional	US	34
	Williams et al.	Cross-sector collaboration between public health, healthcare and social services improves retention: Findings from a nurse home visiting program	Cross Sectional	US	35
Supportive Alcohol and Child Welfare Policy					
n = 9	Berglas et al.	Pregnancy-specific alcohol policies and admissions to substance use disorder treatment for pregnant people in the USA	Cross Sectional	US	39
	Desai et al.	Public perception on policies to address prenatal substance use: Recommendations regarding maternal criminal prosecution and child welfare	Cross Sectional	US	39
	Greene et al.	Contextual and Policy Influences on the Implementation of Prenatal Care Coordination	Qualitative	US	39
	Heenan et al.	Influencing and implementing mandatory alcohol pregnancy warning labels in Australia and New Zealand	Commentary	Australia & New Zealand	17
	Jordan et al.	Rethinking Local Economic Development for Fetal Alcohol Spectrum Disorder in Renosterberg Local Municipality, South Africa	Mixed Methods	South Africa	10
	Kenny et al.	Responses to prenatal opioid and alcohol abuse: A review of US and Australian mandatory reporting laws	Review	Australia & US	40
	Steely Smith et al.	State laws on substance use treatment for incarcerated pregnant and postpartum people	Review	US	40
	Strizel	Substance Use-Associated Infant Maltreatment Report Rates in the Context of Complex Prenatal Substance Use Policy Environments	Cross Sectional	US	40
	Wolfson & Poole	Supportive alcohol policy as a key element of fetal alcohol spectrum disorder prevention	Review	Canada	41
Other – stigma, ethical issues, and systemic approaches					
n = 13	Barber & Terplan	Principles of care for pregnant and parenting people with substance use disorder: the obstetrician gynecologist perspective	Review	US	41
	Erng et al.	Prenatal alcohol exposure risk perception dimensions and influencing factors: A systematic review and conceptual model	Systematic Review	Australia	41
	Evans	Women with alcohol dependence and FASD prevention	Commentary	Australia	42
	Frew	Reducing the stigma of perinatal substance use disorders: The time is now	Editorial	US	42
	Hill & Mazurek	Wine-Mom Culture, Alcohol Use, and Drinking Motives: A Descriptive Study and Cross-Cultural Exploration of American and British Mothers	Cross Sectional	US	42
	Hilliard	Voices of Women With Lived Experience of Substance Use During Pregnancy: A Qualitative Study of Motivators and Barriers to Recruitment and Retention in Research	Qualitative	US	43

Lipsett et al.	Addressing stigma within the dissemination of research products to improve quality of care for pregnant and parenting people affected by substance use disorder	Review	US	43
Mills	Protecting the future child: Foetal alcohol spectrum disorder, easy rescue and the regulation of maternal behaviour	Review	Australia	43
Mitchell et al.	Is perinatal substance abuse falling through the cracks?	Cross Sectional	Ireland	44
Morehouse et al.	Knowledge, Training, and Support Needs for Identification and Appropriate Care of Children with Prenatal Alcohol and Other Drug Exposures in the Child Welfare System	Mixed Methods	US	44
Puccio et al.	They Will Never Forget How You Made Them Feel: Implementing Harm Reduction in the Perinatal Setting	Commentary	US	45
Sapru et al.	Combining physician expertise and women's lived experience to educate health professionals about preventing fetal alcohol spectrum disorders	Qualitative	US	20
Tuitt et al.	Unsettling Settler Colonialism in Research: Strategies Centering Native American Experience and Expertise in Responding to Substance Misuse and Co-occurring Sexual Risk-Taking, Alcohol-Exposed Pregnancy, and Suicide Prevention Among Young People	Conceptual Framework	US	45