

Fetal Alcohol Exposure

The Issue in Brief

There is conclusive scientific evidence that heavy patterns of maternal drinking during pregnancy can be harmful to the unborn child.

- These outcomes are described under the umbrella of fetal alcohol spectrum disorders (FASD), the most severe of which is fetal alcohol syndrome (FAS).
- No significant relationship between moderate maternal drinking during pregnancy and adverse health outcomes has been substantiated.

There is no scientific consensus about the threshold of drinking above which risk for harm is increased.

Conversely, there is disagreement on what constitutes a “safe” level of maternal consumption during pregnancy [1].

The effects of prenatal alcohol exposure are influenced significantly by other factors, including metabolism, nutrition, genetics, maternal age, and socioeconomic status.

Of the spectrum of disorders, FAS is the most documented form. However, the incidence rate of FAS differs considerably across countries.

- The rates of FASD and FAS are particularly high in certain communities and groups.

Disparities in prevalence and incidence rates of FAS and other FASD are thought to be largely attributable to different methods of screening and differences in diagnosis and reporting.

Access to prenatal care and screening plays an important role in the diagnosis of FASD and in its prevention.

ICAP’s Health Briefings cover the effects of alcohol consumption on health. They offer an overview of the relationship between drinking patterns and health outcomes, compile the key literature, and provide the reader with an extensive bibliography that refers to original research on each topic. The Briefings attempt to present the balance of the available evidence. They have been peer reviewed by external experts and do not necessarily reflect the views of ICAP or its sponsoring companies.

Relevant ICAP publications:

International Center for Alcohol Policies (ICAP). (2008). *Module 10: Drinking and pregnancy*. In *ICAP Blue Book: Practical guides for alcohol policy and prevention approaches*. Available: <http://www.icap.org>.

International Center for Alcohol Policies (ICAP). (2009). *International guidelines on drinking and pregnancy* (ICAP Policy Tables). Available: <http://www.icap.org/Table/InternationalGuidelinesOnDrinkingAndPregnancy>

What Is the Evidence?

There is conclusive scientific evidence that heavy patterns of maternal drinking during pregnancy can be harmful to the unborn child.

These outcomes are described under the umbrella of fetal alcohol spectrum disorders (FASD), the most severe of which is fetal alcohol syndrome (FAS) [2].

- Over the past 30 years, the adverse health outcomes associated with heavy maternal drinking have been identified by a variety of names and clinical definitions, including:
 - fetal alcohol effects (FAE);
 - partial FAS (pFAS);
 - atypical FAS;
 - alcohol-related neurodevelopmental disorder (ARND) [3-7];
 - alcohol-related birth defects (ARBD) [8-11].
- There has been considerable disagreement about what each of these clinical diagnoses entails, and these terms are not interchangeable.
- In an effort to standardize preventive and clinical interventions for fetal alcohol exposure, medical consensus now groups these harmful health effects under FASD. Diagnosis of an FASD requires a confirmed history of maternal alcohol consumption, as well as the presence of at least one of each of the following categories of signs and symptoms:
 - pre- and postnatal growth deficiencies [9, 12];
 - physical anomalies, especially particular facial features;
 - central nervous system dysfunction [13].
- In addition to FASD, other outcomes are linked with heavy drinking during pregnancy, including:
 - intrauterine growth retardation [14];
 - placental abruption [15];
 - stillbirth and spontaneous abortion [6, 16-22, 37].

While some studies suggest no significant relationship between moderate maternal drinking during pregnancy and adverse health outcomes [6, 23, 38-41], recommendations to the public increasingly lean in the direction of abstaining from alcohol.

Thresholds and drinking patterns

There is no scientific consensus about the threshold of drinking above which risk for harm is increased; conversely, there is disagreement on what constitutes a “safe” level of maternal consumption during pregnancy [1].

- The weight of evidence strongly indicates that heavy chronic and frequent heavy episodic drinking are associated with the greatest risk of fetal harm [24].
- Evidence on isolated episodes of heavy drinking (“extreme” or “binge” drinking) is inconsistent [4, 18, 25-27, 42].
- Because individuals metabolize and respond to alcohol differently, thresholds for harm vary among individuals.

The effects of prenatal alcohol exposure are influenced significantly by other factors, including metabolism, nutrition, and genetics.

- Studies have shown that how ethanol is metabolized by the mother has an effect on the likely outcome for the fetus [28].
- Nutrition during pregnancy (e.g., folate intake) also affects a woman’s metabolism of alcohol [28, 29].

Other developmental determinants may act together with maternal drinking patterns to increase the risk for FASD [30].

- Socioeconomic status (SES) and related factors, such as nutrition and the quality of prenatal care, all affect the risk for FASD.
- Advancing maternal age is known to increase risk of developmental disorders, and chronic heavy drinking during pregnancy has been shown to be more prevalent among older women [31].
- Studies have demonstrated that heavy paternal alcohol consumption also impacts fetal development [32]; whether this occurs directly through physiological changes in sperm production or indirectly through confounding variables is not clear.

Prevalence of FASD

Of the spectrum of disorders, FAS is the most documented form. However, the incidence of FAS differs considerably across countries.

- The highest documented rate of FAS has been described in the Western Cape Province of South Africa, where the incidence rate is 65 FAS births per every 1,000 live births [33].
- The rate of FAS in different parts of the United States, by comparison, ranges from 0.2 to 1.5 per 1,000 live births [34].
- The rate of other FASD in the United States is thought to be approximately three times higher—from 0.6 to 4.5 per 1,000 live births [34].
- The United Kingdom reports no cases of FAS [35].

Disparities in prevalence and incidence rates of FAS and other FASD may also be largely attributable to different methods of screening and differences in diagnosis and reporting [35, 36].

The rates of FASD and FAS are particularly high in certain communities and groups.

Among indigenous populations, such as Native Americans in the United States, First Nations populations in Canada, and Aboriginal communities in Australia, rates are significantly higher than population-wide estimates in those countries [36].

- Research suggests that harmful drinking patterns and other confounders (e.g., poor nutrition) may be more prevalent among these groups. Many of these confounders are linked with various socioeconomic factors [24].

Access to prenatal care and screening plays an important role in the diagnosis of FASD and in its prevention, and relates to the high rates observed in groups that may be socially excluded.

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