



Latest Evidence on Alcohol and Pregnancy

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Alcohol is the most commonly used recreational substance. In 2012, almost 90 percent of people in the United States over 18 years of age reported that they had consumed at least some alcohol in their lifetime, and 56 percent reported drinking within the last month (Substance Abuse and Mental Health Services Administration [SAMHSA], Center for Behavioral Health Statistics and Quality, 2012). If you're over 21 years of age, drinking alcohol is legal, socially acceptable and in most cases safe.

But according to a 2014 report from the Centers for Disease Control and Prevention

(CDC), at least 38 million men and women in the United States drink too much, meaning that their alcohol use carries serious health risks. The CDC defines drinking too much as high weekly alcohol intake (≥ 15 drinks/week for men, ≥ 8 drinks/week for women), and binge episodes (≥ 4 drinks in a single episode). Drinking too much also includes any alcohol use by a pregnant woman (CDC, 2014).

In 2005, the U.S. Surgeon General's office issued an *Advisory on Alcohol Use in Pregnancy*, which stated that, "No amount of alcohol

Abstract Alcohol increases risk for miscarriage, birth defects and other problems, and it is the sole cause of the range of physical, developmental and cognitive problems known as fetal alcohol spectrum disorders (FASD), which can affect up to 5 percent of all pregnancies. Many women report drinking early in pregnancy, often before they know they're pregnant. When knowledgeable of the latest research evidence, nurses can counsel women of the risks alcohol use poses to a healthy pregnancy. DOI: 10.1111/j.1751-486X.12219

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consumption can be considered safe during pregnancy” (Carmona, 2005). In 2014, an international charter issued by representatives from 35 countries and published in the journal *The Lancet Global Health* called for “broad-based policy initiatives and actions at different levels of every society ... to encourage abstinence from alcohol during pregnancy” (Jonsson, Salmon, & Warren, 2014, p. e137). However, many people, even some health care professionals, aren’t fully aware of the research confirming the dangers of maternal alcohol use and might continue to erroneously advise women that light to moderate drinking during pregnancy is OK.

Women and Ethanol

The form of alcohol contained in beer, wine and other alcoholic beverages is ethanol. Ethanol is a small molecule and is soluble in both water and lipids. Once consumed, ethanol is absorbed readily from the digestive tract, and then becomes diluted within the body’s extracellular water content. It freely passes through cell membranes into the cytoplasm. In high-enough concentrations, ethanol can impair cell function to the point of causing cell death.

Alcohol is ingrained in our culture. Many people find the effects of alcohol to be pleasant, and drinking is common in many social gatherings. Use of alcohol may also serve as a coping response to common life stressors, such as marriage, family and work. But women and men respond differently physiologically to drinking alcohol. On average, women are smaller than men, and pound for pound their bodies contain less water. Thus, consuming the same amount of an alcohol beverage—a glass of wine, a bottle of beer or a standard mixed drink—will raise the blood alcohol content in a woman significantly more than in a man. After a bout of drinking, a woman’s brain and other organs remain exposed to ethanol, along with its toxic metabolite acetaldehyde, at higher levels until these substances are broken down and eliminated from the body (Office of Research on Women’s Health [ORWH], National Institutes of Health, 2008). As a result, drinking alcoholic beverages can be more risky for women than for men. In particular, high use can have serious health consequences. Among those who drink heavily, women tend to experience more heart, liver and

brain damage from alcohol compared to men. Alcohol use is also associated with an increased risk of breast cancer (ORWH, National Institutes of Health, 2008).

Alcohol Use in Pregnancy

Pregnancy represents a special case in alcohol use. In the early 1970s, Christy Ulleland, a pediatric resident in Seattle, noted that many babies born to women with alcoholism had failure to thrive. Two colleagues, David Smith and Kenneth Jones, conducted a closer examination of these infants and identified a specific pattern of facial malformations, growth deficiencies, structural brain defects and low IQ that they labeled fetal alcohol syndrome (FAS). Soon, other studies in Germany and Sweden reinforced these findings (Eustace, Kang, & Coombs, 2003; Fetal Alcohol Spectrum Disorders (FASD) Center for Excellence, Substance Abuse and Mental Health Services Administration, n.d.; ORWH, National Institutes of Health, 2008).

Further research has demonstrated that alcohol is a teratogen, a substance that can cause abnormal development in a growing fetus (Eustace et al., 2003; Gass, 2014; Nykjaer et al., 2014). In a pregnant woman, alcohol readily crosses the placenta to enter the fetal bloodstream. The immature fetal liver lacks the

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enzymes to process alcohol, and the fetus must rely on the mother for alcohol metabolism (FASD Center for Excellence, Substance Abuse and Mental Health Services Administration, 2007; WebMD, 2013).

Recognition of the effects that even low levels of prenatal alcohol exposure can have on the physical and cognitive development of a child led to the coining of the umbrella term FASD. Within the full range of this spectrum, a newborn may have birth defects most commonly involving the heart or kidneys, and/or neural anomalies involving the eyes, ears and parts of the brain. A child affected by FASD may exhibit poor overall growth, abnormal limb

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development and small brain size (May et al., 2014). Later in life, an individual born with an FASD may have cognitive deficits, leading to problems involving learning and memory, coordination, social awareness, attention and executive function (Quattlebaum & O'Connor, 2013).

Prenatal alcohol exposure is the leading preventable cause of intellectual disability in the United States (Gass, 2014). The international charter on FASD states that there are “more than a million babies are born every year with permanent brain injury from a known and preventable cause” (Jonsson et al., 2014, p. e137). According to a report from the Institute of Medicine, “Of all the substances of abuse (including cocaine, heroin and marijuana), alcohol produces by far the most serious neurobehavioral effects in the fetus” (Stratton, Howe, and Battaglia, 1996, p. 35).

Studies have shown that alcohol alters the growth and function of the placenta (Lui et al.,

2014). Alcohol consumption increases the risk of preterm birth and infants born small for their gestational age (Nykjaer et al., 2014). Even those children with prenatal alcohol exposure who have IQ scores in the functional range (>70) may have deficits in cognitive areas, such as problem-solving, planning, attention and task completion and abstract language. These individuals may experience long-term learning and behavioral problems that interfere with basic life skills, such as school performance and the ability to hold a job (Quattlebaum & O'Connor, 2013).

Accurate figures for the rates of FAS and FASD are hard to determine. The incidence of FAS is estimated at one to three cases per 1,000 births (Eustace et al., 2003; Quattlebaum & O'Connor, 2013). In a population-based surveillance study, researchers reviewed the medical records of children ages 7 to 9 to identify FAS as defined by three characteristics: (1) facial dysmorphism, (2) central nervous system abnormalities and (3) growth deficiency. The overall prevalence of FAS was found to be 0.3 cases per 1,000 children, with the rate highest among American Indian/Alaska Native children (2 cases per 1,000 children) and lowest among Hispanic children (0.2 per 1,000 children). This prevalence rate is lower than estimates based on in-person assessment by experts, possibly as a result of the following: (1) lack of recognition

by clinicians of the common physical and behavioral characteristics of FAS, (2) insufficient documentation of child growth and development, and (3) failure to consider FAS and the effects of prenatal alcohol exposure when making a diagnosis of behavioral and learning problems in children (Fox et al., 2015). A case assessment study in first graders at one typical U.S. school system, conducted by experts in recognizing FASD, found the incidence of FASD ranged from 2.4 percent to 4.8 percent of all children (May et al., 2014).

With up to 5 percent of pregnancies affected by fetal alcohol exposure, FAS and FASD are serious public health concerns. These conditions are preventable, but once they occur in a child there is no cure and the effects last a lifetime (Eustace et al., 2003; FASD Center for Excellence, Substance Abuse and Mental Health Services Administration, 2007; Gass, 2014; National Institute on Alcohol Abuse and Alcoholism [NIAAA], 2013; Quattlebaum & O'Connor, 2013). But awareness of the risks of alcohol in pregnancy remains low (Jonsson et al., 2014). For example, an online survey sponsored by a British newspaper found that 60 percent of respondents thought that some alcohol consumption during pregnancy was acceptable (Turner, 2014). According to FASD specialist Dubovsky (2014), this troubling result spotlights a common public misperception that drinking poses little concern to a pregnant woman and her developing fetus.

A survey by SAMHSA (2013) found that 18 percent of pregnant women between 15 and 44 years of age reported at least some consumption of alcohol during their first trimester, a time when many women may not yet know they're pregnant. In addition, almost 7 percent reported an episode of binge drinking during their first trimester (FASD Center for Excellence, Substance Abuse and Mental Health Services Administration, 2014; SAMHSA, 2013). A binge

episode rapidly increases the blood alcohol level, making binge drinking during pregnancy of particular concern. A pattern of binge drinking elevates the risk of miscarriage, preterm birth, low birth weight and sudden infant death syndrome (SIDS) and it's a particularly significant risk factor for FASD (CDC, 2013; National Institutes of Health [NIH], 2010).

Implications for Nursing Practice

According to the CDC, only one in six pregnant women has ever talked with their health care provider about their drinking. As a result, many may never have been alerted to the dangers of alcohol (CDC, 2014).

The Surgeon General's advisory states that, "Health professionals should

inquire routinely about alcohol consumption by women of childbearing age, inform them of the risks of alcohol consumption during pregnancy, and advise them not to drink alcoholic beverages during pregnancy" (Carmona, 2005, p. 1).

For nurses and other clinicians, having a conversation about alcohol use during a health care visit is recommended with all adolescent and adult clients. This is particularly important when working with women of childbearing age or those who are pregnant or trying to get pregnancy, as these women might not be aware of the risks of alcohol during pregnancy, or they might have received unclear or conflicting information. For women who report an excessive use of alcohol or any use while pregnant, a brief counseling

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intervention may be all that they need to help them understand the risks and set realistic goals to reduce or stop their drinking (CDC, 2014).

Alcohol Screening and Brief Intervention in Alaska

Alaska has one of the highest reported rates of binge drinking among women in the nation (CDC, 2012, 2015a). Public health nurses in the state were interested in trying new approaches that might reduce drinking. In 2012,

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an initiative funded by CDC and the Arctic FASD Regional Training Center (RTC) worked with three regional public health nursing clinics to implement an alcohol screening and brief intervention (SBI) program in primary care settings. Alcohol SBI has been shown effective in reducing alcohol consumption, and its use is recommended by the U.S. Preventive Services Task Force (2013). It consists of two steps: (1) using screening questions to identify a woman's drinking patterns and (2) for those identified as drinking too much, initiating a short conversation about alcohol use or, for those with severe risk, referral to specialized treatment.

Training of 180 primary care staff, including 120 nurses, in alcohol SBI took more than 15 months. Initially, nurses reported that implementing the alcohol SBI program was "awkward," but they began to see successes in their interactions with women. Alcohol SBI has now become an integral part of prevention screening in Alaska's public health nursing practice and is used in all 22 public health centers and more than 240 villages across the state during a routine clinic visits for prenatal care, family planning, sexually transmitted infection screening and tuberculosis.

As one nurse stated, "We are public health nurses. Our job is to try and help out the community as a whole, and alcohol is a big issue for the community that we live in" (CDC, 2015b).

Prevention Is the Key

Drinking alcohol is common, culturally prominent, socially acceptable and, for those of adequate age, perfectly legal. Still, it carries risks for certain individuals, and is known to be damaging to a developing fetus. Women of child-bearing age who choose to drink may want to consider taking effective steps to avoid pregnancy. Pregnant women or those trying to conceive are advised not to drink any alcohol. While alcohol's harmful effects on a fetus are well-documented, they're not yet fully understood. The recommendation for pregnant women needs to be clear and consistent: "There is no known amount or type of alcohol that has been proven to be safe to drink at any time during pregnancy" (Dubovsky, 2014).

Alcohol use behaviors occur within the context of life events, partnership or marriage, family, culture and society. Thus, the message of alcohol's risks during pregnancy and effective prevention strategies needs to reach not only women, but their spouses and partners, family members and support persons who can

Box 1.

Selected Resources on FASD

American College of Nurse-Midwives
ourmomentoftruth.com/Alcohol-and-Pregnancy

American Academy of Pediatrics
www.aap.org/en-us/advocacy-and-policy/aap-health-initiatives/fetal-alcohol-spectrum-disorders-toolkit/Pages/default.aspx

CDC
www.cdc.gov/ncbddd/fasd/index.html

Healthy Mom&Baby
www.health4mom.org/alcohol_in_pregnancy_how_much_is_safe

SAMHSA FASD Center for Excellence
fasdcenter.samhsa.gov



help them make decisions about alcohol use and support their healthful choices (see Box 1; Dubovsky, 2014; Jonsson et al., 2014).

Conclusion

As many as one in 20 babies born today are affected by prenatal exposure to alcohol. That's an alarming, if not sobering, statistic. FASD is a devastating and lifelong condition, but it's entirely preventable, because its sole cause is drinking during pregnancy. Nurses can help deliver the message that alcohol poses risks to a healthy pregnancy, and this message needs to reach women of childbearing age, their partners, spouses and family members, as well as all health professionals working with this client population. Eliminating drinking during pregnancy is one important step to help more babies get a stronger start and reach their full potential in life. **NWH**

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