

Functional neurologic abnormalities due to prenatal alcohol exposure are common

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Most children who are exposed to large amounts of alcohol while in the womb do not go on to develop fetal alcohol syndrome (FAS). Instead, problems that arise fall under a broader term that describes a spectrum of adverse outcomes, fetal alcohol spectrum disorders (FASD). A study using population-based prospective data from Chile to examine the risk for developing components of FASD has found that functional central nervous system abnormalities were alarmingly high.

Results will be published in the October 2012 issue of *Alcoholism: Clinical & Experimental Research* and are currently available at Early View.

"FAS is a clinical diagnosis with specific criteria," explained Devon Kuehn, a postdoctoral fellow at the Eunice Kennedy Shriver National Institute for Child Health and Human Development and as well as corresponding author for the study. "A diagnosis of FAS requires abnormalities in the three areas of facial features, growth and central [nervous system](#). Conversely, FASD is not a clinical diagnosis, but a group of conditions that may exist in [children](#) exposed to alcohol in pregnancy. The effects may be mild or severe and each person may be affected differently." Kuehn is also a staff neonatologist at Walter Reed National Military Medical Center.

A unique aspect of this study was the collection of detailed alcohol consumption during the pregnancy, added Kuehn, which was validated with home visits. "We focused on growth, facial, and central nervous

system abnormalities in children heavily exposed to alcohol in utero," she said.

"While it has long been known that not every child exposed to large amounts of alcohol during gestation is impacted by that [alcohol exposure](#)," added Edward P. Riley, a professor in the department of psychology at the College of Sciences at San Diego State University, "this study provides some of the best data available on just how common various indications – for example, growth retardation and physical and functional anomalies – of prenatal alcohol occur."

Kuehn and her colleagues initially began their study with a group of 9,628 women who were screened during their first prenatal appointment in [Chile](#). From this first screening, 101 were found to consume at least four drinks per day, and were then matched with 101 women who reported no alcohol consumption during pregnancy. Detailed data regarding alcohol consumption were collected during the pregnancies, and the children were evaluated up to 8.5 years of age by clinicians who were unaware of their alcohol-exposure status.

"Following heavy alcohol exposure during pregnancy, 80 percent of the children had one or more abnormalities within the diagnostic criteria of FAS," said Kuehn. "In other words, women who drink heavily during pregnancy are very likely to have a child with abnormalities. Even more concerning is that functional [central nervous system](#) abnormalities were the most common problem in children heavily exposed to alcohol in utero. Therefore the most common effects on the child will impact learning, behavior, language, or mental function."

"It is critical to note that while physical characteristics associated with FAS were not all that common, over 40 percent of the exposed children had evidence of functional abnormalities," said Riley. "These are children who might qualify for a diagnosis of an alcohol related

neurodevelopmental disorder (ARND). The significance of this cannot be overstated, as these are children who often go unrecognized and untreated, or are frequently misdiagnosed."

Both Kuehn and Riley noted the dangers of [binge drinking](#). "It is interesting that binge drinking continued to have a significant effect on outcome in addition to the daily heavy [alcohol consumption](#)," said Kuehn. "Other studies have shown that binge drinking may have the greatest risk on children, but we are the first to show binge drinking remains a risk factor even in women drinking heavily every day."

"So the take home message of this paper is that high levels of alcohol exposure and in particular binge drinking can lead to behavioral or functional issues, even in the absence of growth restriction or facial characteristics that are typically associated with prenatal alcohol exposure," said Riley. "These data indicate that physicians need to consider prenatal alcohol exposure in the etiology of functional deficits. There has been much controversy over the behavioral teratogenic effects of alcohol and a diagnosis of ARND, but these data show that functional consequences in the offspring were much more common than physical markers of exposure."

"We hope to convey to clinicians taking care of children that a significant number of children with neurologic effects from [alcohol](#) exposure may not present with the more recognizable facial or growth abnormalities," added Kuehn. "For clinicians working with women of childbearing age, the key message would be to counsel these women that binge drinking and total intake are important risk factors for the outcome of their child and that daily heavy drinking will most likely result in a an adverse outcome in their child."

"Studies such as this may help us to determine what factors may place an individual at risk for having an impacted child," added Riley. "What

differences in environmental factors such as diet, or genetic factors, might exist between those who had an effected child and those who did not? It would be interesting to follow these children and determine how their behavioral profiles change as a function of age."

Provided by Alcoholism: Clinical & Experimental Research

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