

Safe Passage Study links drinking and smoking with stillbirths and Sids

 By Nicci Botha

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An international study has confirmed that drinking alcohol and smoking during pregnancy is detrimental to the unborn baby. In fact, even more so than previously thought.



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The Safe Passage Study (SPS) followed the drinking and smoking behaviour of a group of South African and American women during pregnancy between 2007 and 2015, and showed that the combined effect of the two habits compounds the risk for stillbirth and sudden infant death syndrome (Sids).

The methodology used to collect data included:

- Detailed assessment of prenatal alcohol, tobacco, marijuana and methamphetamine, periconceptional maternal nutritional status and measures of stress, depression and mental health
- Maternal medical and obstetric history and infant medical history
- Serial profiles of foetal and infant physiology – including foetal electrocardiograms, biometry and Doppler flow velocity waveforms in major foetal vessels
- Antenatal and postpartum assessments of placental structure and function, utilising Doppler ultrasound and detailed histopathology and banking of placental specimens
- Collection and banking of maternal and infant DNA for study of copy number variants in genes that are potentially related to the vulnerability of certain infants to prenatal alcohol toxicity and adverse effects of other exposures
- Foetal and infant growth, facial dysmorphology, neurodevelopment and neurologic integrity (infant EEG and hearing)
- Among foetal and infant deaths, rigorous autopsy and standardised classification of the cause of death, including complications of prematurity and infectious diseases
- Neuropathologic studies of the brains of autopsied fetuses and infants in the study in order to determine the effects of adverse prenatal exposures directly upon the human brain at the neurochemical, cellular and molecular level

Funded by the National Institutes of Health (NIH) in the United States, the study followed the pregnancies of 11,892 women from the first prenatal visit (on average at 16 weeks gestation) to the child's first year of life. The majority of women (59.1%) were recruited from a prenatal clinic in Bishop Lavis in Cape Town, while the remaining 40.9% of participants were

recruited from two sites in North and South Dakota in the United States.

The researchers found that women who both drank alcohol and smoked during pregnancy had an almost three times higher risk (2.83 relative risk) of stillbirth compared to women who completely abstained from these behaviours. Smoking alone had a relative risk of 1.6 for stillbirth, while drinking alone had a relative risk of 2.2. This risk increased when these behaviours continued beyond the first trimester of pregnancy (12 weeks gestation).

Sids risk factor

The study also found a 12 times higher risk for Sids in cases where women drank and smoked during pregnancy. In cases where the women drank but did not smoke, the risk for Sids increased by four, and when they smoked but did not drink, there was a five times higher chance for Sids.

“This is the first study to show that combining these risk factors strengthens the negative effects on stillbirths and SIDS,” says Professor Hein Odendaal of the Department of Obstetrics and Gynaecology at Stellenbosch University’s Faculty of Medicine and Health Sciences (FMHS), who led the South African chapter of the SPS.

“What’s particularly alarming is that these behaviours were quite common among study participants. More than half used alcohol (52.3%) sometime during pregnancy, and 17% continued drinking throughout the entire pregnancy. Almost half of them smoked (49%) sometime during pregnancy, and a third (33%) continued smoking for the duration of the pregnancy,” he says.

The study was done in collaboration with the Boston Children’s Hospital and Harvard University in Boston, Columbia University in New York, the University of South Dakota in Vermillion, the University of North Dakota in Grand Forks, and a data collection and analysis centre in Boston.

“Earlier studies on drinking and/or smoking during pregnancy only collected data after delivery, relying on the mother’s memory of events. This study is unique in that we collected data throughout the pregnancy, which we collated with health data from the mother, foetus and later also the infant,” explains Odendaal. Up to three assessments were done on the mother and foetus during pregnancy, and after delivery, another three assessments were done on the infant – at birth, at one month of age, and at one year.

The researchers found that drinking and smoking reduced blood flow in the uterine and umbilical arteries as early as 20-24 weeks of gestation. “Again a compound effect was noticed,” says Odendaal. “Even low levels of drinking and smoking affected blood flow in the umbilical artery. Higher levels of smoking and drinking aggravated these effects on blood flow.”

Smoking and placental insufficiency

The study also found an association between smoking and placental insufficiency – a complication of pregnancy where the placenta is unable to deliver an adequate supply of nutrients and oxygen to the foetus and can’t fully support the developing

baby.

According to him, preterm birth and placental abruption are two of the main causes of stillbirth in South Africa. Smoking and now also the combination of smoking and drinking are known risk factors for both these conditions.

“By decreasing their exposure to alcohol and smoking, pregnant women can lower the risk for preterm birth and placental abruption – two conditions responsible for many infant deaths in South Africa,” says Odendaal.

During the study, researchers also noted other factors that contributed to an increased risk for stillbirths:

- Location – stillbirths were more common in the South African cohort than in study participants in the US.
- Level of education – fewer years of schooling were associated with a higher risk of stillbirths.
- Length of pregnancy – the earlier the delivery, the higher the chance of stillbirth.
- Previous stillbirth – mothers who have had previous stillbirths have an increased risk of another stillbirth.
- Restricted growth – there was a higher chance of stillbirth in cases where the foetus displayed poor growth.

“It is essential that the adverse effects of smoking and drinking, and, in particular, their combined effect, is continuously brought to the attention of the public and healthcare workers. Preterm delivery places a heavy burden on early and later life. A reduction in the number of preterm deliveries, in a community where the rate is very high (13.8% in the study), will bring about substantial cost savings, such as a reduction in neonatal intensive care and later developmental problems associated with preterm delivery,” Odendaal concludes.

ABOUT NICCI BOTHA

Nicci Botha has been wordsmithing for more than 20 years, covering just about every subject under the sun and then some. She's strung together words on sustainable development, maritime matters, mining, marketing, medical, lifestyle... and that elixir of life - chocolate. Nicci has worked for local and international media houses including Primedia, Caxton, Lloyd's and Reuters. Her new passion is digital media.

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