Parents' smoking damages their kids' lungs

A woman's smoking during pregnancy can detrimentally affect her child's lung function into adulthood, conclude three groups of investigators from the Harvard School of Public Health. And those effects, it seems, are irreversible.

Many of the investigators are involved in the Harvard Six Cities Study, which has been building a body of knowledge about air pollution and lung hazards for 20 years. Separate reports in the June 1 and June 15 AMERICAN JOURNAL OF EPIDEMIOLOGY (AJE) and in the June AMERICAN JOURNAL OF RESPIRATORY AND CRITICAL CARE MEDICINE (AJRCCM) provide strong evidence that both maternal and paternal smoking create long-term — perhaps even lifetime — health dangers for children.

In all of the studies, children were asked to blow into the tube of a spirometer, which measures the volume of air that can be moved in and out of the lungs. Overall, the offspring of smokers blew less air.

The AJRCCM study examined 8,700 children age 6 to 18 in six cities in the United States and found that those exposed to tobacco smoke before the age of 6 had a 2 to 3 percent decrease in lung function, or capacity. Twelve years later, those children still exhibited reduced lung function.

Normally, human lung function begins to decrease in the late 20s or early 30s, says Lucas Neas, coauthor of the June 1 AJE study. Decreased breathing capacity caused by lost lung function can be counteracted by vigorous exercise, he adds, though lost lung function can never be regained. In addition, the study finds that children who grow up in smoking households stand a greater chance of developing a host of lower respiratory symptoms, including shortness of breath, persistent wheeze, chronic cough and phlegm, and bronchitis.

"As vital [lung] capacity declines, your capacity for life itself declines," Neas explains.

The June 1 AJE study of 2,994 white children between the ages of 7 and 11 in six U.S. cities from 1983 through 1988 corroborated the link between parental smoking and respiratory harm to children. But unlike other studies, this one integrates the effects of indoor air pollution caused by passive smoke and ambient air pollution, comments C. Arden Pope III of Brigham Young University in Provo, Utah.

"These studies were designed to look at both indoor and outdoor exposures," says Pope, "and are clearly superior to other studies." However, he adds, "The jury's still out on whether or not it's prenatal or postnatal exposure that causes harm."

The June 15 AJE study looked at 8,863 white children age 8 to 12 in 22 North American communities and finds a weak correlation between prenatal smoking and first-trimester harm to the fetal lungs. Researchers know that smoking moms give birth to smaller babies, but little is known about the connection between low birthweight and reduced lung function. Some suspect that the lungs of fetuses whose mothers smoke, like those of fetal rats in laboratory tests, weigh less and produce less elastin (the main protein of the lung's elastic tissue fibers), thus decreasing pulmonary function.

Maternal smoking has also been linked to hearing defects in children (SN: 7/10/93, p.23). Moreover, the May PEDIATRICS raised the question of a link between smoking mothers and sleep apneas, which are thought to contribute to sudden infant death syndrome (SIDS).

Morton Lippmann of New York University's Institute of Environmental Medicine in Tuxedo, N.Y., says the evidence linking prenatal smoking and SIDS is inconclusive at this time. However, he is quick to say that the AJE studies represent "the latest, most complete, and most definitive research [on parental smoking] so far. I admire the quality and persistence of the work." — *G. Marino*

Assaults may amplify female alcoholism

Psychological stress caused by rape and other violent attacks influences importantly the emergence of alcoholism in women, according to a new study.

"A vicious cycle apparently starts with being a physical-assault victim," asserts psychologist Dean G. Kilpatrick, director of the National Crime Victims Research and Treatment Center at the Medical University of South Carolina in Charleston. "Assault increases women's risk of violence-related stress, which increases their risk of alcohol and substance abuse, which increases their risk of being assaulted again."

Kilpatrick urges screening female alcohol abusers for past assaults and the presence of post-traumatic stress disorder (PTSD), a cluster of symptoms that includes nightmares, inability to concentrate, and intrusive thoughts about a traumatic event. Treating an assault victim's PTSD may lessen her alcohol dependence, he theorized at the annual meeting of the Research Society on Alcoholism in Maui, Hawaii, last week.

Kilpatrick and his coworkers analyzed data from a national survey of 4,008 women, half between the ages of 18 and 34. Trained female interviewers randomly telephoned households containing at least one adult female. Three-quarters of the participants were interviewed 1 and 2 years later; most of the rest were reinterviewed once.

Each interview lasted about 35 minutes and included questions about exposure to violent assaults (rapes or attacks intended to kill or seriously injure the victim), current and past PTSD, and alcohol and illicit drug use. Initial interviews also covered family history of substance abuse and the tendency to seek out exciting and intense experiences (dubbed "sensation seeking").

In the first interview, about 1 in 8 women reported a prior rape and 1 in 10 cited other violent attacks. PTSD had afflicted 12 percent at some time in their lives and nearly 5 percent in the 6 months before the interview. More than 6 percent of the volunteers reported alcohol dependence during their lifetime; this condition had affected 3 percent in the prior year.

A history of both violent assault and PTSD occurred substantially more often in this latter group, after controlling for family history of substance abuse and sensation seeking, Kilpatrick contends. Compared to abstainers from alcohol and drugs, those who cited alcohol dependence over the past year encountered more violent assaults during the 2-year follow-up; women who abused two or more drugs simultaneously suffered the greatest number of new violent assaults.

Moreover, among women reporting no history of alcoholism, about 9 percent of those assaulted during the follow-up developed alcohol dependence, compared with around 1 percent of their nonassaulted counterparts. Women who first developed PTSD during the follow-up also showed an increased incidence of alcoholism.

The highest risk for alcoholism occurred in assault victims with a family history of substance abuse, a penchant for sensation seeking, and PTSD.

Federal statistics released last week indicate that most rapes occur before age 18 and many before age 11, which may partly explain why first assaults preceded alcohol use for some participants, he adds. Girls who grow up in families with one or more substance abusers may face an increased risk of violent assault during childhood or may receive inadequate parental attention as children, Kilpatrick holds.

The South Carolina researchers have begun a national telephone survey of 3,000 teenage boys and girls to examine the extent to which their findings generalize to both males and younger people. — *B. Bower*

Science Service, Inc. is collaborating with JSTOR to digitize, preserve, and extend access to *Science News*. www.jstor.org