

Editorial

Passive smoking in infants and children

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Passive smoking, sometimes called involuntary smoking, is the inhalation of smoke from two sources viz. mainstream smoke, which is exhaled by the person smoking a cigarette and sidestream smoke, which goes directly into the air from the end of a cigarette, pipe or cigar¹. Mainstream smoke is exhaled by the smoker for about 24 seconds per cigarette, while sidestream smoke pollutes the air during the entire cigarette's burning i.e. about 12 minutes¹. Such smoke lingers in the air long after the cigarette is finished. Because sidestream smoke is unfiltered by the lungs of the smoker, it has the highest concentration of toxic materials¹. Environmental tobacco smoke (ETS), otherwise known as secondhand smoke, is a combination of exhaled mainstream smoke and sidestream smoke. ETS is a complex mixture of chemical compounds, including at least 40 known carcinogens. It also contains carbon monoxide, a gas that inhibits the blood's ability to carry oxygen to body tissues. ETS contaminates the air and is retained in clothing, curtains and furniture. Although ETS is dangerous to everyone, fetuses, infants and children are at most risk.

ETS exposure reduces the birth weight of infants of nonsmoking mothers and contributes to additional reductions in birth weight among babies of smoking mothers². Infants of mothers who smoke are up to three times more likely to die from Sudden Infant Death Syndrome (SIDS) compared to those whose mothers do not smoke³. Infants who die from SIDS tend to have higher concentrations of nicotine in their lungs than do control children, regardless of whether smoking is reported⁴.

For young children, the major source of tobacco smoke is smoking by parents and other household members. Maternal smoking is usually the largest source of ETS because of the cumulative effect of exposure during pregnancy and close proximity to the mother during early life¹. However, in Sri Lanka, the prevalence of smoking among women is less than 1%⁵. The health risks imposed on children around adults who smoke are sobering. At a time when young lungs are growing and developing, children in a room with a smoking adult can inhale two to three

times as much toxic material per pound as adults do because they have a more rapid breathing rate. Furthermore, the infant or very young child may literally be trapped in this poisonous environment. Even if the adult smoker leaves the room, the young child must continue to breathe the residual ETS that remains. ETS in the home is a major source of exposure because children spend most of their time at home and indoors. Unlike adults who can choose whether or not to be in a smoky environment, children have little choice. They are far less likely to be able to leave a smoke-filled room if they want to, as babies cannot ask and children may either not feel confident about raising the subject or may not be allowed to leave even if they do ask.

ETS exposure impairs a child's ability to learn. It is neurotoxic even at extremely low levels. More than 21.9 million children are estimated to be at risk of reading deficits because of ETS. Higher levels of exposure to ETS are also associated with greater deficits in mathematical and visuospatial reasoning⁶. Maternal prenatal smoking contributes to the development of antisocial behavior and attention-deficit hyperactive disorder symptoms in the mother's offspring⁷. Exposure to ETS increases both the number of ear infections a child will experience, and the duration of the illness⁸. Inhaled smoke irritates the eustachian tube, causing swelling and obstruction which interferes with pressure equalization in the middle ear, leading to pain, fluid and infection. A study showed that children living with smokers are at an increased risk of childhood meningitis⁹.

The U.S. Environmental Protection Agency (EPA) has reported that ETS exposure increases the risk of lower respiratory tract infections such as bronchitis and pneumonia¹⁰. Infants with mothers who smoke are 50% more likely to be hospitalized with a respiratory infection during their first year compared to infants with nonsmoking mothers. Infants whose mothers smoke in the same room have a 56% higher risk of being hospitalized compared to infants whose mothers smoke in a separate room. There is a 73% higher risk if mothers smoke while holding their infants and a 95% higher risk if mothers smoke while feeding their infants¹¹.

ETS exposure increases the frequency of episodes and the severity of symptoms in asthmatic children¹². ETS exposure is also associated with increased respiratory-related school absenteeism among children, especially those with asthma¹³. Maternal and grandmaternal smoking may increase the risk of childhood asthma. Relative to children of never-smokers, children whose mothers smoked throughout pregnancy have an elevated risk of asthma in the first 5 years of life. Children whose mothers quit smoking prior to the pregnancy show no increased risk¹⁴.

In addition to the immediate health impact, there is growing evidence of longer term adverse health consequences of exposure to ETS in childhood. A large European study found that passive smoking during pregnancy and early childhood was associated with more respiratory symptoms and poorer lung function in adulthood¹⁵. A Norwegian study of nurses' aides found an association between those who were exposed to ETS as children and long-term sickness absence in adulthood¹⁶.

Sri Lanka Global Youth Tobacco Survey (GYTS), a school-based survey of students in grades 8-10, conducted in 1999, revealed that ETS exposure is very high, 56% students living in homes where others smoke and 67% being exposed to smoke in public places. Furthermore, half had parents who smoked¹⁷.

In view of the considerable health risks posed to children by passive smoking, public health policies are needed to protect this vulnerable population. There are two principal approaches: legislation and education. Legislation includes all regulatory approaches to controlling where and when people can smoke. Education includes public information, debate and advocacy to encourage behaviour change. These two approaches are complementary. Evidence from Australia and the USA, where bans or restrictions on smoking in public places are already commonplace, suggests that having smoking bans, with widespread public support, is a prerequisite for the adoption of smoking restrictions in the home^{18,19}. In other words, once people have accepted that non-smoking should be the norm in public places, there is likely to be a greater willingness to voluntarily restrict smoking in the home. In Sri Lanka, from 1st December, 2006 a ban has been imposed on smoking in public and confined spaces through a bill passed in parliament. Legislation is inappropriate to reduce smoke exposure in the home but educational strategies to raise awareness about the risks to children from passive smoking are more likely to be effective in changing behaviour. Some people have expressed

concern that bans on smoking in the workplace and public places will lead to a rise in people smoking in the home, thus putting children at greater risk of ill-health through passive smoking. However, there is no good evidence that this is the case. In fact, smoking bans help people to stop smoking and are more likely to lead to a reduction of smoking in the home^{18,19}.

Little is known about how widespread practices are to protect children from secondhand smoke in the home or what factors influence such practices. Until recently, most studies found that the majority of smokers had taken no action. However, there have been encouraging results from studies conducted in Scandinavia²⁰. In the USA and Canada, initiatives to encourage parents to ban or restrict smoking in the home have shown positive outcomes. One study found that among a group of mothers who received counselling about the dangers of passive smoking, their children's exposure to smoke in the home declined in the counselled group from 27.3 cigarettes per week at the start of the study to 4.47 at three months, and to 3.66 at 12 months²¹. Another study in Canada examined families' efforts to make their homes tobacco smoke-free and to minimise their infants' exposure. Six months after the birth of a child, 76% (176) of the women in the study reported that they did not allow people to smoke in their houses²². A US study targeting low-income families with young children also showed that parents responded by reducing children's exposure to tobacco smoke, following a period of training and follow-up counselling²³.

Parents who smoke should be aware that their children may become ill as a result of breathing in airborne tobacco smoke. Furthermore, children of smokers are more likely to take up the habit themselves because they copy the behaviour of adults and will perceive smoking as the norm if they grow up in a household where adults smoke. Some healthcare agencies in North America have begun to address the issue of smoking in the home and are working with parents to minimise their children's exposure to environmental tobacco smoke. For example, the US National Safety Council has produced guidance for parents on what practical steps they can take to minimise children's exposure to tobacco smoke (if they are unable or unwilling to stop smoking). These include:

- Try to smoke only outside. If you must smoke inside limit smoking to a room where you can open windows to allow adequate ventilation.

- Never smoke in a child's bedroom and do not allow anyone else to smoke there.
- Do not smoke while you are washing, dressing or playing with your child.
- Never smoke in the car with the windows closed, and never smoke in the car when children are present.

Many programmes have been developed to reduce smoking in the home by encouraging parents and carers to stop smoking. However, a review of such interventions found that only four out of 18 studies found a statistically significant effect, suggesting that such interventions are largely ineffective²⁴.

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