Synthesis on tobacco and pregnancy

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How Important Is It?

In Canada, the 1990s have been marked by a rise in public awareness regarding the harmful effects of tobacco on health, and by the emergence of studies and laws about the use and price of cigarettes.

The *Report on Smoking in Canada*[1] reveals that, from 1985 to 2001, the prevalence of daily smokers declined significantly among both sexes and in all age groups: the population of smokers 15 years and older decreased from 35.1% of the total population to 21.7%.

Nonetheless, smokers are still predominantly young, in their early reproductive years. This fact is far from trivial since chronic exposure to cigarette smoke during the fetal period significantly increases the risk of physical and mental health problems.

Indeed, while the devastating effects of tobacco on the health of adults are well known, its effects on children are proving to be troubling, especially when exposure to tobacco smoke starts during the fetal period.

Results from the National Longitudinal Study on Children and Youth (NLSCY)[2] indicate that 23.3% of Canadian women smoke during pregnancy. Of these women, 84% smoke throughout pregnancy. Rates of daily tobacco use among pregnant women break down as follows: 65% smoke between 1 and 10 cigarettes a day; 34% smoke between 11 and 25 cigarettes; 1% smoke more than 25 cigarettes.

A CEECD poll on the perceptions of tobacco use among pregnant women shows that the Canadian population is not aware of the number of pregnant women who smoke. Although there is some public awareness around the negative effects of smoking on the birthweight of babies, most people still appear to discount the long-term ravages of fetal exposure to tobacco smoke on the physical and mental health of children.

What Do We Know?

Prenatal exposure to tobacco is recognized as a serious and preventable child health challenge. National surveys conducted over the past decade in North America found that between 1 and 4, and 1 in 5 pregnant women smoked cigarettes during pregnancy. The number of children exposed prenatally to tobacco smoke via maternal smoking has extensive repercussions.

The psychosocial outcomes for children associated with prenatal maternal smoking can be numerous, including:

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- Reduced auditory orientation and responsiveness
- Increased tremors and startles in newborns
- Lower scores on tests of general cognitive performance in the preschool years
- Behavioural and psychological problems before school entry
- Reduced scores in the verbal domain during the school years
- Increased activity, inattention, and impulsivity in school
- Behavioural problems in school
- Conduct disorder and substance abuse during adolescence.

There is consistent evidence to suggest that increased exposure to nicotine in utero is associated with increased rates of conduct problems and hyperactivity during childhood and adolescence as well as increased rates of juvenile and adult crime. However, prenatal exposure to tobacco does not seem to be associated with an increased risk in children for emotional problems, such as depression. Gender also seems to moderate the long-term effects of smoking in pregnancy, as boys tend to manifest conduct disorders and girls tend to turn to substance abuse.

Moreover, research with animals suggests that smoking is linked to both structural and functional changes to the fetal brain. Animal studies show that nicotine and carbon monoxide can limit oxygen transmission to the fetus, resulting in problems with learning and memory. In humans, there is evidence of neurological, emotional, and behavioural changes.

The challenge of studying the effects of tobacco use during pregnancy lies in the fact that women who smoke during pregnancy tend to differ significantly from non-smokers in terms of their socio-economic status, mental health, personality characteristics, parenting styles, and exposure to stress. All of these factors contribute to confounding findings and make causal connections more difficult to establish. Animal studies are therefore very important in understanding separate biological mechanisms. However, cross-sectional and longitudinal studies conducted with clinical and community samples show strong associations between smoking in pregnancy and long-term problems with children's psychosocial development after controlling for a wide variety of individual, family and social factors.

What Can Be Done?

There is already compelling evidence to motivate all smokers to give up smoking. But pregnant smokers should be especially motivated, given the risks their smoking poses for their pregnancies and children. We know that during the parenting stage of life, parents (and, more specifically, pregnant women) are increasingly receptive to smoking cessation interventions due to their increased contact with health care systems and other facilities where smoking cessation can be encouraged. These are therefore the obvious sites for promoting awareness around tobacco use and fetal/child development.

While the literature on tobacco treatment supports widespread screening and treatment for smoking, pregnant women may need specific interventions along with self-help materials focusing on pregnancy issues. Research shows that quitting during the first trimester seems to provide the greatest benefits, but the positive effects of quitting at any time during pregnancy are also undeniable. Therefore, we should not only help pregnant women stay smoke-free from the time they make their first prenatal visit, but also throughout their pregnancy.

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A variety of intervention designs have been used to increase parents' motivation to quit smoking both during and after pregnancy:

- Practical counselling (including problem solving/skills training recalling past experiences at quitting, anticipating triggers, challenges to quitting)
- The Five-Step counselling approach
- Printed self-help materials
- Telephone counselling
- Social support outside of treatment, supporting a partner's efforts to quit, and receiving support from other family members, friends and co-workers
- Nicotine delivery systems that give intermittent rather than continuous exposure.

The abiding problem of investigation in this area remains how to identify smokers, especially pregnant smokers. Social pressure to not smoke during pregnancy can inhibit pregnant women from revealing their smoking status. Studies show high rates of deception (between 28% and 35%) when women are asked to self-report tobacco use and then are biochemically tested.

In fact, among the sizeable proportion of women who quit smoking for the duration of their pregnancy, rates of postpartum relapse are disappointingly high. Often the reasons for relapse can be found at home. Indeed, the presence of other smokers (i.e., an intimate partner or other family member) in the household has been shown to significantly increase the likelihood that smokers smoke during pregnancy and after giving birth.

Fortunately, there is ample evidence to support the effectiveness of treatment programs for pregnant and parenting smokers. Approximately 35% of pregnant women who quit smoking remain smoke free, improving their health as well as that of their children and other family members.

References

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