

Sex, Gender, Nicotine and Tobacco



It is important to examine how sex-related factors affect responses to tobacco use and treatments, and how gendered factors such as social, cultural and economic norms, relationships and opportunities affect smoking initiation, patterns of use, cessation and responses to tobacco policies, for men, women, boys and girls.

DEFINITIONS

Sex-related factors affect how your body reacts to substances, including how substances are metabolized, what effects they may have on your brain, and the development of tolerance and dependence. Female and male bodies have different genetic and physiological characteristics that affect these processes.

Gender-related factors affect your risks for use, exposure to marketing or exploitation, access to care and services, and the societal response to problematic use. Men, women, and gender diverse individuals experience these elements differently. In part, this is based on social roles and expectations that are dependent upon cultural context.

Globally, tobacco use is the leading preventable cause of death.^[2] While more men than women smoke, smoking is increasing among girls and young women in some countries. In France, Italy, Sweden, Argentina and Chile, smoking among adolescent girls now exceeds that of adolescent boys.^[2]

In Canada, the gender gap in smoking has narrowed over time, although smoking among men remains more prevalent.^[3] Recently, an increase in both cigarette smoking and nicotine vaping among Canadian adolescents has raised concerns over the relationship between nicotine vaping and tobacco use patterns and dependence among youth.^[4]

Key Sex-Related Factors

- Females who smoke cigarettes are more vulnerable to respiratory illnesses, including chronic obstructive pulmonary disease (COPD), with lower levels of cigarette exposure; this is due in part to smaller lungs, airways, and the influence of sex hormones.^[5]
- Nicotine metabolism is faster in females compared to males, due in part to the impact of ovarian hormones on CYP2A6- the enzyme activity involved in nicotine metabolism.^[6]
- Males metabolize nicotine more slowly than females and are more likely to smoke for the reinforcing effects of nicotine.^[7]
- Nicotine withdrawal is affected by menstrual cycle patterns; withdrawal symptoms tend to be greater during the luteal phase.^[8]
- Some treatments may be less effective for females, including: nicotine replacement therapy (NRT), regardless of whether or not combined with counselling [9]; and bupropion.^[10] In contrast, treatment with varenicline reveals similar or better outcomes among females compared to males.^[10-12]

Key Gender-Related Factors

- Men tend to be more often exposed to secondhand smoke (SHS) at work and women more often in the home.^[13]
- Girls and women often smoke as a means to control negative mood and emotions.^[14]
- Women who smoke are more likely to report depression and difficulty in smoking cessation compared to men; this may be due to both social and biological influences, but further research is required.^[15,16]
- The tobacco industry has linked smoking with empowerment and sexual attractiveness for women and with strength and masculinity for men.^[17]

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As evidence emerges on the health effects, and potential harms and benefits of ENDS, it is critical that a sex and gender lens is applied. Examining sex and gender-related impacts on ENDS patterns of use, dependence, health effects, and interventions will improve research, knowledge, and practice and policy responses.

- Women are more often concerned that quitting will result in weight gain.^[18]
- In a study with sexual and gender minority young adults, transgender individuals smoked more per day than cisgender and non-binary individuals.^[19]

Sex, Gender And Electronic Nicotine Delivery Systems (ENDS)

The risks and benefits of electronic nicotine delivery systems (ENDS) are hotly debated. For people who smoke cigarettes, ENDS may be a method for reducing or quitting smoking, or offer a form of harm reduction with fewer health risks than traditional tobacco use.^[20] However, increasing prevalence rates among youth in some countries including Canada and the USA,^[4,21] and the emergence of vaping related illnesses and deaths^[22] are serious concerns. While there is a lack of research on sex-specific health effects and gendered patterns of involuntary exposure to ENDS, policy responses are best aligned with restrictions on tobacco second hand smoke (SHS) exposure.^[23]

Evidence on the sex-related health effects of ENDS, including vaping related respiratory illnesses, is limited, but does indicate:

- In a study testing the aerosol delivery of nicotine to mice via a modified ENDS device, female mice demonstrated greater nicotine induced hypothermia.^[24]
- In an experimental study comparing smoking and e-cigarette use, participants who smoked demonstrated less oxidative and vascular responses after vaping an e-cigarette, compared to non-smokers who had responses similar to smoking a regular cigarette; and females who were taking oral contraceptives demonstrated more negative changes in vitamin E levels and flow-mediated dilation compared to males.^[25]

There is evidence that gender-related factors impact patterns and prevalence of ENDS use:

- Prevalence of ENDS and poly-tobacco product use tends to be greater among boys and men.^[26-38]
- ENDS use may increase the odds of smoking initiation among youth. In a Canadian study, past 30 day use of e-cigarettes was associated with initiation of smoking a whole tobacco cigarette, with slightly higher rates in boys (9.5%) than girls (7.4%) at follow up.^[39]

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- In a study examining women and men's reasons for using e-cigarettes:^[40]
 - men were more likely to report initiating e-cigarette use to quit smoking due to health concerns, and were more likely to use for enjoyment; and,
 - women were more likely to report initiation based on recommendations from family and friends, and were more likely to use to manage stress and negative mood.
- Girls and women prefer certain flavours of e-cigarettes, including: non tobacco and non-menthol flavours, or chocolate and sweet flavours of e-cigarettes.^[41]
- It is unclear if ENDS are equally effective for supporting smoking cessation in women and men. Longitudinal data from the Population Assessment of Tobacco and Health (PATH) study reveal women who smoked were more likely to transition to exclusive use of e-cigarettes, compared to men,^[42] while other evidence suggests women and men are equally likely to be an ex-smoker but current vaper.^[43]

For information about tobacco and its effects while pregnant, breastfeeding, and parenting, visit: bccewh.bc.ca

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