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| Logo1 | **POLICY • BRIEF**  **European Institute of Women's Health**  **Women and Smoking** |

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**Women and Smoking**

On 26 July 2021, WHO released the following information that warns of risks when using products containing tobacco:

* Tobacco kills up to half the people who use it.
* Tobacco kills over 8 million people each year. Over 7 million of these deaths result from direct tobacco use with around 1.2 million a result of non smokers  exposed to second hand smoke.
* Over 80% of the world's 1.3 billion tobacco users live in low to middle-income countries.
* Tobacco ia an epidemic and one of the biggest public health threats the world has faced by killing more than 8 million people a year around the world. Over 7 million of those deaths are from the direct use of tobacco, while around 1.2 million are non smokers who were exposed to second-hand smoke.(1)All tobacco is harmful, with no safe level of exposure to tobacco. Cigarette smoking is the most common use of tobacco worldwide. Other tobacco products include waterpipe tobacco, smokeless tobacco products, cigars, cigarillos, roll your own tobacco, pipe tobacco, bidis and kreteks.
* Waterpipe tobacco use damages your health in similar ways to cigarette tobacco use. The health dangers of waterpipe tobacco use are much less  understood by its users.Smokeless tobacco use is highly addictive and damaging to health. Smokeless tobacco contains many cancer causing toxins and it increases risks of of cancers of the head, neck, throat, oesophagus and oral cavity (including cancer of the mouth, tongue, lip and gums) and various other dental diseases.Over 80% of the 1.3 billion tobacco users worldwide live in low to middle income countries, where the burdern of tobacco related illness and death is heaviest. Tobacco use contributes to poverty by diverting household spending from basic needs such as food and shelter to tobacco.

**Smoking in the EU: The Basics**

Smoking is the leading cause of preventable death and disease in Europe for women and men. **1, 2, 3**Tobacco can lead to a variety of non communicable diseases (NCDs), including lung cancer, cardiovascular disease, and diabetes; diseases which account for 86% of deaths and 77% of the disease burden in the WHO Europe region. **4**  In Europe 28% of adults smoke, and 16% of all deaths are attributed to tobacco use both global highs. **5** Despite increased tobacco control policies, tobacco use remains shockingly prevalent throughout the EU.

While smoking has traditionally been a male habit, its popularity with younger women still increases with potentially disastrous consequences for their future health. Smoking from an early age leads to nicotine addiction, keeping younger people smoking longer and increasing the adverse side effects. **6** In the past, social constraints suppressed tobacco use in women; however, increased gender equality and lower social pressures to refrain from tobacco use have greatly diminished. While overall smoking prevalence is lower in women than men, this gap has narrowed across the EU due to a decrease in male smoking levels and male and alarming increases in the number female smokers in many countries.

Some EU Member States now have higher rates of smoking in young women than young men. **7** In 2014 the rates of current smokers in Europe (aged 15 years and older) ranged from 16.7% in Sweden to 34.7% in Bulgaria. Additionally, the rates of passive smoking varied for people aged 15 years and older, from 5.9% in Sweden to 64.2% in Greece. **8** In the EU-28 the prevalence of women smoking is highest in Bulgaria, Croatia, Cyprus, Greece, and Hungary with 21-22% of women smoking daily. **9**

Eurobarometer Report 2012 said Europeans smoke on average 14.2 cigarettes per day, virtually inchanged ubchanged since 2009.  43% of smokers, smoke 11-20 cigarettes each day, which corresponds to about one pack per day, though the number is currently decreasing.**10** Although some EU countries have the highest average levels of tobacco consumption, it has still decreased by 16% since 2000 (see Figure 1). **11**  Nevertheless, some gender specific data shows the rates in some EU countries for women are stagnant, or even increasing in some cases.**12**

**The Tobacco Disease Burden: Why Gender Matters**

Tobacco is the leading cause of premature mortality in Europe, and can harm nearly any organ in the body. Over half of smokers die prematurely: an average of 14 years earlier than non-smokers. **13** Tobacco Atlas estimates that approximately 176 million adult women worldwide smoke daily. While smoking has steadily decreased worldwide since 1980, the prevalence of smoking in women is higher in high-income countries–particularly in Europe (see Figure 2). **14**

Women who smoke have an increased risk of cardiovascular, respiratory diseases, cancers, osteoporosis, reproductive health problems, and various other illnesses compared to non smoking women (see Figure 3). **15**  Women are as vulnerable to the harmful effects of tobacco smoke as men, if not more so. Certain diseases like chronic obstructive pulmonary disease (COPD) the risk to women from smoking is higher than for men. **16** Further, women’s risk for smoking related health complications increases with age; women who continue to smoke after 40 increase their risk from smoking related hazards by up to ten-fold. **17**

Women smoke for different reasons, are addicted to nicotine more rapidly, have more difficulty quitting, and experience more severe withdrawal symptoms than men. **18** A Yale University study published in the Journal of Neuroscience in 2014, researchers found that smoking induced dopamine activation occurs differently in the brains of men and women who smoke. Their findings align with the existing literature indicating that men typically smoke for the reinforcing drug effect, while women tend to smoke for other reasons such as mood improvement, stress management, and out of habit. This may explain why some smoking cessation techniques, such as nicotine patches, are less effective in women. These neurobiological deviations have previously eluded researchers, and so the Yale team advocates gender specific medications and approaches to smoking cessation. **19**

**Smoking and Lung Cancer**

Historically, lung cancer mostly affected men. However, this gap has been narrowing due to the increased number of female smokers. For women, 80% of lung cancer is smoking related. The incidence of lung cancer is levelling off or decreasing in men but increasing amongst women. **20** Lung cancer kills more women worldwide than breast, ovarian, and uterine cancers combined. **21**

In Europe, lung cancer causes 20% of all cancer related deaths, the highest of any cancer. **22**  Lung cancer rates for European women rose by 9% in 2015, while breast cancer and colon cancer were predicted to drop 10% and 8% respectively. **23**  A recent study funded by Macmillan Cancer Support estimated that the number of women living with lung cancer in the UK will nearly quadruple in the next 30 years, with the increase mainly due to the ageing population. **24**

While lung cancer has a strong association with tobacco use, one in five women who develop this disease has never smoked. While lung cancer rates are decreasing in men, they remain relatively stable in women, except for young, who never smoked women in whose case rates of lung cancer are on the rise. **25** The risk of non smoking women developing lung cancer appears to be 2 to 3 times greater, suggesting that other factors i.e. passive smoking plays a role. **26, 27, 28**

 **Smoking, HPV infection and Cervical Cancer**

According to the American Cancer Society, women who smoke are about twice as likely as non smokers to get cervical cancer. Researchers believe that tobacco bye products damage the DNA of the cells of the cervix and therefore may contribute to the development of cervical cancer. Smoking also makes the immune system less effective in fighting human papillomavirus (HPV) infections, which places smoking girls at a higher risk of developing cervical cancer. **29**

**Smoking, Cardiovascular Disease (CVD), and Stroke**

Smoking and exposure to second-hand smoke both increase a women’s risk of heart disease and stroke. Exposure to smoke is more likely to cause CVD in women than in men. The risk of CVD is especially high in women who started smoking before the age of 15. **30** Researchers at the University of Minnesota and Johns Hopkins University, when reviewing 30 years of research covering nearly four million people, found that women who smoked had a 25% higher risk of developing CVD than men who smoked. For each additional year of smoking, a woman’s risk of developing CVD increased by 2%. Smoking resulted in an estimated 2.3-fold increased risk of heart attack compared to 1.8-fold risk in men. **31**, **32**

**Smoking and Diabetes**

Smoking increases the risk of developing type 2 diabetes for both men and women. Smoking is a health hazard for everyone, but people who have diabetes face an even greater risk because exposure to high levels of nicotine can compromise the effectiveness of insulin (the hormone that lowers blood sugar levels). **33**  The combination of high blood glucose and smoking increases damage to the blood vessels that feed the heart, brain, eyes, kidneys, and peripheral nerves, speeding up the consequences of diabetes. **34** In the highest risk group—those who smoke two packs or more per day - men who smoked were  45% more likely than non-smoking males to develop type 2 diabetes; women who smoked to the same level were 74% more likely than non-smoking women to develop type 2 diabetes when controlling for other factors. **35**  The American Nurses’ Health Study, which followed over seven thousand women with diabetes over 20 years, found that smoking increases mortality among women with type 2 diabetes; this risk increases as the average number of cigarettes smoked per day increases. The study found that smoking cessation can significantly lower the risk of death. Thus, those with diabetes are strongly advised not to smoke. **36, 37**

**Smoking and Reproductive Health  - Smoking in Pregnancy**

A DG Research funded study states that “smoking during pregnancy is one of the biggest yet avoidable causes of illness and death for both mother and infant.” Nonetheless, epidemiological studies show that between 11% and 30% of pregnant women smoke or are passively exposed to tobacco smoke. **38**  Women in the lowest socioeconomic groups are 6-7 times more likely to smoke during pregnancy than women in higher socioeconomic groups. Largely due to the carbon monoxide (CO) and nicotine from cigarettes, smoking negatively impacts both maternal and foetal health. Nicotine and CO reduces foetal oxygen supply. In addition, nicotine increases foetal blood pressure, and due to placental characteristics, nicotine and CO levels in the foetus are significantly higher than those found in the mother. **39**

Women who smoke during pregnancy are at elevated risk of the following: **40, 41, 42, 43**

• Stillbirth
• Perinatal mortality
• Ectopic pregnancy
• Placental abruption (placenta detachment from uterine wall before delivery)
• Placenta previa (placenta covering of the uterine opening)
• Premature labour (smoking is estimated to account for 15% of premature labours)

  Infants born to mothers who smoke while pregnant are at increased risk of:

• Behavioural disturbances
• Malformations (i.e. musculoskeletal defects, facial defects, limb reduction,    missing / extra digits)
• Decreased respiratory function
• Infant mortality
• Low birth-weight and underweight during infancy
• Sudden Infant Death Syndrome (SIDS)
• Childhood Obesity

Children exposed to smoking in utero are also at increased risk of asthma, respiratory infection, adult emphysema, infant colic, long-term growth impairment, intellectual disability, reproductive organ issues, and other illnesses. **44, 45, 46, 47, 48**

Research finds that pregnant women who did not smoke but were exposed to smoke at work or at home had a 23% increased risk of stillbirth and 13% increased risk of having a baby with defects compared to women who were not exposed to passive smoking during pregnancy. Exposure to more than 10 cigarettes a day was sufficient for this increased risk. **49**

**Smoking, the Birth Control Pill and Early Menopause**

Women who smoke and take oral birth control are at an elevated risk of heart attack, stroke, blood clots, and peripheral vascular disease. **50, 51** Nicotine alone causes high blood pressure and increased heart rate, which put stress on the blood vessels. When taking the birth control pill, oestrogen adds to this stress on the vessels. This risk increases with age and heavy smoking (15 or more cigarettes per day), particularly among women over the age of 35. **52** Additionally, smoking may lead to early menopause with the associated health risk for CVD and osteoporosis.

**Smoking across the Lifespan**

Europe’s youth has the highest smoking rates in the world, with 25% of 15-24 year olds smoking. This figure varies greatly depending on the country. It is estimated that 40% of French 17-year-olds smoke, one of the highest rates in Europe. **53** The EU average for 15-year olds smoking once per week is 14% for both boys and girls and is as high as 20% for Bulgaria, Croatia Hungary and Italy. **54**

Smoking in adolescence increases the risk of developing cardiovascular problems, respiratory illnesses, and cancer. Young smokers are less physically fit, have reduced lung function, and daily smoking is associated with developing mood and anxiety disorders. Not only does tobacco have immediate harmful effects on young people, most regular smokers started before the age of 20. **55** This underscores the necessity of interventions to prevent young people from starting to smoke in the first place.

Smoking rates also vary based on social factors, with higher rates among lower socio-economic groups and rising rates in the young female population. **56, 57**Between 2013 and 2014, approximately 1-2% more 15-year-old girls than boys smoked in Denmark, France, Germany, Hungary, Italy, Malta, the Slovak Republic, Spain, Sweden, and the UK. This gender difference rose to 5-9% in Bulgaria, the Czech Republic, and Luxembourg.. **58, 59**

The trend of young girls smoking more than boys began in the 1990s. Smoking is one way for girls to resist the “good girl” image and marks a transition from childhood into adulthood. Some young women consider smoking a slimming tool. One in four girls who smoke say that smoking curbs their appetite, helping them to keep thin. **60**  Peer influence is the most common reason people start smoking. 79% of smokers and ex-smokers say that they started when they saw friends smoking and 21% cited seeing their parents smoking. **61**

Young smokers are a responsive to policies aimed to reduce tobacco consumption such as clean indoor-air laws, excise taxes, and restrictions on youth access to tobacco. **62**  In the Eurobarometer Report, 28% of young people themselves that health warnings on tobacco packages are effective in stopping youths from smoking; however, 61% of smokers and ex smokers aged 15-24 said the health warning did not impact their attitude and behaviours towards tobacco. **63**