

Women's Health and Tobacco Usage in the World

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ABSTRACT

Although in developed countries tobacco usage initially was confined to men, nowadays in these countries tobacco usage rates among men are decreasing whereas among women rates are increasing. According to 2010 data, smoking rate is 10% among women globally. Highest rates are in Russia, and many European countries (30-40%). In Africa and Japan, the women smoking rates are below 10%. There are 24 countries which girls smoke more than boys. Smoking causes many health effects in women and smoking related diseases are responsible for 7% of mortality in women. After smoking cessation, the risk of smoking related diseases decrease.

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Key words: Tobacco usage; Women's health; Smoking related diseases

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EPIDEMIOLOGY AND MORTALITY

Although in developed countries tobacco usage initially was confined to men, nowadays in these countries tobacco usage

rates among men are decreasing whereas among women rates are increasing. Women started smoking 20-30 years after men at around 1940s^[1,2]. On the other hand in developing countries smoking rates are still much higher among men compared to women. According to 2010 data, smoking rate is 10% among women globally. Highest rates are in Russia, and many European countries (30-40%)^[1]. In USA, Canada, Australia, Brazil and Turkey, smoking rates are lower (10-20%). That is explained by the fact that in developed countries women smoking rates are decreasing generally and in developing countries as in Turkey and Brazil women start smoking at an older age than men. In Africa and Japan, the women smoking rates are below 10%. The only country where more women smoke than men is Sweden^[1]. According to 2013 data, smoking rates in many European countries are similar, but have decreased in Russia (10-20%), and also have going on decreasing in the Far East countries^[3]. At the present day, developing countries and underdeveloped countries in which smoking rates among women are very low, are primary targets for tobacco industry.

Recently, electronic cigarette usage has increased in USA and many European countries. It is popular between women because of e-cigarette companies are using beautiful famous women and slogans that say e-cigarette helps users lose weight in their advertisements^[3]. Especially pregnant women prefer e-cigarette because they think e-cigarette is less harmful than tobacco. But according to a 2014 WHO report, e-cigarettes threat to adolescents and fetuses^[4]. On the other hand, In Middle East countries, women use water pipes more than men. In Saudi Arabia, 52% of women use water pipe. Also other smokeless tobacco products usage is more common between women than men in South Africa, Mauritania and Thailand^[3].

According to 2011 data, in adolescent girls (ages between 13 and 15) smoking rates are between 16 and 30% in Russia and many European countries, between 7 and 15% in USA and below 7% in North Africa, Australia, Middle East and Far East countries. There are 24 countries which girls smoke more than boys. In South American countries, Sweden, Slovenia, Bulgaria and New Zealand, adolescent girls smoke more than their male peers^[1,3].

Advertisements targeting women, established image of smoking sexy women in magazines, conception among adolescents that smoking is “cool”, decreases weight gain and increases one’s social status are held responsible for the increased popularity of smoking among adolescent girls.

Data concerning effects of tobacco usage on women’s health are derived from developed countries in which smoking rates among women are relatively high. In 1980s in the USA mortality rates from all causes among smoking women were found to be 80-90% higher than non-smoking women. In the USA in 1997, 165.000 women lost their lives prematurely due to smoking related causes. Since the 1980s, around 3 million women are estimated to have lost their lives prematurely due to smoking related causes^[2]. Smoking related diseases are responsible for 7% of mortality in women. According to WHO 2004 data; smoking related deaths were reported to be 20-25% among women in the USA, United Kingdom and Canada^[1]. According to 2010 data, the highest smoking related deaths were reported to be more than 15% in Korea, Cuba, Brunei, USA, Denmark, United Kingdom, and some European countries^[3].

EFFECTS OF TOBACCO USAGE ON WOMEN’S HEALTH

Ovulation, Menstruation and Fertility:

Primary and secondary infertility rates are higher among smoking women compared to non-smoking women^[2,5-7]. It was shown in multiple studies that fertility decreases among women especially when more than 20 cigarettes per day are smoked^[8-10]. In a meta-analysis with a big population, infertility risk was found to be 1,6 times higher in smoking women^[11]. Causes for infertility in smoking women are many fold in many stages of reproduction: cadmium in cigarettes accumulating in the ovaries causing cell death, estrogen synthesis being suppressed in smoking women, cotinine inhibiting progesterone release, tobacco’s negative effects on germ cells, its decreasing of mucociliary activity in tubas, preventing angiogenesis in endometrium^[7]. Additionally there are also studies showing that smoking causes excessive dysmenorrhea, menstrual irregularities and secondary amenorrhea^[12-14].

Weight and Fat Distribution

Smoking does not lead to weight loss in women but after a while reduces weight gain. Smoking women have lower weight compared to non-smoking women or women who quit smoking. On the other hand, smoking in women causes abdominal fat deposition which is usually typical for men^[2].

Pregnancy

Smoking women postpone their pregnancies for 1 year on average^[15]. Twenty percent of pregnant women smoke worldwide but only 25 % of those could quit smoking while they are pregnant. In our country that proportion is reported to be between 15 and 25 percent^[7]. Smoking expectant mothers have an increased risk of pre-eclampsia^[2]. Nicotine in cigarette causes vasoconstriction in placental vessels and causes decreased blood flow to the fetus. In addition carbon monoxide in cigarette leads to formation of carboxy-haemoglobin which also decreases oxygenation of the fetus^[7]. These factors culminate in spontaneous abortion, placental anomalies such as ablatio placentae and placentae previa, low birth weight (lower birth weight on average of 200-250 grams compared to babies of non-smoking mothers), premature birth, perinatal and neonatal baby losses which all are more frequently seen with smoking

pregnancies^[16-25]. Sudden infant death syndrome (SIDS) is also seen more frequently in babies from smoking mothers^[26-29]. There also are studies suggesting that intrauterine mortality, abortion and low birth weight rates are higher in women who do not smoke themselves but are passive smokers^[2].

It was also shown in studies conducted with large populations that congenital heart defects^[30], cleft lip or palate^[3,31] anomalies and attention deficit hyperactivity syndrome^[32] are seen more frequently in children from smoking mothers. Future smoking rates for these children also were found to be two times higher compared to children from non-smoking mothers^[7]. It is also reported that smoking women are more reluctant to breastfeed their infants compared to non-smoking women^[2].

Menopause

Menopause transition begins 1-4 years earlier in smoking women compared to non-smoking women. Ill effects caused by menopause such as hot flashes and urinary incontinuity are encountered more frequently in smoking women^[2, 33-35].

Osteoporosis

Smoking has an ill effect on bone mineral density especially in post-menopausal period. In studies it was shown that hip fractures were encountered more often in smoking women^[2, 33, 36].

Cardiovascular Diseases

Major cause of death in women as well as in men is cardiovascular diseases (CVD) worldwide. When effects of estrogen are considered it is apparent that ill effects of smoking in women on cardiovascular system are more apparent. In many prospective studies it was shown that major cause of CVD in women was smoking^[33, 37, 38]. In smoking women risk of a heart attack is increased twofold whereas for women on oral contraceptives this risk is increased as much as 40 folds^[39]. CVD risk in smoking women younger than 50 years is found to be higher than older women^[2, 40]. It was also shown that risk increases with numbers of cigarettes smoked per day and duration of smoking^[41].

Stroke and subarachnoid hemorrhage risks are also higher in smoking women. In studies, this risk increase was shown to be as much as 2-3 folds^[39]. In women younger than 65 years, 55% of cerebrovascular diseases are caused by smoking^[42]. In many studies carotid atherosclerosis, peripheral artery disease and aortic aneurysm rupture were also found to be higher in smoking women^[2, 33].

Chronic Obstructive Pulmonary Disease (COPD)

COPD risk in smoking women is increased by 12 fold and in industrialized communities COPD rates in women are close to that in men. Ninety percent of women with COPD smoke. COPD risk also increases proportionally with number of cigarettes smoked and duration of smoking^[33, 39]. Smoking is responsible for 90% of mortality in women with COPD and there is a pronounced increase in the last 20-30 years in deaths caused by COPD in women. As babies born to smoking mothers have decreased lung capacities, it was also shown that women who were exposed to environmental cigarette smoke at their childhood had decreased respiratory functions. In smoking adolescent girls and adult women; there also is a decrease in lung functions at early ages^[2].

Cancer

In smoking women cancer risk is increased for many types of cancers of which lung cancer takes the lead such as: mouth, pharynx,

esophagus, bladder, liver, pancreas, kidney, stomach, rectum and colon cancers. There is an increased risk even for myeloid leukemia^[2,33]. In 2004 it was found for developing countries that 6% of newly diagnosed cancers were associated with smoking and for developed countries that percentage was even higher at 11%^[43].

Every year 71.000 women die from lung cancer. Smoking is responsible for 80% of lung cancer and 90% of lung cancer related deaths in women^[2,44]. Lung cancer risk is increased 25 folds in women who smoke. In the USA lung cancer prevalence among women summited in the middle of 1990^[2]. Lung cancer risk is still increased for women who themselves aren't smokers but their spouses smoke^[2,44]. Presently the distribution of lung cancer prevalence in women by country parallels that of smoking rates in that country. In accordance with that; lung cancer prevalence is relatively lower in developed countries in which smoking rates are declining and in non-developed countries in which smoking rates for women are relatively lower^[1]. Since 1950, death from lung cancer in American women increased by 800% and since 1987 death rates from lung cancer exceeded that from breast cancer. In 1990 in women 10% of cancer related deaths were caused by lung cancer globally^[2]. For some countries, that percentage was as high as 20%. Cancer risk is also related to the number of cigarettes smoked. Although cancer risk is increased by 3.9 folds in women who smoke 1-9 cigarettes per day, cancer risk is increased 40 folds in women who smoke 40 cigarettes per day^[45]. Death risk from lung cancer is also increased 20 folds in women who smokes 2 packages of cigarettes or more compared to non-smoking women^[2].

Cervix and vulva cancer were also found to be associated with smoking independently from Human Papilloma Virus infection^[2,46,47]. There is also accumulating evidence pointing out that breast cancer in pre-menopausal women may be related to smoking^[48,49]. An increase in the risk of acute myeloid leukemia was also stated in reports from World Cancer Research Fund and American Society of General Surgeons^[2,50].

Endocrine System

Diseases caused by estrogen deficiency and Graves ophthalmopathy resulting from Graves' disease are shown to be associated with smoking. Although negative effects of smoking on glucose metabolism are known, exact role of smoking on the pathogenesis of Type 2 Diabetes Mellitus and Gestational Diabetes is not elucidated yet^[2].

Gastro-intestinal System

Gallbladder diseases, peptic ulcer and Crohn's disease are encountered more often in smoking women. Crohn's disease also has a poorer diagnosis in smoking women. Related to the immunosuppressive effects of smoking, Ulcerative Colitis is found less frequently in smoking women and more frequently in women who quit smoking^[2].

Depression and other Psychiatric Diseases

As major depression prevalence is higher among women compared to men, smoking women have an increased risk of major depression compared to non-smoking women. Although exact mechanisms aren't elucidated yet; in people with bulimia, alcohol dependency, schizophrenia, attention deficit disorder and anxiety disorder smoking rates are higher^[2].

Other Health Effects

With smoking; prevalence of non-life threatening diseases such as

periodontal diseases, cataracts, age-related macular degeneration and wrinkles are also increased^[2,33]. It was also reported that Rheumatoid Arthritis and HIV infection rates are also higher in smoking women^[2].

USAGE OF OTHER TOBACCO PRODUCTS

Water pipe smoking in women has the same health risks as smoking in terms of CVD and negative effects on pregnancy^[33]. Water pipe smokers inhale deeper and longer compared to smoking a cigarette. As a result water pipe smoking causes deposition of toxic products at higher concentrations compared to cigarette smoking^[51]. Smokeless tobacco also known as snus usage, which is encountered more often in women, increases CVD, oral cancer, pancreatic cancer and low birth weight risks^[33,51].

Menthol cigarette usage is also more widespread among women and makes quitting more difficult. Low-tar cigarettes which are also known as light cigarettes are also more common among women and in fact have same health risks as normal cigarettes^[51].

EFFECTS OF SMOKING CESSATION IN WOMEN

Many studies have shown that children of smoking women have similar birth weights as non-smoking women if smoking is stopped during the first trimester^[2,33].

After smoking cessation, CVD risk decreases by 25-50% by the first 2 years and equals to that of non-smokers in 10-15 years^[2,33].

Equalization of stroke risk to those of non-smokers may be apparent in less than 5 years but may take 15 years^[33].

Although COPD risk decreases after cessation, it continues to be higher than non-smoking women. In a cohort study with a wide population conducted in the USA, it was found that risk of COPD development was same for women who quitted smoking, 5 years after cessation as non-smoking women^[52].

Although never reduced to non-smoker levels, cancer risk decreases gradually after smoking cessation. According to public health data in USA, in women who smoke more than 20 cigarettes per day, lung cancer rates are 9.1 times higher than non-smoking women but 16 years after smoking cessation this risk increase was found to be only 2.6 folds^[33].

CONFLICT OF INTEREST

The authors has no conflict of interest with regard to the work in the manuscript.

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