

TOBACCO AND HEALTH

Tobacco chewing or smoking implies where tobacco is either chewed or burnt and the vapors inhaled. The practice began as early as 5000-3000 BC¹. Tobacco is obtained from fresh leaves of plants in genus *Nicotiana* and includes species like *Nicotiana tabacum* and *Nicotiana Rustica*. Leaves of these plants are harvested and curved to allow for slow oxidation and degeneration of carotinoids in tobacco leaves. Various methods of tobacco consumption are bidis, cigars, cigarettes, electronic cigarette, hookah, kreteks, passive smoking, pipe smoking, roll your own and vaporizer etc. The resulting product is often mixed with other additives² and then pyrolysed. The vapors thus produced are then inhaled and the active substances are absorbed through the alveoli in the lungs. The active substances trigger chemical reactions in nerve endings which heighten the heart rate, memory, alertness reaction time and pleasure.

WHO estimates that tobacco caused 5.4 million deaths in 2004³ and 100 million deaths during the 20th century⁴. In 2000, smoking was practiced by 1.22 billion people, predicted to rise to 1.45 billion people in 2010 and 1.5 to 1.9 billion by 2025. If prevalence had decreased by 2% a year since 2000, this figure would have been 1.3 billion in 2010 and 2025⁵. Smoking is generally 5 times more prevalent among males than females⁶, however the gender gap declines with younger age⁷. As of 2002, about 20% of young teens⁸⁻¹⁰ smoke worldwide, with 80,000 to 100,000 children taking up the habit everyday - roughly half of whom live in Asia. Half of those who begin smoking in adolescent years generally continue to smoke for 15-20 years¹¹. WHO in 2004 projected 58.8 million deaths to occur globally¹² from which 5.4 million are tobacco attributed¹³ and 4.9 million as of 2007¹⁴. As of 2002, 70% of the deaths are in developing countries.

In a smoker, increased risk of contracting disease is directly proportional to the length of time that a person continues to smoke as well as the amount smoked. However, if someone stops smoking, then these chances gradually decrease as the damage to the body is repaired. A year after quitting, the risk of contracting heart disease is half that of a continuing smoker. The primary risks of tobacco usage include many forms of cancer especially lung cancer, kidney cancer, cervical cancer, breast cancer, bladder cancer, esophageal cancer, pancreatic cancer and Stomach cancer. There is some evidence suggesting an increased risk of myeloid leukemia, and increased cancers of liver, ovary, gall bladder, adrenal gland and small intestine etc.

Toxic compounds like polycyclic aromatic hydrocarbons, nitrosamines, radioactive polonium, radon etc are presumably responsible for increased incidence of lung and other cancers in humans¹⁵. Smoking also causes COPD (Chronic bronchitis and emphysema)¹⁶. Mortality from COPD shows a relation to cigarette smoking almost as strong as that for lung cancer. Among those smoking 25 or more cigarettes daily, mortality is more than 20 times higher than in non-smokers¹⁷. Cigarette smoking reduces exhaled nitric oxide concentration thereby leading to increased risk of respiratory infections¹⁸. Smokers have more 2-3 times higher risk of heart attacks, 30-60% increase risk of deaths due to heart attacks and 2-3 times higher risk of stroke, atherosclerosis and hypertension and dyslipidemia¹⁴. This is mainly due to the effect of nicotine in causing increased catecholamines, platelet stickiness and aggregation and rise in carboxyhemoglobin levels.

Adverse effects of tobacco smoking in pregnancy include increased incidence of low birth babies, premature babies, miscarriage, sudden infant death syndrome (SIDS)¹⁷. Tobacco causes harmful effects on genitourinary system which include reduced fertility¹⁹, early menopause²⁰, 4 times risk of carcinoma cervix²¹, rarely renal and bladder cancer²² and increased morphological abnormalities of sperms²³. In a study by Zavos²⁴, smokers had sex with the partner at an average of 5.7 times per month while the non smokers had 11.6 encounters.

As far as adverse effects on the gastro-intestinal system are concerned, there is increased incidence of oral cancer, gingival recession, periodontitis, staining of teeth, halitosis and tooth loss²⁵, while the incidence of oesophageal carcinoma²⁶ unlike pancreatic cancer and stomach cancer^{27,28} is quite high. Smoking increases susceptibility to peptic ulcer and Crohn's disease²⁷.

Although smokers often report that smoking helps relieve feeling of stress but most smokers, when denied access to nicotine, exhibit withdrawal symptoms such as irritability, jitteriness, dry mouth and rapid heart rate as nicotine's half life is only 2 hours²⁸. Smokers have 53% more chances of divorce than non smokers²⁹. Adverse effects of smoking on cognitive function include increase risk of Alzheimer's disease³⁰, cerebral atrophy³¹ as well as reduced memory and more anxiety disorders.

Smoking more than 20 cigarettes a day increases the risk of tuberculosis by 2-4 times³² and these occurs 4 times increase in risk of pneumococcal disease³³ because of adverse effects through structural damage and effects on immune system. Other adverse effects of smoking include cataract possibly as a result of deposition in the lens of the cadmium contained in tobacco³⁴.

Even the non smokers can be affected indirectly by inhalation of smoke exhaled by smoker known as passive smoking. For example maternal smoking increase the combined mortality in foetal and neonatal life by 28% and reduces birth weight by 170g and 320 g³⁵. Exposure to environmental tobacco smoke during childhood and adolescence leads to increased risk of lung cancer in adulthood¹⁵. Exposure to tobacco smoke can cause cough and breathlessness in non smoking patients with chronic bronchitis and emphysema and can induce attacks of asthma³⁶. Passive inhalation of cigarette smoke can worsen angina³⁷. There is no safe level of exposure to tobacco smoke. Any exposure is harmful with immediate damage.

Changing cigarette designs over the last five decades, including filtered, low-tar and light variations, have not reduced overall disease risk among smokers and may have hindered prevention and cessation efforts³⁸.

In summary, tobacco use imposes enormous public health and financial costs on this nation-cost which are completely avoidable. Until we end tobacco use, more people will become sick, more families will be devastated by the loss of loved ones and the nation will continue to incur damaging medical and lost productivity costs. Now is the time to fully implement proven and effective interventions in the form of nicotine replacement and non-nicotine medications etc, which reduce tobacco caused death and disease and to help end this public health epidemic once and for all. Tobacco prevention and control efforts and need to commensurate with the harm caused by tobacco use. Otherwise, tobacco use will remain

the largest cause of preventable illness and death in India for decades to come. Even the clear cut warning sign "Smoking is injurious to health" written on the cigarette packs is ignored by educated and uneducated ones. Media can play a definite role. Quitting at any age and at any time beneficial. It is never too late to quit, but the sooner the better.

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N. S. Neki

*Professor of Medicine,
Govt. Medical College and Guru Nanak
Dev Hospital, Amritsar, India
President Geriatric Society of India.
e-mail: dr nsneki_123@yahoo.com*

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