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Tobacco and CVD

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More than 400 years ago King James I of Great Britain identified the dangers of tobacco smoking. He said with great foresight that "Smoking is a custom loathsome to the eye, hateful to the nose, harmful to the brain, dangerous to the lungs, and in the black, stinking fume thereof nearest resembling the horrible stygian smoke of the pit that is bottomless" [1]. This attack on tobacco use from King James I shows that concern against the ill effects of tobacco began as soon as its use began to spread. It is now well known that tobacco use increases the risk of cardiovascular diseases (CVDs), chronic obstructive pulmonary diseases, cancer, and adversely impacts quality of life, resulting in a huge socio-economic concern for modern societies. In the 20th century, smoking was the second leading cause of death after wars [2]. Similar to vectors such as the anopheles mosquitoes, which cause malaria, tobacco companies have been observed to have the widest outreach disregarding international boundaries, regulations, and conventions. According to a 2003 WHO report [3], 6 million people die every year globally because of tobacco use and this death toll from tobacco will increase to 10 million deaths per year in the next two decades if the current trends continue. This report estimates that 1 billion deaths would occur in the 21st century due to tobacco use, and by the year 2030 1 in every 6 individuals will die because of the ill effects of tobacco. Currently, 48% of men and 12% of women worldwide smoke tobacco with developing countries being the biggest contributors.

Substantial evidence has accumulated in the last 50 years regarding the pathophysiology and mechanism of disease causation by tobacco and its products [4]. Cigarette smoke contains around 4,000 poisons, in which nicotine, carbon monoxide, oxygen free radicals, and raised fibrinogen are the main assault weapons, all of which increase atherosclerosis. Recent evidence suggests that smoking is also related to metabolic disorders such as impaired glucose tolerance, type 2 diabetes mellitus, and central adiposity. Results from INTERHEART, a large international case–control study of incident myocardial infarction matched against normal controls, has shown middle-aged individuals who smoke have a 10-fold greater risk of sudden cardiac death as compared to non-smokers [5]. Further, it demonstrated a linear increase in the risk of myocardial infarction with increases in the number of cigarettes smoked per day. In addition, the INTERHEART study also showed that chewing and other non-smoking forms of tobacco and non-cigarette forms as smoking such have a similar propensity to cigarette smoking in increasing the risk of myocardial infarction. Although women are less likely to smoke than men, smoking-related mortality and morbidity is evident in them as well. According to a 2001 U.S. Surgeon General's Report [6], women smokers have a high risk of early heart attack and risk increases with the number of cigarettes smoked and duration of smoking. The incidence rate (per 100,000) of stroke among a cohort of 118,538 women was 49.8% for smokers as compared to 17.7% for non-smokers [7]. Along with active smokers, smoking has its ill effects on the passive smokers as well. A meta-analysis of 18 studies conducted by He et al., showed passive smokers are at 25% excess risk of coronary diseases. Increased arterial thickening has been reported among passive smokers in the ARIC (Atherosclerosis Risk in Community) study [8]. Older smoking adults continue to be at risk for premature mortality due to CVD, in whom associated problems such as diabetes, osteoporosis, and respiratory diseases are also exaggerated.

Systematic review of literature suggests that older adults are receptive to smoking cessation and have high quit rates. Even pharmacological therapy to quit smoking appears to be more effective in older smoking adults. Despite the benefits of smoking

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cessation older adults receive suboptimal advice. A review of Medicare patients showed only 44% receive documented smoking advice [9]. The benefits of quitting smoking are evident for all ages, genders, regions, and ethnicities. The benefits start within weeks of quitting smoking. Within 2 months of quitting smoking, the arterial pressure and heart rate are lowered and by 6 months a decrease in the parameters for CVD risk, improved arterial stiffness, and coronary endothelial function are observed. By 5 years of smoking abstinence the risk of cardiovascular death, myocardial infarction, and stroke reaches the level of non-smokers. After 20 years of quitting smoking, inflammatory and haemostatic markers return to normal levels and there is a regression of atherosclerosis in peripheral arteries [10].

The public health burden of tobacco use mandates the urgent need for tobacco control particularly price increases and advertisement bans. In 1999, a report from the WHO showed that with every increase of 10% in the price of tobacco products there will be a decrease of 40 million in number of smokers and 10 million deaths because of tobacco worldwide with substantial benefits to developing countries. Similarly, substantially less numbers of cigarette consumption per capita has been observed in countries with a ban on cigarette advertisements as compared to those without the ban. Meta-analysis of results from numerous studies shows there is a reduction in hospital admission for acute coronary events after the enactment of smoke-free legislation [11]. The WHO-Framework Convention on Tobacco Control (FCTC-2005) is a good starting point and ratified by many countries worldwide [12]. In addition, in 2008, the WHO also provided the MPOWER strategies for global tobacco control, which reflects and builds on the WHO-FCTC (2005) [13]. The six proven polices to reverse the global tobacco epidemic of MPOWER include, monitoring tobacco use and prevention policies, protecting people from tobacco smoke, offering help to quit tobacco use, warning about the dangers of tobacco, enforcing bans on tobacco advertising, promotion, and sponsorship, and raising taxes on tobacco.

Despite all the global efforts, there appears to be a disconnect in the way tobacco control efforts are carried out with several countries not completely implementing the WHO guidelines. At individual levels, while physicians are keen to attempt biological measures such as drugs for quitting smoking, tobacco activists emphasize the behavioral interventions and policy measures.

In order to sensitize a wide array of stakeholders involved in tobacco control and to provide complete information on tobacco, starting from biological and pathophysiological mechanisms at one end to broad societal perspective on the other, we requested Profs. K.S. Reddy, Christpoher Millet, and Monkia Arora to be the guest editors of this important issue. We congratulate them for bringing such a comprehensive and complete issue that will appeal to all our readers. We hope you will enjoy reading this highly informative special edition on tobacco.

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