Review Article

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You can Smoke; but with a HEAVY Heart

Chitrang Shah[1*] Shashank Arora[2] Masum Patel[3] Vidhi Patel[4]

[1]Tobacco Cessation Expert, Apollo CBCC, Ahmedabad, Gujarat, India.
[2]PG Student, Department of Periodontology, Surendra Dental College and Research Institute, Sri Ganganagar, Rajasthan, India.
[3]Intern, Ahmedabad Dental College and Hospital, Ahmedabad, Gujarat, India.
[4]Private Consultant, Vadodra, Gujarat, India.

ABSTRACT

Background: Smoking is one of the most common addictions that have affected the people all over the world. Cigarette smoking is the most important preventable cause of premature death in the world. Smoking has been considered a major risk factor for cancer (particularly lung cancer, cancers of the larynx and mouth, esophageal cancer and pancreatic cancer), heart attacks, strokes, chronic obstructive pulmonary disease (COPD), Idiopathic Pulmonary Fibrosis (IPF) and emphysema. Many smokers around the globe know that smoking can cause cancer, but far fewer are aware that their habit has adverse effects on the heart and it makes them prone to Coronary Heart disease or Stroke. Even more striking, people are unaware that even secondhand smoke increases the risk of heart disease and stroke among nonsmokers. Smokers are at a higher risk of developing chronic heart disorders like Atherosclerosis i.e fatty buildups in arteries. Atherosclerosis is found to be the most common cause for the high number of deaths from smoking**.** Smoking Tobacco leads to Coronary heart disease and even stroke. Smokers are two to four times more prone to develop cardiac disease and complications than nonsmokers. Tobacco Smoking has been associated with the sudden cardiac death of all types. Risk of stroke is double in smokers than in non smokers.

Keywords: Smoking , Heart Disease , Tobacco Cessation.

INTRODUCTION

Smoking remains a leading risk for early death and disability worldwide. Cigarette smoking, being a major risk factor for cardiovascular disease (CVD), has been proved to be the leading preventable cause of death worldwide**.** Also, secondhand smoke amplifies the risk of CVD among those who do not smoke**.**[1,2] The notable point is that the risk is reversible, and quitting smoking after a myocardial infarction reduces the individual's risk of mortality (due to CVD) by 36% over 2 years. [3,4] The risk of heart failure is double in smokers compared to the non-smokers. Also, smoking is proved to induce and/or worsen serious cardiac arrhythmias. [5] Smoking is identified as the causative factor for coronary heart disease (CHD) (including myocardial infarction (MI) and sudden death), cerebro-vascular disease (stroke), peripheral artery disease (PAD), and abdominal aortic aneurysm. [6,7,8] It has been proved that smoking and LDL:HDL ratio top the list of most important modifiable risk factor associated with myocardial infarction. Smoking cessation has been proved to be a very effective tool in the prevention of cardiac disease; yet a lot of contemplation has not been received from the Cardiologists and Physicians for it**.** In fact, the benefits of smoking cessation outperform those delivered by other preventive strategies such as Hypertension or cholesterol control. [4]

How does Smoking alter the Heart function?

Smoking affects the cardiovascular system either through its nicotinic action or through the direct effects of carbon monoxide and other harmful oxidative gases. Smoking promotes atherogenesis and can lead to acute cardiovascular pathologies. Smoking induces endothelial injury, causes the

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***Correspondence Dr. Chitrang Shah.**
Apollo CBCC, Ahmedabad, Gujarat, India.
Email: Not Disclosed

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formation of atheroma and has an additional prothrombotic influence.[9,10] Nicotine binds to nicotinic cholinergic receptors in the brain and acts as a sympathomimetic agent.[11] It stimulates the release of catecholamines, leading to increases in heart rate, blood pressure, and myocardial contractility that increase myocardial work and oxygen demand [12]. Nicotine also induces vasoconstriction through its action on alpha-adrenergic receptors and by inducing endothelial dysfunction.[9,13] This results in a reduced coronary and cerebral blood flow.

The most common (and the most harmful too) gas/byproduct of smoking is carbon monoxide. Carbon monoxide has a greater affinity than Oxygen and hence it binds to the hemoglobin more intensely and avidly. This in turn reduces the availability of oxygen in different organs of the body (hypoxemia) leading to ischemia. In addition to this, increased mass of Red blood cells will lead to hyperviscosity and eventually hypercoagulation in smokers. [10]

Cigarette smoke contains high levels of oxidant gases such as oxides of nitrogen and free radicals. These induce inflammation, endothelial dysfunction, and oxidation of lipids, which are mediators in the pathogenesis of CVD. They also contribute to platelet activation, thrombogenesis[14] and enhance coagulability through increase in plasma fibrinogen.[15] Other components of cigarette smoke, such as metals and polycyclic aromatic hydrocarbons, also damage endothelial cells and contribute to atherosclerosis.

The increase in risk of Cardio Vascular Disease associated with smoking is also mediated through other cardiovascular risk factors such as an increase in low-density lipoprotein-cholesterol and triglyceride, a decrease in high-density lipoprotein cholesterol, an increased risk of type 2 diabetes, and possibly an increase in blood pressure.[16-18]

Second Hand Smoking (SHS) & Heart Disease:

The risk of CVD in the passive smokers is also a grinding concern. However, Passive cigarette smoking is associated with a smaller increase in the relative risk of coronary heart disease than is active cigarette smoking. Factors like Diet and Lifestyle are confounding factors in the causation of CVDs. [19,20].

There is also evidence that passive smoking may contribute to atherosclerosis by sensitizing neutrophils, causing their activation and subsequent oxidant-mediated tissue damage. There are studies providing additional evidence of oxidative stress and potential damage from tobacco smoke even for non-smokers who are exposed to the smoke of others either inside or outside their homes. [21] Ischemic Heart disease has been cited as one of the major mortality risks from Secondary smoking. [22] Of note, the cardiovascular effects of Environmental Tobacco Smoke appear to be different in nonsmokers and smokers. Nonsmokers appear to be more sensitive to Environmental Tobacco Smoke than do smokers because of physiological adaptations smokers undergo as a result of long-term exposure to the toxins in cigarette smoke.

What can be done?

The Primordial Prevention of CVD is both necessary and cost-effective. In developing countries like India, tobacco-caused heart disease is an extra burden on their Health Care systems which has to be taken care of. In patients with established and serious cardiovascular disease, smoking cessation is an effective measure for the prevention of death and hospitalization due to heart disease. Quitting smoking is as effective as modern pharmaceutical therapies, and just as fast in manifesting its benefits. Abstinence from Tobacco has shown to improve the condition by many folds. Quitting Smoking can rapidly reduce the risk of fatal cardiovascular events. Quitting smoking nullifies the risk of cardiovascular disease from smoking, making it a standard intervention for those at risk of and with existing cardiovascular disease. Also, it has to be noted that the substantial benefits of smoking cessation in the prevention of cardiovascular disease require stronger commitment from Cardiologists and Tobacco Cessation Experts as Tobacco cessation counseling along with Pharmacotherapy have shown definite results in helping the patients to quit. The excess risk of the occurrence of a heart attack is reduced to almost 50% within one year of quitting in comparison to continuing smokers. [24, 25] Also, it has been seen that special Tobacco Cessation centers or clinics have been more beneficial and have shown better

results than physicians attempting the Tobacco cessation counseling. [26, 27]

CONCLUSION

The use of Tobacco significantly increases the diseases burden in India and all over the world. Smoking increases the risk of developing cardiovascular diseases, which includes coronary heart disease and stroke. Smoking has been seen to affect the blood pressure, reduces exercise tolerance and also the tendencies of blood getting clot is seen to be enhanced. Smoking has been named one of the primary preventable causes of death due to Heart disease. Hence, Physicians and Cardiologists have felt the potential need of the Tobacco Cessation Clinics. Also, the number of tobacco users quitting spontaneously on their own is scarce. Therefore, tobacco cessation clinics (TCCs) are being established in India and all over the world as smoking cessation or Tobacco cessation is the need of the hour.

CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

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