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EDITORIAL VIEWPOINT

Tobacco and CVD: A Historical Perspective

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Tobacco consumption, in the past few decades has arguably been established as one of the most significant preventable causes of mortality and morbidity globally [1]. Recent projections estimate that tobacco kills at least 6 million people globally every year, which is much higher than the combined mortality caused by diseases such as acquired immunodeficiency syndrome, tuberculosis, and malaria [2]. The low- and middle-income countries (LMICs) are the worst affected by the tobacco epidemic [2]. It is estimated that by 2030, more than 80% of the tobacco-related deaths will occur in LMICs [3].

Tobacco use is a leading preventable risk factor of cardiovascular diseases (CVDs) [4]. About 1.62 billion deaths in the year 2000 (1 in every 10 cardiovascular deaths) worldwide were due to smoking tobacco in any form [5]. Approximately one-third of deaths due to tobacco are likely to be attributed to CVDs by the year 2015 [6].

Understanding the historical evolution of tobacco use and its association with CVDs may stimulate as well as provide important inputs for future tobacco control and CVD prevention programs and policies.

TOBACCO'S JOURNEY ACROSS THE WORLD

The story of the origin and spread of tobacco goes back thousands of years. The tobacco plant is mostly indigenous to the Americas, where its cultivation was started by the native Indians in the year 6000 BCE [1]. Tobacco was introduced in Europe in 1492 when Christopher Columbus and his crew returned from their first voyage of the Americas and

brought with them tobacco leaves and seeds [7]. From Europe, tobacco spread to other parts of the world in the 16th century. In the early 16th century, tobacco was introduced in the Middle East by Egyptians [8]. Tobacco was introduced in China and Japan between 1530 and 1600, and the Japanese army introduced tobacco in Korea in the last decade of the 16th century [7]. During the same period, Portuguese and Spanish traders took tobacco to Africa during their voyages [7]. The Portuguese brought tobacco to India in early parts of the 17th century where they used tobacco leaves as barter for spices and textiles [1].

The origin of the word *tobacco* is contested. Some people believe that it is derived from the Arabic word *tabaq*, which means “euphoria producing herb.” Some experts believe that tobacco comes from the Caribbean word *tabaco*, which is the name of the pipe from which tobacco was smoked. Some sources refer the origin of this word from the Tabasco state in Mexico [9]. The tobacco plant was botanically named by Swedish botanist Carolus Linnaeus in 1753. He described 2 species of the tobacco plant: *nicotiana rustica* and *nicotiana tabacum*. He named the tobacco plant after French Diplomat Jean Nicot who introduced and popularized tobacco in France as a cure for migraine headaches [1].

Historically, tobacco has been used for several purposes. These varied from time to time and region to region. Tobacco was mainly used by Native Americans for ceremonial purposes. They used tobacco for smoking, ingesting orally as syrup and chewing [8]. They even consumed tobacco through rectal enemas in a spiritual ritual [8]. In Haiti, tobacco was used as a medicine for cleaning nasal passages and as an analgesic [1]. In the 16th century, European doctors used to recommend tobacco as

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a cure for headache, toothache, falling fingernails, lockjaw, halitosis, worms, and cancer [10]. The recreational use of tobacco started in the latter half of the 16th century when pipe smoking was popularized by Thomas Harriot (on his return from Virginia, where he was sent to explore opportunities in the newly acquired colony) and his friend Sir Walter Raleigh (an English aristocrat, who developed the art of curing tobacco leaves in a way that popularized smoking among the British aristocracy) [10]. In the beginning of the 17th century, pipe smoking became popular in the Netherlands and later in the 18th and 19th centuries, it spread across Europe and to the East Asian countries [10]. In India and the Middle East, hookah or water pipe smoking (where tobacco smoke was filtered through water to overcome its purported ill effects) was popular among noble and elite classes [11]. Oral and nasal forms of tobacco use became popular in the 18th century [12]. In India, chewing of different flavors of tobacco flakes along with betel quid gained popularity especially among women. Women, in those times used to color their lips and mouth red by chewing tobacco with betel quid for makeup. Sniffing tobacco was also widely accepted, which led to an increase in import of tobacco in India during the Medieval Ages [11].

During the Crimean War, the use of cigarettes started becoming popular [10]. Consumption of cigarettes increased exponentially during World War I and by the end of World War II, cigarette smoking was the most common form of tobacco consumption in developed countries of the world [10]. Cigarette smoking became deeply ingrained in Western society after World War II. Cigarette smoking remains the most popular means of tobacco consumption worldwide.

TOBACCO CONSUMPTION AND CVDS: THE HISTORICAL EVIDENCE

Huchard [13], in his article on diseases of the heart and blood vessels in the year 1893, provided some of the first evidence in scientific literature of a relationship between tobacco consumption and heart diseases. He wrote: “The (unfavorable) influences of nicotism on the development of arteriosclerosis appear to have been demonstrated. And this is not surprising since nicotine produces most often arterial hypertension by vasoconstriction” [13]. Since the early 20th century, several physicians and researchers have implicated tobacco in increasing the risk of several CVDs. Erb [14], in 1904,

found that almost 60% of patients with intermittent claudication were heavy smokers. Buerger [15], in 1908, reported a rare form of peripheral vascular disease that leads to progressive inflammation and thrombosis of arteries and veins of hand and feet and occurs mostly in smokers. This disease was later named after him as Buerger’s disease (*thromboangiitis obliterans*). His findings were supported by Weber [16], Brown and Allen [17], and Allen et al. [18]. Hoffman was among the first to show a statistical association between smoking and coronary thrombosis [19]. English et al. [20] compared 1,000 smokers matched with 1,000 nonsmokers in 1940 to show possible association between smoking and CVDs and concluded that there is “a more profound effect on younger individuals owing to the existence of relatively normal cardiovascular systems, influencing perhaps the earlier development of coronary disease.” The first U.S. Surgeon General’s Report on Smoking and Health [21] provided evidence of higher death rates among male smokers from coronary artery disease in comparison to male nonsmokers. This evidence was further strengthened in the U.S. Surgeon General’s Report of 1971, which stated that smoking not only is an independent risk factor, but also combines with other risk factors to affect cardiovascular health [22]. Hammond [23], in his study on approximately 1 million people, showed an increased mortality from coronary heart disease among cigarette smokers.

The seminal British physicians cohort study by Doll and Hill [24] showed that male cigarette-smoking doctors had a higher risk of death from coronary thrombosis (ratio of death rate for male smokers in comparison to lifelong nonsmokers under 70 years of age was 2:1 and for men over 70 years was 5:1). The Framingham Heart Study, which is one of the most important cohort studies for CVD epidemiology, in the year 1960, provided evidence that cigarette smoking increased the risk of heart disease. The same cohort, in 1988, provided conclusive evidence for cigarette smoking being among the most important factors to cause stroke [25].

ANTITOBACCO MOVEMENTS AND SENTIMENTS: A HISTORICAL SNAPSHOT

During the time when tobacco consumption was gaining popularity worldwide the health, societal, and economic harms of tobacco were also being highlighted by various scientists, thinkers, and philosophers.

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