

Effects of Smoking on the Human Organism

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Abstract

Title: Effects of Smoking on the Human Organism

Background: Smoking is widely recognized for its adverse impacts on health, contributing to chronic and acute conditions affecting nearly every organ system. This review synthesizes the extensive body of research highlighting the physiological and pathological effects of tobacco use.

Methods and Materials: A comprehensive review was conducted using PubMed and additional databases, selecting studies published in the last 25 years. Studies were evaluated for relevance and reliability, focusing on those that provided clear outcomes and substantive evidence on the effects of smoking.

Results: The analysis confirms that smoking is responsible for a significant burden of disease, including major risks for cancers, cardiovascular diseases, respiratory conditions, and reproductive health issues. Smoking increases the risk of lung cancer by 80-90% and is a primary factor in cardiovascular and respiratory diseases. Passive smoking further extends the risk to non-smokers, significantly impacting public health.

Conclusion: Smoking cessation presents substantial benefits, potentially reversing many adverse effects. Public health policies should continue to focus on reducing smoking rates through education, cessation programs, and legislative measures to mitigate the extensive harm caused by tobacco consumption.

Keywords: Smoking-related diseases, Tobacco use effects, Smoking cessation benefits, Public health policies, Passive smoking impacts

Effects of Smoking on the Human Organism

Smoking leads to several chronic diseases like cancer and heart issues, apart from affecting the ability of the lungs to work well. In most cases, individuals cannot return and make changes according to their will. The harmful effects of smoking on immunity can make the person more prone to certain types of diseases. It is estimated that over 16 million US adults are suffering from a disease that is mainly caused by smoking. 30 people who are not smoking get impacted by the passive smoke from someone, but overall, 1 person dying affects everyone. It is also linked with eye issues and T.B.T.B.

Each year, second-hand smoke causes around 41,000 fatalities among non-smokers and 400 deaths among babies [1]. In adults, second-hand smoke causes stroke, lung cancer, coronary heart disease, and various health issues. Children who are exposed to second-hand smoke are also at high risk of sudden infant death syndrome. Acute respiratory infections, middle ear disease, more severe asthma, respiratory symptoms, and slowed lung growth are observed.

Cigarette smoking causes harm to almost every organ in the body [2], [3], and it is the biggest avoidable cause of death. However, smoking rates have decreased drastically. It is projected that it causes around 480,000 fatalities per year [4]. Smokers aged 60 and more have a twofold increase in mortality as compared to non-smokers, dying an estimated 6 years sooner.[5] Quitting smoking has immediate health advantages, and depending on the age at which the individual stops, some or all of the lower life expectancy can be restored.[6]

However, nicotine itself does not cause cancer, but almost 69 chemicals in tobacco smoke are carcinogenic[1], and cigarette smoking accounts for at least 30 percent of all cancer deaths.[6] Total death from cancer is almost double in smokers as compared to non-smokers. This risk increases four times more in severe smokers than non-smokers [1].

Lung cancer is the number one cause of lung cancer. Studies show 80-90 percent of lung cancer is tied to smoking somehow - making it the top cancer killer for dudes and gals. Around 80 percent of people who suffer from lung cancer can blame it on smoking. Just increasing a bit, you make yourself 5–10 times more likely to get lung cancer compared to people who don't smoke. [6, 7] And the more you smoke, the higher your risk increases. But it is not just about lung cancer we're talking about. Smoking also raises the odds of getting mouth-throat, oesophageal, stomach, pancreatic, cervical, kidney, and bladder cancer. Even some kinds of leukemia seem more common among smokers, and it's not just cigarettes either. Other smoked and smokeless tobacco products have links to cancer as well. [8]. Smokeless tobacco has also been connected to cancers of the mouth, throat, esophagus, stomach, lungs, and colon. So, however, you cut it, tobacco and cancer seem to walk hand-in-hand down the highway of health risks. [1] Every form of tobacco nudges those cancer stats up a little higher. Those are just the cold, hard facts reported by study after study. [9]

Smoking facilitates lung disorders in children, chronic bronchitis and emphysema (COPD), as well as exacerbating asthma symptoms in both adults and children, and so on. Cigarette smoking is one of the leading causes of chronic obstructive pulmonary disease. In short, we have the abbreviation COPD [9]. According to survival statistics, stopping smoking results in the healing of much of the smoking-induced lung damage over time. COPD, on the other hand, is irreversible; COPD-related lung damage does not heal with time.

Smoking surely increases your chance of getting heart problems like stroke, heart attack, blood vessel disease, aneurysm, and so on. In fact, 40% of deaths from smoking are from cardiovascular disease. Coronary heart disease, the number one killer in America, is caused

by smoking cigarettes, and studies have also linked smoking to other bad health stuff like rheumatoid arthritis, swelling, and a weaker immune system. Even young smokers between 26 and 41 years old reported having a lower quality of life than non-smokers their age in a big survey of people. Recent animal studies have also discovered a relationship between the pancreas and a portion of the brain involved in nicotine intake, perhaps tying cigarette smoking to an increased risk of Type 2 Diabetes. In some surveys, it is demonstrated and added to research work.

Literature review

The effects of smoking on your body:

Nicotine is a very addictive chemical found in tobacco smoke that compels smokers to continue smoking. In addition to nicotine, smokers absorb around 7,000 additional compounds in cigarette smoke. [10] Many of these components are extracted from the combustion of the tobacco leaf. Some of these substances are chemically active and cause significant and harmful changes in the body. Tobacco smoke includes more than 70 recognized carcinogens. Tobacco use damages virtually every organ in the body, producing various illnesses and lowering overall health.

Tobacco smoke contains several toxic components, including:

Tar is the term used to describe the solid particles suspended in tobacco smoke. The particles include compounds, including carcinogens (cancer-causing substances). Tar is a sticky, dark substance that stains teeth, fingernails, and lung tissue.

Carbon monoxide is a toxic gas. It has no odor or color and, in large dosages, swiftly kills because it replaces oxygen in the blood. When smokers smoke, the carbon monoxide in their blood makes it more difficult for oxygen to reach their organs and muscles, by which the content of oxygen gets less.

Oxidizing chemicals - are highly reactive compounds that can harm smokers' heart muscles and blood vessels. They react with cholesterol, causing fatty material to accumulate on arterial walls. Their effects cause cardiovascular disease, stroke, and blood vessel disease.

Metals-Tobacco smoke contains a wide range of cancer-causing substances, such as arsenic, beryllium, cadmium, chromium, cobalt, lead, and nickel, which come under metals,

Radioactive chemicals - tobacco smoke which includes hazardous, radioactive substances called radioactive chemicals found in industries and all [10, 11]

Search Methodology

This review article was created after rigorous investigation and evaluation of the different studies done throughout the world on the effects of smoking on an individual's health. PubMed was the major database utilized for the search, coupled with information from other

databases and sources. The publication dates of the articles chosen for evaluation are within the last 25 years. Articles that could not present a firm and exact conclusion, as well as those whose results were determined to be questionable, were eliminated. [Figure 1](#) summarizes a PRISMA flow diagram of the review demonstrating the screening procedure.

Identification

Records identified through database searching: PubMed (n = 532) Additional records identified through other sources: (n = 11)

Records after duplicates removed: (n = 4)

Screening

Records screened: (n = 539)-----→Records excluded: (n = 453)

Eligibility

Full-text articles assessed for eligibility1: (n = 86)-----→ Full-text articles excluded:
Screening full test (n = 7) Review (n = 29) Not focused (n = 42)

Included

Studies included in the review: (n = 8)

[Figure 1 PRISMA review process flow diagram](#)

Effect of smoking on the Respiratory System:

Humankind is well aware of the numerous facets of smoking-related diseases affecting the respiratory system. When discussing the adverse effects of smoking, most people primarily consider the damage it causes to the lungs. Without question, smoking has a significant influence on our respiratory system. It heightens the risk of long-term asthma complications, diseases such as COPD and emphysema, and other lung health disorders, including fibrosis and cancer, along with numerous other respiratory ailments.

[12] Smoking is an essential factor in the causation and worsening of many respiratory illnesses. In many anti-smoking campaigns, smoking is commonly depicted as being directly linked to respiratory system damage to educate the public about its harmful effects. A large number of acute eosinophilic pneumonia cases do have smoking as a triggering factor [13]. Almost all varieties of pneumonia are exacerbated and impacted by the habit of smoking.

Smoke is often linked to numerous respiratory diseases, triggering various cellular responses. Over time, numerous theories about cell proliferation in smokers have developed, many of which have been validated by scientific research. Of particular importance is the proliferation

of Langerhans cells. This proliferation is significantly associated with cigarette smoking and leads to Pulmonary Langerhans cell histiocytosis [14].

Every smoker, to some extent, damages one or more aspects of their bronchial architecture as a result of smoking. Bronchiolitis, an inflammatory bronchial response, is common in smokers. It is not incorrect to state that practically all smokers suffer from respiratory bronchiolitis [15]. The smoking habit significantly worsens the prognosis of respiratory sickness. Regardless of the source, practically all smoke is hazardous to the healthy functioning of our alveolar complex. Toxin and tar build-up in the lungs is a terrible side effect of smoking, causing permanent damage to the normal architecture over time. The partial combustion of smoke-producing compounds adds to the dread, and many researchers have found that these toxins that are not burned cause more serious lung diseases than those that are completely burned out.

Effect of smoking on the cardiovascular system (CVS):

Smoking causes many heart problems in people and is a big danger for cardiovascular diseases all over the world. It also causes death that those with heart issues could have prevented. [16]. Abstinence from smoking is frequently advocated following practically all cardiovascular events, whether significant or small, that demonstrate the impact of smoking on a person's cardiovascular health.

Some studies show that folks who quit smoking gain substantial benefits from it. They had a much better chance of avoiding heart-related problems than those who remained a smoker. It's a proven fact that smoking amplifies heart problems for those who already have cardiovascular issues.

Almost all cigarettes for sale have nicotine in them one way or another. Nicotine is a main cigarette component that accelerates atherogenesis and so contributes to coronary artery heart disease. [17]. It is a widespread myth that hookah smoking is considerably less dangerous than smoking traditional cigarettes. Hookah's detrimental effects on the cardiovascular system are equivalent to conventional cigarettes due to its overlapping toxicants and chemical composition [18]. Carbon monoxide, oxidants, phenols, nicotine, heavy metals, and other constituents of hookah smoke have been linked to severe cardiovascular problems in users [19]. Consequently, considering hookah as an alternative to cigarette smoking is ill-advised.

Similarly, water pipe use has cardiovascular impacts that can rival those of traditional cigarettes [20], and it is recommended to avoid them as well. Numerous radiographic studies have confirmed that smoking causes significant changes in the cardiovascular system. Using B-mode ultrasonography, the intimal-medial thickness of the carotid artery was measured, revealing that smoking increases this parameter.

Chronic smoking leads to specific, enduring changes in the progression of atherosclerosis. Furthermore, smoking negatively affects the prognosis of hypertension; hypertensive smokers experience an accelerated rate of atherosclerosis progression, often leading to renovascular and malignant hypertension, which are more severe forms of the condition.

Effect of smoking on Reproductive health

Smoking has a harmful effect on both men's and women's reproductive health. The fetus also suffers as a result of a pregnant woman's smoking habits. The effect of tobacco on a fetus' intrauterine existence is well established, and smoking is prohibited during pregnancy.

Women who smoke are advised to quit if they want to have a healthy baby. It is a terrible truth that a fetus is seldom spared from being a victim of numerous diseases as a result of his pregnant mother's smoking. Given the numerous facets of smoking-related concerns associated with an individual's reproductive abilities, one may argue that smoking is a big curse for a healthy reproductive existence.

Smoking promotes testosterone imbalance in males as well as erectile problems. Long-term cigarette smoking causes unfavorable hormonal changes in women, interfering with appropriate reproductive functions. Continuing to smoke, especially during pregnancy, is unquestionably detrimental to the birth of a healthy child.

Using tobacco can cause problems for men's reproducing ability. Tobacco might be related to erectile dysfunction; this happens because inhaling cigarette smoke alters the way nitric oxide sends signals, which most medical experts believe is the main cause for a smoker to have erectile issues. [21]. This dysfunction is a direct result of blood vessel deuteriation. Conclusively, it is possible to draw a final verdict, which is smoking does affect a male ability to reproduce because it impacts the blood vessels' health. [22].

Smoking during the first trimester of pregnancy is not considered safe, either. The decreased birth weights observed in neonates born to mothers who smoked are primarily attributed to intrauterine growth retardation. Extensive research has consistently demonstrated significant intrauterine growth retardation in infants born to smoking mothers. There is a well-established correlation between maternal smoking and developmental delays in children, which have profound and long-lasting consequences. Furthermore, exposure to tobacco smoke, including second-hand smoke, increases the risk of adverse health outcomes in infants. It is, therefore, imperative that pregnant women take extensive precautions to protect both themselves and their unborn children from the harmful effects of second-hand smoke.

Other health implications of smoking

Smoking has numerous detrimental effects on our bodies, yet many individuals remain ignorant or unconcerned due to a lack of knowledge. These changes that smoking causes in our bodies may appear to be less harmful at first, but they may become permanently irreversible once they reach an advanced level. People who smoke catch germs more easily than those who don't. Smoking harms an individual's oral immunity. Smoking decreases the host's oral immunity against *Candida albicans* and hence makes the individual prone to oral infections involving *Candida*. [23]. Smoking disrupts the natural oral and nasopharyngeal bacterial flora, allowing potentially pathogenic organisms to colonize these sites. [24]. Smokers have fewer interfering aerobic and anaerobic microbes than non-smokers, endangering the natural mouth flora. [25]. When smoking is stopped, the disrupted flora composition returns, demonstrating that smoking is the major cause of altered oral flora. In the case of chain smokers, re-establishing normal oral flora becomes nearly impossible. It's thought that if people stop smoking, they will be less likely to get Alzheimer's disease, which helps against a condition with huge power over what happens in someone's life. Otoacoustic Emissions (OAE) are usually lower in smokers than in non-smokers. Smoking is also linked to malignancies of other organs besides the lungs. Smoking is believed to be a major cause of most human cancers. The intensity of smoking is associated with a decrease in optic nerve vessel density in glaucoma patients. It causes dry eyes because it stops the natural wetting of eyes by damaging minor oil-making glands inside them.

Smoking's Effects on Babies

Low birth weight is directly linked to an elevated risk of adult heart disease, high blood pressure, and diabetes. Cleft palate and cleft lip are more likely to occur. ADHD (attention deficit hyperactivity disorder) risk is enhanced. Passive smoking (second-hand smoke exposure of the non-smoking mother) can also affect the fetus. When a parent persists in smoking during their child's first year of life, the child is at a higher risk or prone to developing several problems like ear infections, respiratory diseases like pneumonia and bronchitis, Sudden Unexpected Death in Infancy (SUDI), and meningococcal disease.

Conclusion

Tobacco is associated with a big risk of getting long-term illnesses for people, making it hard to live well and happily. Smoking hurts the human body, but stopping it can help make it healthy. This review article attempted to combine the effects of smoking on the many systems of the human body. It is practically impossible to fully summarize the consequences of smoking in a single article because no organ system is untouched by smoking. It's also perfect for everyone in our community to increase awareness about the harmful effects of health. As smoking is a risk factor in the causation of various diseases, abstinence from smoking provides huge protection from various ailments. To protect the safety of non-smokers, the issue of passive smoking must be understood and treated effectively. Advanced research, which is currently underway, promises to gain a better understanding of the various unknown aspects of smoking, allowing these studies to enlighten and prevent more smokers from dooming their lives with smoke.

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