

A review on
Health Consequences of Smoking and Its
Prevention.

A project submitted

by

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To

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Declaration

I do hereby declare that the project paper entitled “A review on Health Consequences of Smoking and its prevention” presented to Department of Pharmacy, BRAC University, is the outcome of the study performed by me under the supervision of Dr. Mesbah Talukder, Associate Professor, Department of Pharmacy, BRAC University. I also declare that no part of this report has been or is being submitted elsewhere for the award of any degree. All of the work described here is entirely my own, unless specified otherwise.

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At first, I need to give appreciations to Almighty ALLAH for giving me the strength. Without his blessing I would never be able to do all the works regarding my project and to complete my project.

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To my Parents

Abstract

Like most people, we all heard how dangerous smoking is for health. However, we do not understand the bad effects entirely. Cigarettes are made of Tobacco that contains nicotine, which is an extremely addictive drug that creates it so tough for chain-smokers to leave the bad practice. In addition, Tobacco products contain many toxic, harmful, and radioactive chemical ingredients that causes different types of disease and premature death. In research of a gathering of 1000 smokers (age 30), about one fourth of them (250) will pass on of smoking-related diseases before finishing middle age, an extra quarter will die early from smoking-related sicknesses not long after retirement age, and additional huge gathering will create handicapping incessant ailments because of their smoking. Large portion of people don't have the clear idea about the chances of becoming ill due to smoking, however when anybody figure the numbers, that is how the result pop up. For some individuals, genuinely understanding the seriousness of smoking turns into encouragement to stop smoking.

Smoking is the addiction that reason sicknesses almost each body part of the physique. Cigarette smoking roots 87 percent of pulmonary malignancy death. It is likewise in charge of numerous different malignancies and pathological condition. These incorporate lung infection, heart and vein diseases, stroke and cataracts. Ladies who smoke have a more noteworthy shot of certain pregnancy related issues or having an infant death from Sudden Infant Death Syndrome (SIDS). Ones smoke is likewise harmful for non-smoker as they take in others smoke second-hand which is otherwise called passive smoking and can get almost same numbers of pathological issues as smokers do.

Although it is a troublesome habit to quit, however smoking is ultimately a choice; it's a obligation to settle on whether or not, or to not continue smoking. This review can give a quick idea and information of the risks related to smoking; an outline of its prevention, together with why it's too hard to give up smoking; the various ways accessible to assist you quit; and also the steps can be taken to make a successful smoking cessation.

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List of acronyms

SIDS: Sudden Infant Death Syndrome

MI: Myocardial Infraction

COPD: Chronic Obstructive Pulmonary Diseases

CVD: Cardiovascular Diseases

PAHs: Polycyclic Aromatic Hydrocarbons

RR: Risk Ratio

CHD: Congenital Heart Disease

AAA: Abdominal Aortic Aneurysm

ED: Erectile Dysfunction

DNA: Deoxyribo Nucleic Acid

NCD: Non Communicable Disease

PA: Physical Activity

NRT: Nicotine Replacement Therapy

FDA: Food and Drug Administration

OTC: Over The Counter

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Chapter 1. Introduction

1.1 Cigarette Smoking

Cigarette smoking is a groundbreaking hazard factor for MI and sudden death, has been plainly connected to cerebrum dead tissue. A comparable connection between cigarette smoking and stroke has been found in Hawaiian Japanese men following 10 years of follow-up in the Honolulu Heart Study, in which cigarette smoking made a noteworthy free commitment to cerebral localized necrosis and intracranial brain hazard. (“Cigarette Smoking - an overview | ScienceDirect Topics,” n.d.)

On January 11, 1964, Luther L. Terry, M.D., Surgeon General of the United States, released *Smoking and Health: Report of the Advisory Committee of the Surgeon General of the Public Health Service*. This report, written at the request of President John F. Kennedy, was in response to the evidence on smoking and lung cancer that had been accumulating since the 1950s. This was the first in the series that is now generally referred to as the Surgeon General’s reports. Based on more than 7,000 articles in the biomedical literature relating to smoking and disease that were available at the time, the Advisory Committee concluded that cigarette smoking is:

- Associated with 70% higher all-cause mortality rates among men
- A cause of lung cancer and laryngeal cancer in men
- A probable cause of lung cancer in women
- The most important cause of chronic bronchitis (U.S. Department of Health and Human Services, 2010a)

Table 1.1, “Producing the Surgeon General’s Report from 1964–2014: Process and Purpose”. The Surgeon General’s reports have established a long list of health consequences and diseases caused by tobacco use and exposure to tobacco smoke. Fifty years later, this report documents that our knowledge continues to expand as new causal conclusions are still being added to that long list (Figures 1.1A and 1.1B).

Level 1	Evidence is sufficient to infer a causal relationship
Level 2	Evidence is suggestive but not sufficient to infer a causal relationship
Level 3	Evidence is inadequate to infer the presence or absence of a causal relationship (which encompasses evidence that is sparse, of poor quality, or conflicting)
Level 4	Evidence is suggestive of no causal relationship

Table 1.1 Four-level pyramid for categorising the power of causal inferences from accessible evidence.

Source: U.S. Department of Health and Human Services 2004.

(U.S. Department of Health and Human Services, 2004)

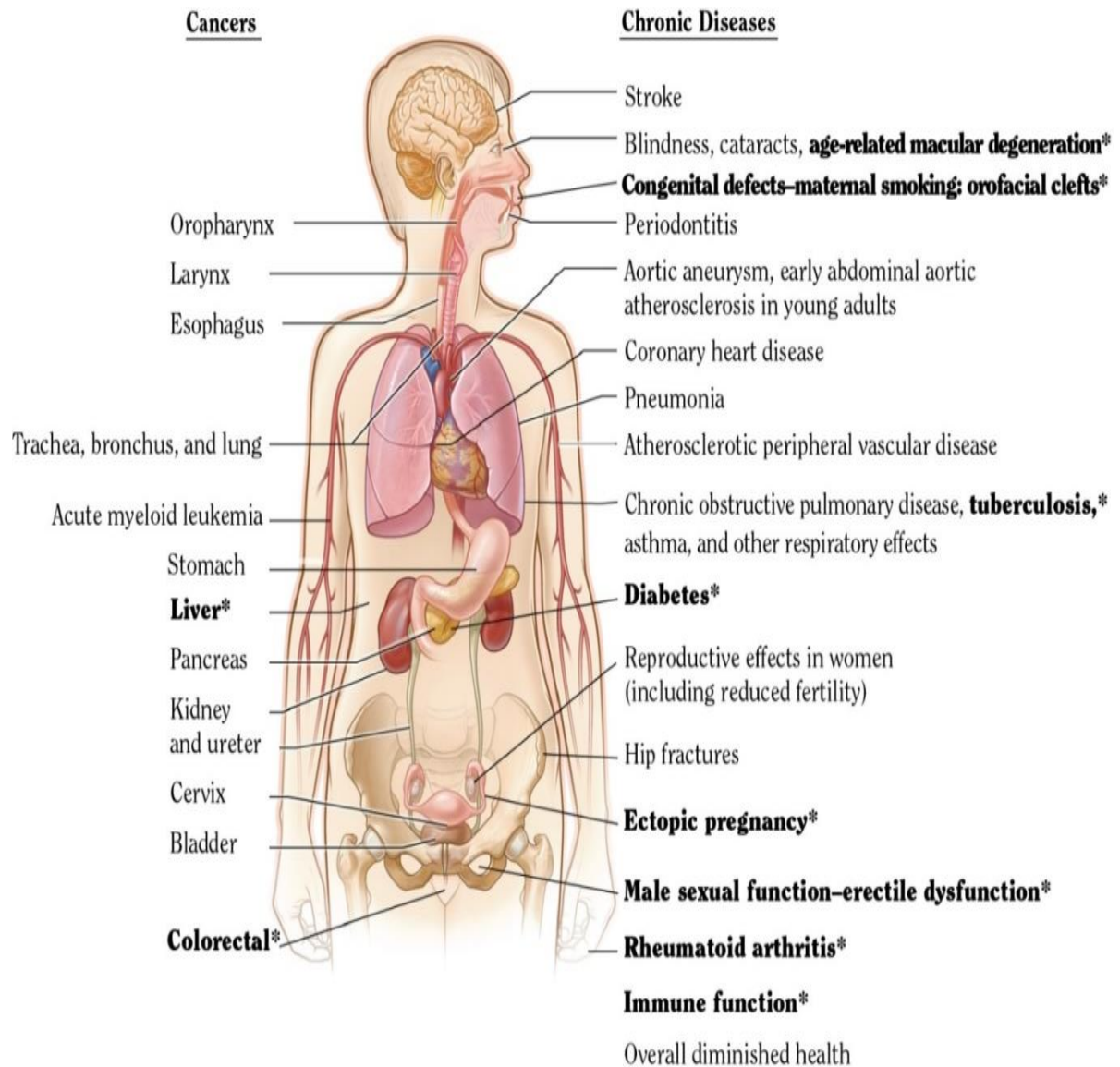


Figure 1.1A The health concerns causally related to smoking.

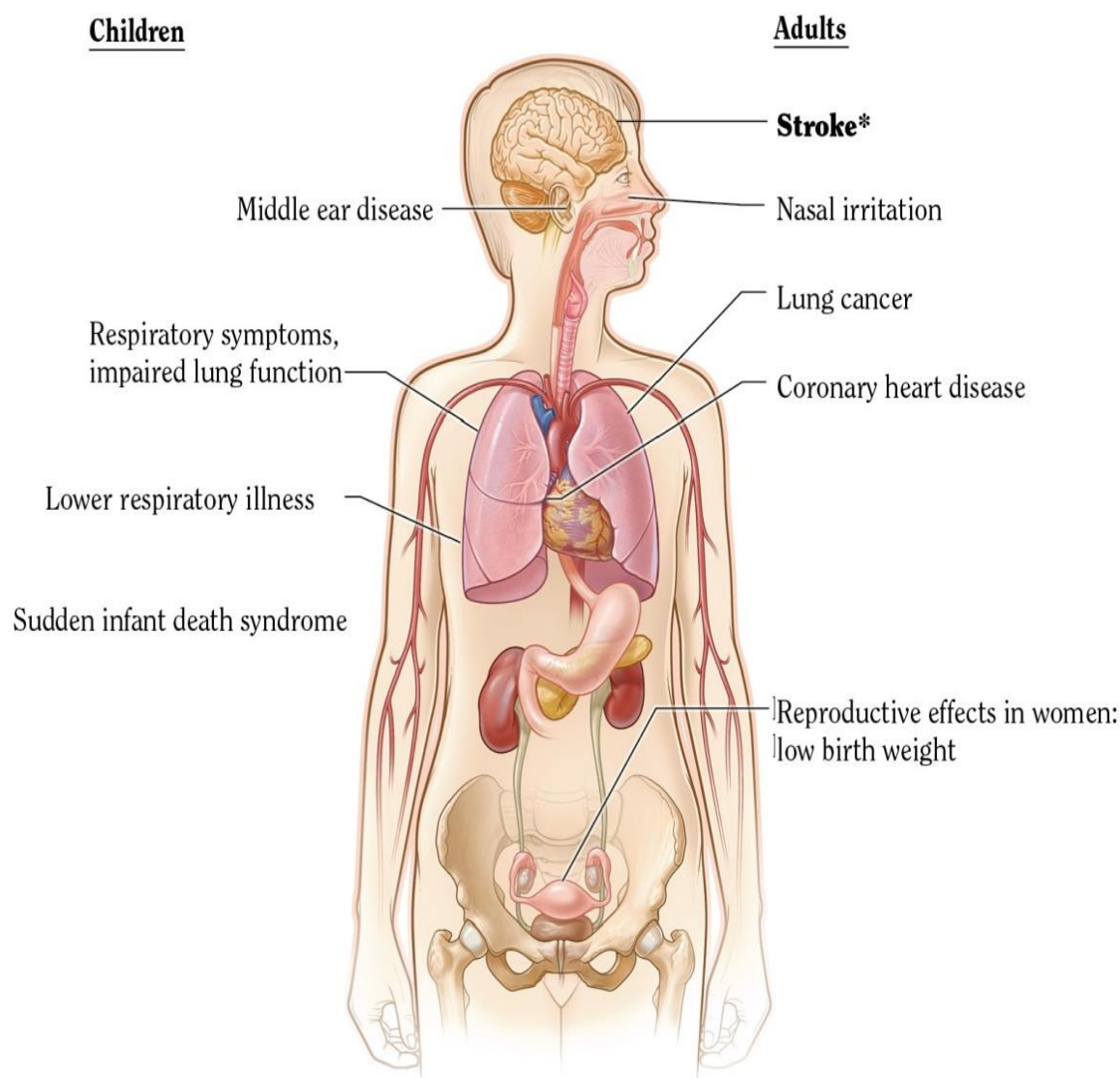


Figure 1.1B The health concerns causally connected to contact to passive smoke.

Source: USDHHS 2004, 2006.

Note: Each condition presented in bold text and followed by an asterisk (*) is a new disease that has been causally linked to exposure to secondhand smoke in this report. (Servais, 2006)

1.2 Aims

In my study, I tried to research what are the possible consequences of direct and indirect smoking and what are the possible ways to prevent this bad habit.

1.3 History

The native peoples of the Americas for millennia used tobacco as a ‘New World’ plant. Brought to the Old World by Christopher Columbus, tobacco and tobacco products soon spread worldwide. The manufactured cigarette has been the dominant form of tobacco use in the United States for only a century (Figure 1.3A), surpassing other forms of use as the modern tobacco industry was shaped by James B. Duke and his American Tobacco Company (Chandler, 1977).

During that century, referred to as “The Cigarette Century” (Rise, 2007), there was a sharp rise in tobacco consumption to a peak in the 1960s and then a decline that has continued over the last three decades. This chapter addresses why this rise and fall of cigarette smoking occurred, giving emphasis to the half-century since the 1964 report of the Advisory Committee to the Surgeon General, *Smoking and Health*, and to the impact of the reports of the Surgeon General on tobacco use in the United States.

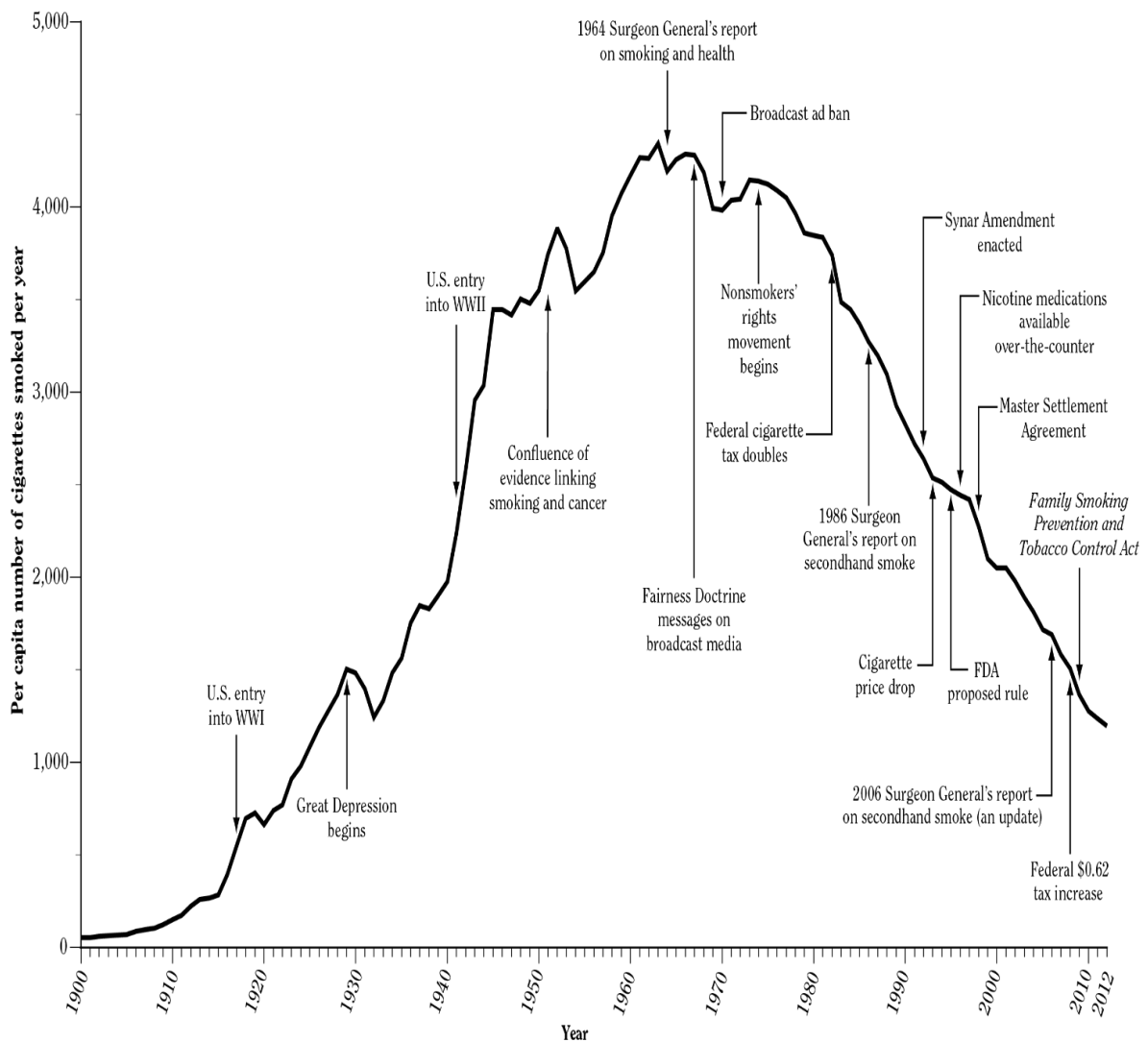


Figure 1.3A Adult per capita cigarette intake and main smoking and health problems, United States, 1900–2012.

Sources: Adapted from Warner 1985 with permission from Massachusetts Medical Society, ©1985; U.S. Department of Health and Human Services 1989; Creek et al. 1994; U.S. Department of Agriculture 2000; U.S. Census Bureau 2013; U.S. Department of the Treasury 2013.

The 50-year span beginning in 1964 and ending in 2014 covers an era of remarkable advances in the understanding of disease etiology and opportunities for the prevention, diagnosis, and treatment of disease. There have also been striking changes seen in the incidence of disease, in mortality rates, and substantial gains in life expectancy. For

example, in 1964 cancer was widely regarded as incurable and few causal agents had been identified, although tobacco smoke was already of concern because it had been identified as carcinogenic (Schwartz, 2011).

During the last half-century, major changes in disease occurrence have taken place that provide a critical context for the tobacco epidemic (Figure 1.3B). The infectious diseases, particularly tuberculosis, declined as leading contributors to mortality to be replaced by the no communicable diseases: cardiovascular dis-eases, COPD, and cancer.

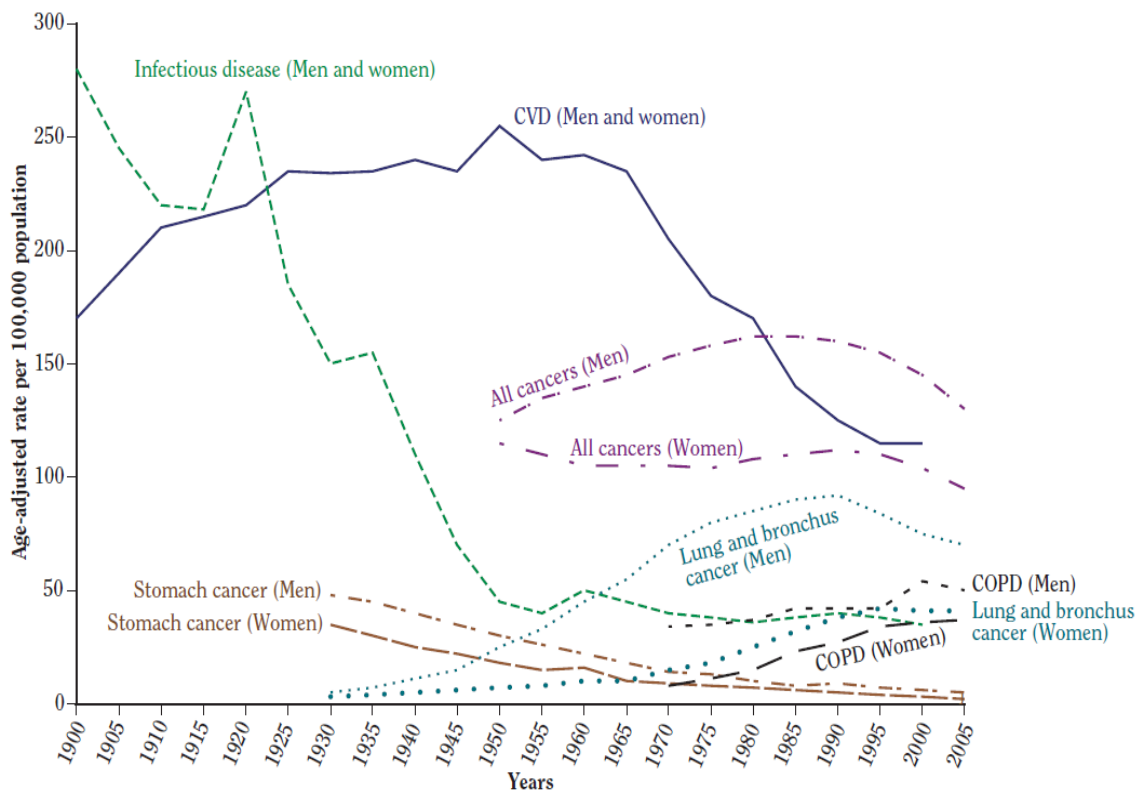


Figure 1.3B Mortality ratios for major illnesses in the United States, 1900–2005.

Source: Infectious disease and CVD rates from Cutler et al. 2006. Age-adjusted rates for stomach, lung, and bronchus cancer from American Cancer Society 2009. Age-standardized rate for all cancers from World Health Organization Mortality Database 2012. Age-adjusted rates for COPD from National Center for Health Statistics 2012. (Schwartz, 2011).

1.4 Nicotine

Nicotine has been addressed in multiple previous reports of the Surgeon General. Most notably, the 1988 Surgeon General's report, *The Health Consequences of Smoking: Nicotine Addiction*, concluded that cigarettes and tobacco products are addicting and that "Nicotine is the drug in tobacco that causes addiction"(Weekley CK, Klesges RC, 1992)

Nicotine can be well absorbed in the small intestine, because of its more alkaline pH and large surface area. However, nicotine is poorly absorbed from the stomach, because its acidic environment results in greater ionized nicotine. In addition, unlike ingestion, nicotine's bioavailability is greater through the lung or through the oral mucosa, because nicotine reaches the systemic circulation before passing through the liver where it is metabolized (first-pass metabolism). Arterial concentrations of nicotine from smoking are higher than venous concentrations (Figure 1.4A).

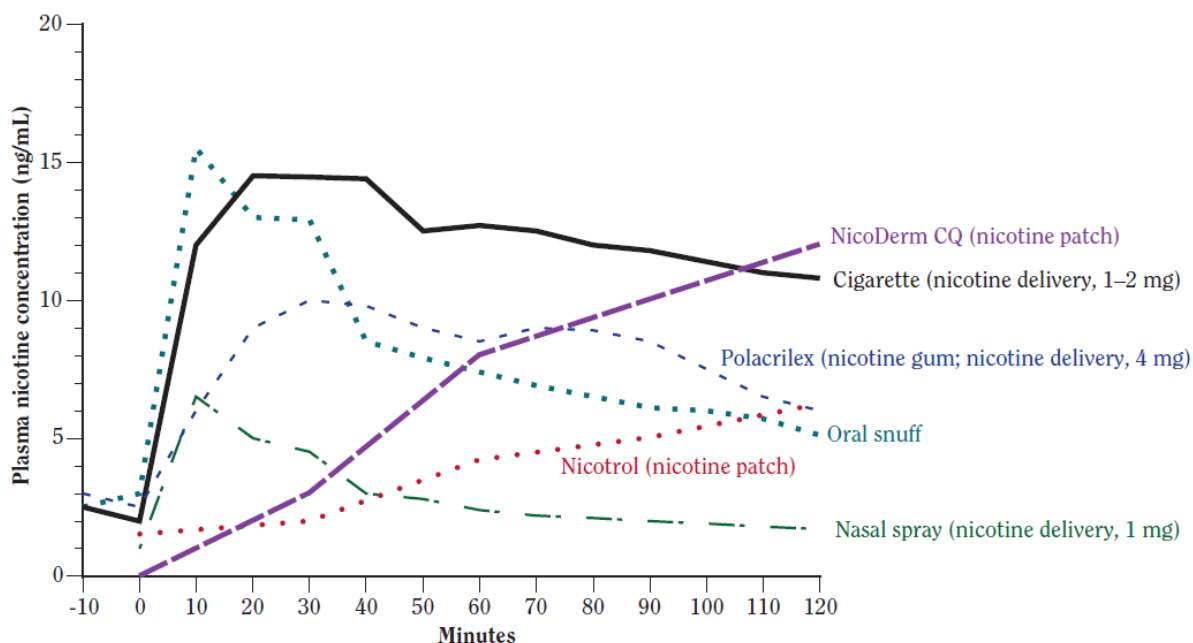


Figure 1.4A Venous blood concentrations of nicotine over time for different nicotine transfer systems.

Source: Adapted from Fant et al. 1999 with permission from Elsevier, ©1999. Note: **mg** = milligrams; **ng/mL** = Nano grams per millilitre.

The pharmacologic reasons for nicotine use are enhancement of mood, either directly or through relief of withdrawal symptoms, and augmentation of mental or physical functions.

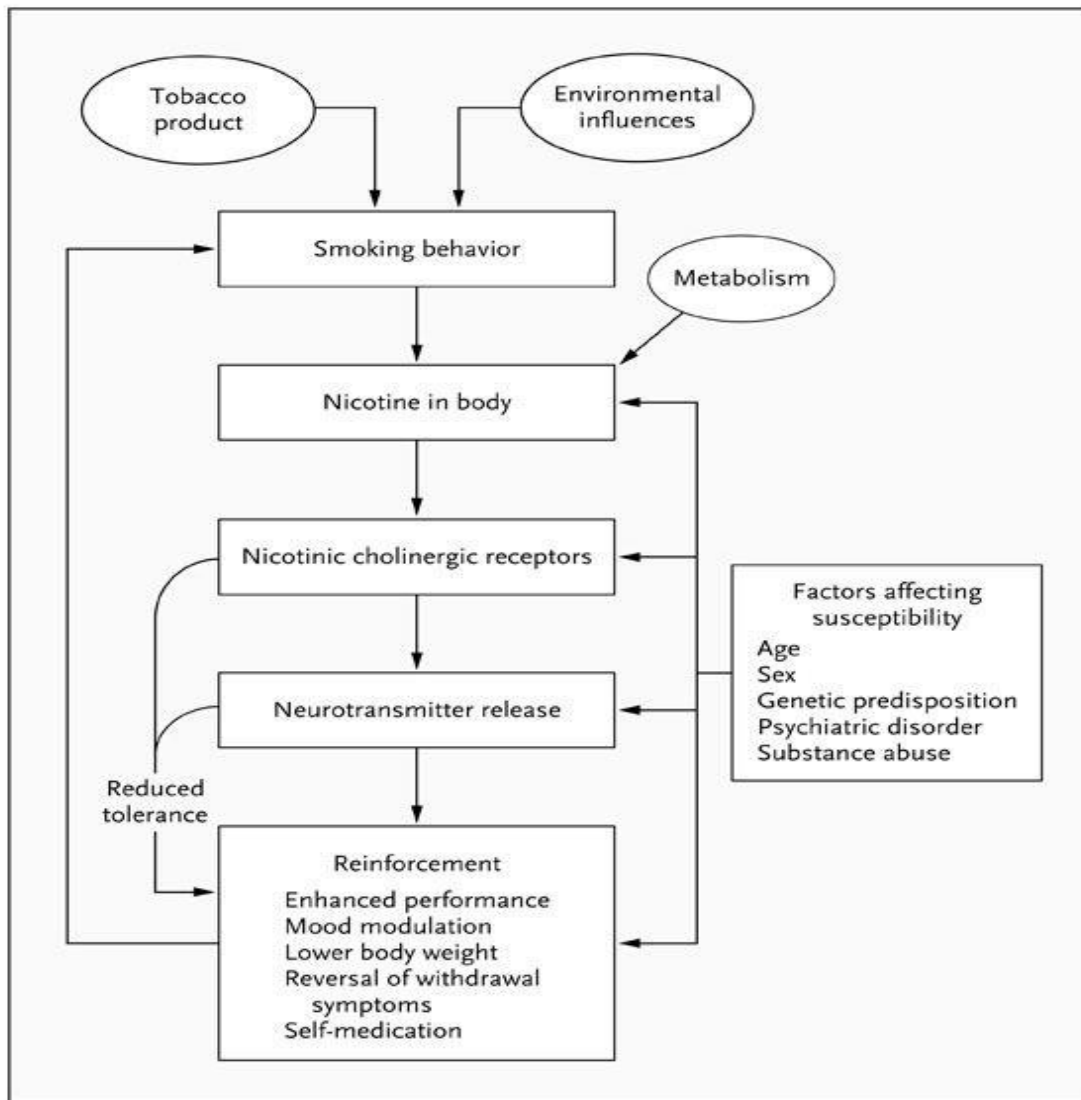


Figure 1.4B The Natural science of Nicotine Habit.

Nicotine acts on nicotinic cholinergic receptors, triggering the release of neurotransmitters that produce psychoactive effects that are rewarding. With repeated exposure, tolerance develops to many of the effects of nicotine, thereby reducing its primary reinforcing effects and inducing physical dependence (Benowitz, 2010)

1.5 Cancer

The signature finding of the landmark 1964 Surgeon General’s report, *Smoking and Health*, was the conclusion that cigarette smoking was a cause of lung cancer in men (U.S. Department of Health, Education, and Welfare (CDC, 2014). At that time, cancer was a highly feared disease with limited therapeutic options (Mukherjee, 2010).

When smokers inhale smoke, each cigarette puff delivers a mixture of carcinogens and toxicants. Tobacco smoke contains more than 7,000 chemicals, and at least 69 of these can cause cancer (U.S. Department of Health and Human Services, 2010b). These include polycyclic aromatic hydrocarbons (PAHs); tobacco-specific nitrosamines; aromatic amines; and volatile carcinogens such as formaldehyde, acetaldehyde, 1,3-butadiene, and benzene (as well as various metals).

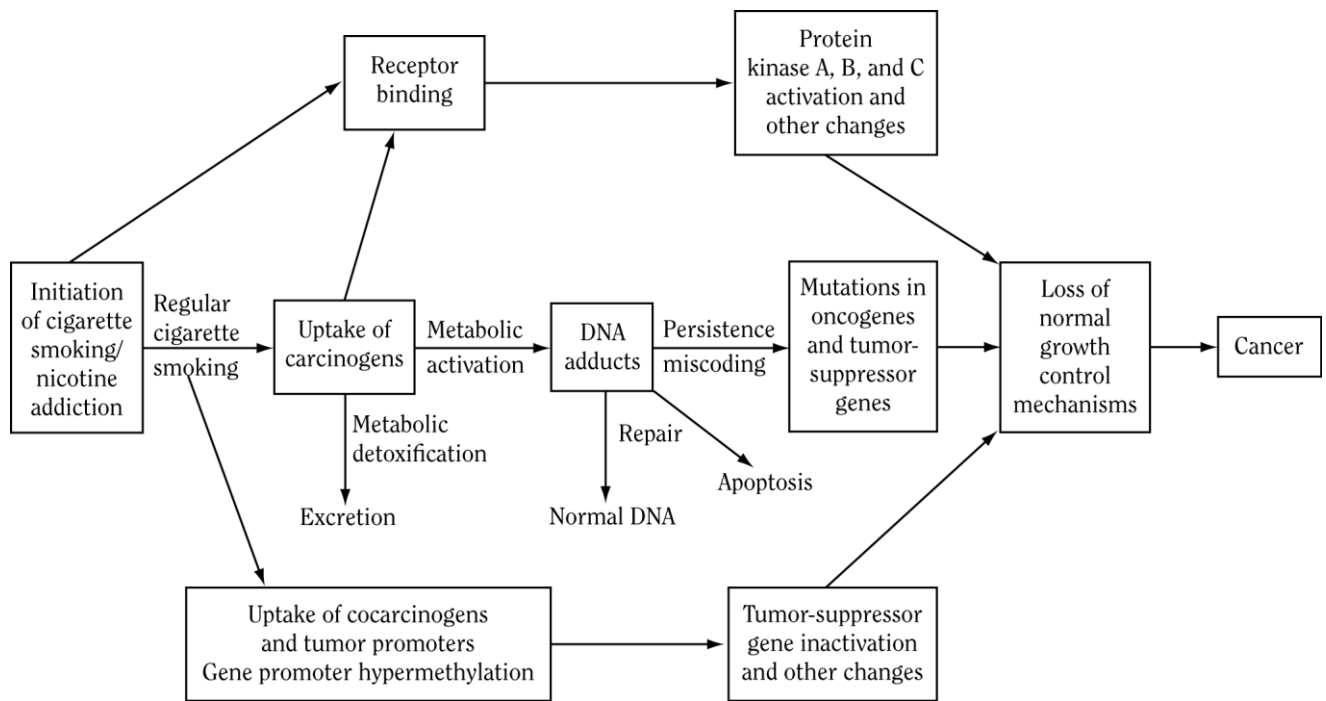


Figure 1.5 Passageway for causation of malignancy by carcinogens in tobacco smoke.

Source: Modified from U.S. Department of Health and Human Services 2010. (U.S. Department of Health and Human Services, 2010b)

1.6 Respiratory Diseases

Smoking has long been linked to adverse effects on the respiratory system, causing malignant and non-malignant diseases, exacerbating chronic lung diseases, and increasing the risk for respiratory infections. The observational evidence showing associations with multiple diseases of the respiratory tract is extensive as is the evidence supporting the biological plausibility of smoking as a cause of these associations (U.S. Department of Health and Human Services, 2010b; US Department of Health and Human Services, 2004)

In the “contemporary” cohort that encompassed the years 2000–2010, male and female current smokers had similar RRs for mortality from COPD (26.61 for men, 22.35 for women), with this RR for women representing almost a doubling of risk when compared to the 1982–1988 time period (Figure 1.6).

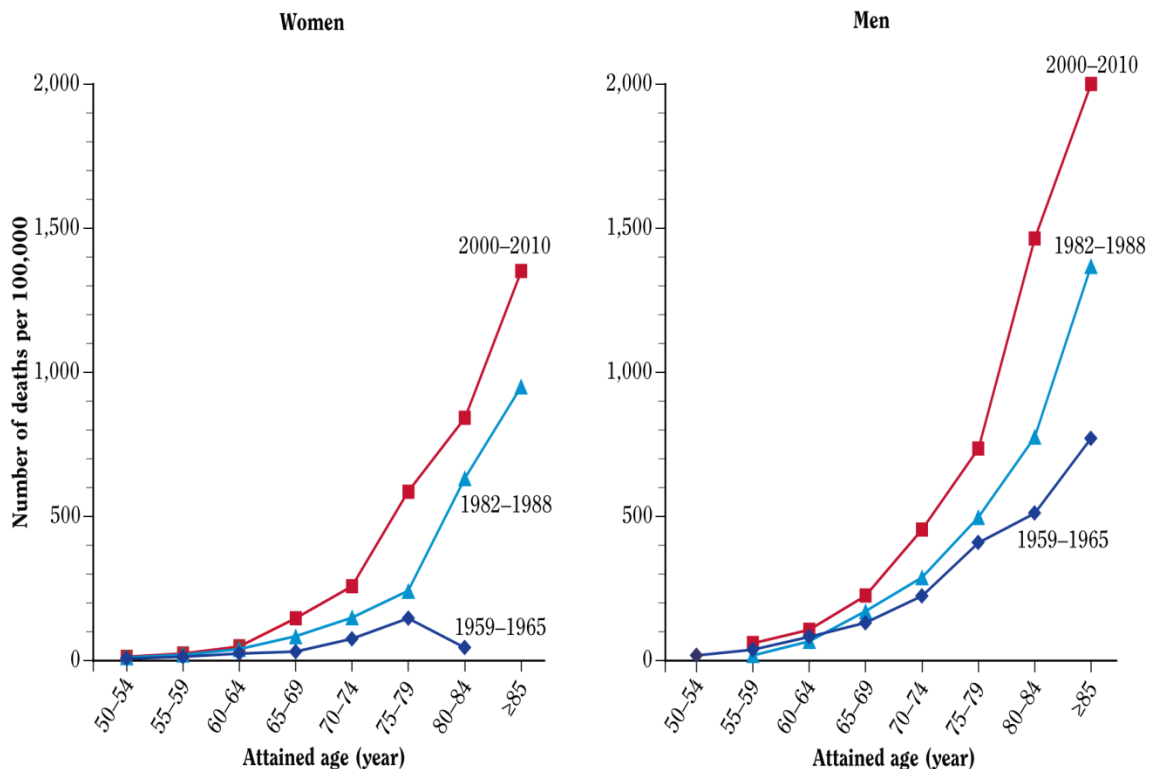


Figure 1.6 Alterations in rates of death from chronic obstructive pulmonary disease over time among recent women as well as men smokers in three time phases.

Source: Thun et al. 2013. Reprinted with permission from Massachusetts Medical Society, © 2013.

Note: Data were obtained from the first Cancer Prevention Study (CPS I) for the period 1959–1965, from CPS II for the period 1982–1988, and from 5 contemporary cohort studies for the period 2000–2010.

1.7 Cardiovascular Diseases

The 2010 Surgeon General's report reviewed in great detail the mechanisms by which cigarette smoking leads to CHD; Figure 1.7 provides an overview of the mechanisms considered (Benowitz, 2003). In addition to supporting the findings of previous reports, the 2010 report concluded that smoking produces insulin resistance that, together with chronic inflammation, can accelerate the development of both macro vascular and microvascular complications, including nephropathy, and the use of nicotine replacement and medications to aid smoking cessation in smokers with CHD produces far less risk than continued smoking.

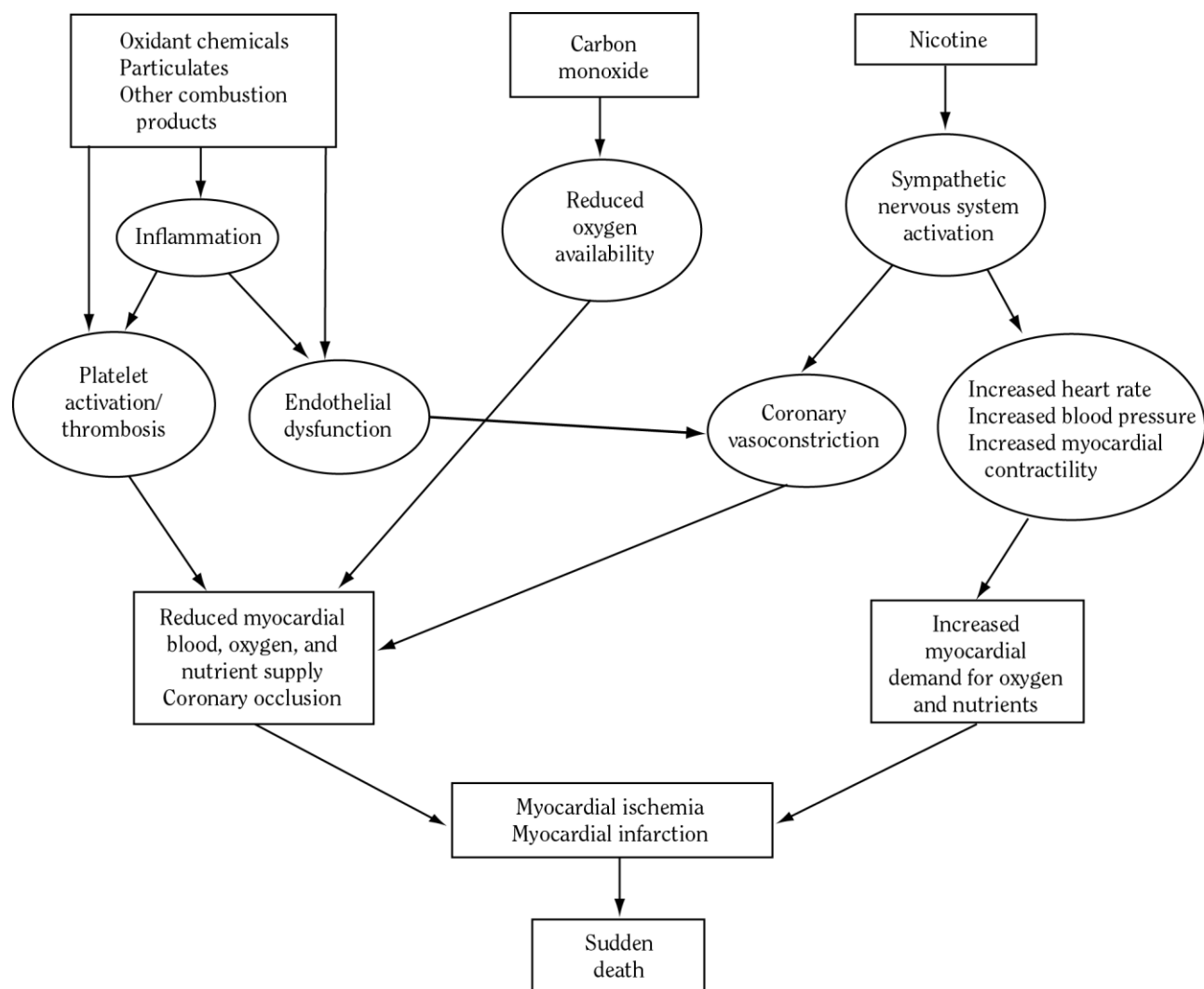


Figure 1.7 Synopsis of mechanisms, how cigarette smoking causes an severe cardiovascular diseases.

Source: Adapted from Benowitz 2003 with permission from Elsevier, © 2003.(Benowitz, 2010)

1.8 Reproductive Outcomes

Tobacco use before and during pregnancy remains a major cause of reduced fertility as well as maternal, fetal, and infant morbidity and mortality. Smoking prevalence among women grew in the decades before the 1964 Surgeon General's report, *Smoking and Health: Report of the Advisory Committee of the Surgeon General of the Public Health Service*, and continued to increase across the 1970s as products were aggressively marketed to women.(Thompson, 2002)

Despite declines in recent decades, more than 400,000 live-born infants are exposed in utero to tobacco from maternal smoking annually. (Heron, Ph, & Statistics, 2012; Murphy, Kochanek, Xu, & Heron, 2012)

Chapter 2. Methodology of research

Methodology of Research:

Throughout the literature review, to obtain all the information used in this review paper was collected from various credible sources, including different peer-reviewed journals, books, newspapers and magazines, online scholarly database and many others. Following are the list of some of the many journals that were searched extensively for the present study:

- The Journal of The Health Consequences of Smoking—50 Years of Progress A Report of the Surgeon General
- Magazine article of Smoking, alcohol and reproduction.
- Book section of Smoking and Reproduction
- Journal article of Smoking and COPD exacerbations
- Generic reviews
- Report of The Health Consequences of Smoking- 50 Years of Progress
- Book of Smoking in Cancer Care (PDQ®): Patient Version
- 2004 Surgeon General's Report—The Health Consequences of Smoking
- Book of How Tobacco Smoke Causes Disease: The Biology and Behavioural Basis for Smoking-Attributable Disease

The aim of this review paper is to compile nearly all the knowledge and information that have been discovered and used by scientists all around the world, over the past years, including the ones that have been invented recently. Hence, this review paper will help to look over all the disadvantages of cigarette smoking and what are the ways to prevent this bad habit and thus, enable scientists to invent new unique methods to re-establish cessation therapies of smoking with a hope for a Tobacco-Free generation.

Chapter 3. How it can be prevented

Physical inactivity, unhealthy diet, tobacco use and the harmful use of alcohol all increase the risk of developing and dying from NCDs. The Global Burden of Disease Study estimated that in 2010, 12.5 million deaths were attributable to dietary risk factors and physical inactivity; over 6 million deaths were attributable tobacco smoking. Recent systematic reviews have concluded that there are benefits of interventions delivered by mobile phone targeting smoking cessation, physical activity and diet. Smoking cessation support delivered by SMS increases quitting rates. Trials of PA interventions reporting outcomes ≥ 3 months showed no benefits. There were at best modest benefits of diet and PA interventions. (Palmer et al., 2018)

Experts have suggested different approaches to stop smoking efficiently.

3.1 Harvard Health approaches

According to the Harvard Health two types of approaches should be taken:

Clinical approaches

Regularly screen adolescents and their parents to determine whether they smoke and, if so, provide encouragement and suggest interventions to stop smoking. Use behavioural and counselling interventions. (For some tips, see discussion below.) If an adolescent has become dependent on nicotine and expresses a desire to quit smoking, consider prescriptions for bupropion (Zyban) or nicotine replacement therapy.

Nicotine replacement therapy (NRT) was the first pharmacological treatment developed for smoking cessation that was approved by the Food and Drug Administration (FDA). Nicotine gum came first in 1984, followed by the nicotine patch in the early 90s. Both became available over the counter (OTC) in 1996. In that same year, the nicotine nasal spray was introduced by prescription, followed by the nicotine inhaler in 1998. Nicotine lozenges were approved for OTC sales directly in 2002. (“Nicotine Replacement Therapy and Methods,” n.d.)

NRT products take a number of forms: gum, transdermal patch, nasal spray, oral inhaler, and tablet (fig: 3.1). Transdermal Patch is a slow sustained release form of nicotine delivery. Other products like gum, nasal spray, oral inhaler, and tablet are acute dosing forms of nicotine. They provide general craving relief and breakthrough craving relief with immediate release of nicotine.(Wadgave & Nagesh, 2016)



Figure 3.1 Different forms of NRT products

School-based programs

motivational enhancement, so that teens are encouraged to quit coping skills instruction, so that teens learn to deal with nicotine withdrawal, stress, and relapse triggers goal setting, so that teens make a personal commitment to quitting.

(“Helping teens stop smoking - Harvard Health,” n.d.)

3.2 10 ways to prevent

According to Kerkar and Pramod there are 10 ways to prevent from starting this bad habit.

1. Becoming Positive Example by Taking Care of Health

Become a good example by taking proper care of your health. Parents are the first teachers to children and by practicing healthy eating habits you can keep your teenagers from bad activities such as smoking.

2. Sympathizing the Attraction of Smoking

Teen smoking can also be a type of rebellion or a way to suit the surroundings in which a child belongs. Some teens also smoke to bring their weight down or to control it. Some people also smoke to feel independent or cool.

3. Saying No To Smoking

You may feel that your teen does not hear about the things you are trying to speak to them, but choose to speak about it anyway. Tell your teen that he or she is not allowed to smoke. Your disapproval of smoking will have more impact on them than you think.

4. Setting standard of Teenagers Pride

Smoking is not fascinating or glamorous. Keep on constantly reminding your teen that smoking can be smelly or dirty. Smoking can also give you wrinkles and bad breath. Your hair and clothes smell as well as your teeth start to look yellow when you tend to smoke in excessive limits.

5. Explaining the Cost of Smoking

By explaining the details about cost of buying a smoke you might prevent your children from beginning smoking. Assist your teen in understanding the amount of money that is spent on smoking a pack of cigarettes per day, week, month or year.

6. Anticipating Pressure from Friends

By expecting situations beforehand, you will be able to prepare your children from beginning smoking. At such times, you can equip your teen with certain tools that will compel him or her to refuse. It might turn out to be as easy as saying, "Thank you, but I do not prefer smoking".

7. Taking Smoking Addiction Critically

Many teenagers believe that an occasional puff of smoke will not cause addiction and even if they do get addicted, they can quit smoking at any time of the day. Teenagers can be subjected to lower levels of smoking.

8. Demonstrating the Eventual Outcome of Smoking

Teens are of an assumption that bad things happen to bad people only. Most teens often believe that heart attacks, strokes and cancer are theoretical. At such times, you can showcase your neighbours, friends, relatives and celebrities who have suffered badly due to excessive smoking.

9. Informing Other Types of Smoking

Candy-flavoured cigarettes (bidis), smokeless tobacco and clove cigarettes (kreteks) are often considered to be less harmful as compared to traditional cigarettes. Teens also have a mind frame that hookah or water pipe smoking is safer than normal cigarette smoking.

10. Participating in Anti-Smoking Communities

You can prevent your children from beginning smoking if you make them understand the consequences of smoking. Take action against teen smoking. Take part in smoking prevention campaigns that are held locally as well as organized by school in numerous ways.

(KERKAR, n.d.)

Chapter 4. General discussion and findings

Smoking remains the leading preventable cause of premature disease and death in the United States. The science contained in this and prior Surgeon General's reports provide all the information we need to save future generations from the burden of premature disease caused by tobacco use. However, evidence-based interventions that encourage quitting and prevent youth smoking continue to be underutilized (CDC, 2014).

The tobacco industry is largely to blame for those 20 million deaths. Tobacco companies have spent billions of dollars refining and marketing the cigarette. As a result, cigarettes have become more deadly and more addictive over these past 50 years. The danger of smoking comes from inhaling chemical compounds, some in the tobacco and some that are created when tobacco is burned. The process used to make modern cigarettes includes the use of many harmful chemicals. In all, scientists have identified more than 7,000 chemicals and chemical compounds in tobacco smoke. At least 70 of them are known to cause cancer. Some of those chemicals speed and enhance the absorption of nicotine – which is the primary agent in tobacco that causes addiction. (U.S. Department of Health and Human Services, 2010b)

The reason cigarette smoking is so deadly is that it causes disease in nearly every organ of the body. Being around an active smoker also presents a significant health risk to those who do not smoke. Because Secondhand smoke contains the same toxins that active smokers inhale and it kills more than 41 thousand nonsmokers a year in this country. The science in 50 years of Surgeon General's Reports has also removed notion that there might be such a thing as a "safe" cigarette. All cigarettes are harmful, and any exposure to tobacco smoke can cause both immediate and long-term damage to the body. Bottom line: There is no safe level of exposure to tobacco smoke, and there is no safe cigarette!(CDC, 2014)

One look at more recent data makes the case even more clearly:

- Between 2010 and 2014, smoking was responsible for approximately 480,000 premature deaths every year among Americans 35 years of age and older.
- Smoking was responsible for nearly 90% of all lung cancer deaths; for 61 % of all pulmonary deaths and for 32% of all coronary deaths in this country. (Services, 2014; Smith, Strobele, & Egger, 1995)

For decades the tobacco industry has been encouraging children to start smoking by promoting images that make smoking look appealing. Even though the tobacco settlement eliminated promotions and sponsorship of events frequented by children, smoking images are still highly visible in our society. They are found in movies and on TV, in video games, online, in retail advertising and in venues designed for young adults. And there is another reason why the industry wants to make children and young people their prime target: young people can become addicted more quickly than adults. If they have not started smoking by age 26, there is almost no chance they ever will. (Centre for Disease Control and Prevention, 2004)

More than 3,200 children under 18 smoke their first cigarette every day. In addition, another 2,100 youth and young adults go from occasional smoking to daily smoking. This is a very important target zone for the tobacco industry. In fact, nearly 9 out of 10 smokers start before the age of 18 – and 20 percent of those smoked their first cigarette before age 13. (CDC, 2014)

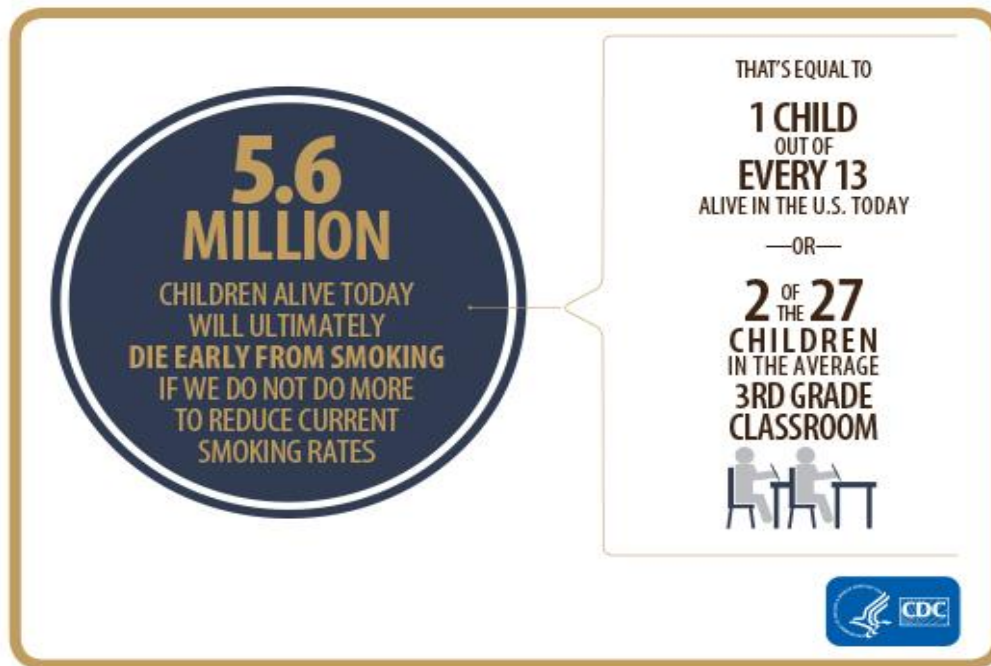


Fig: 4.1 prediction for children (CDC, 2014)

Lung cancer is not the only cancer known to be caused by smoking. In fact, today we know that smoking causes cancer almost anywhere in the body. When you smoke, chemicals immediately cause damage to the cells in your body. Over time, these damaged cells grow uncontrollably in the body. These cells grow into tumors that damage organs and can spread to other parts of the body. Nearly all lung cancer – the number-one cancer killer of both men and women – is caused by smoking. If no one in the United States smoked, we could prevent one out of three cancer deaths. (US Department of Health and Human et al., 2001).

Between 1959 and 2010, lung cancer risk for smokers rose dramatically. The risk for lung cancer for men who smoked doubled in that time – and the risk for women who smoked was nearly 10 times higher in 2010 than it was in 1959. Today, lung cancer is the number-one cause of cancer death for both men and women. Nearly 9 out of 10 lung cancers are caused by smoking. (Services, 2014; U.S. Department of Health and Human Services, 2018)

The evidence is now conclusive that smoking causes both liver cancer and colorectal cancer. Colorectal cancer is the second deadliest cancer after lung cancer. Smoking keeps cancer treatments from working as well as they should. Cancer patients and survivors who continue to smoke are more likely to die from their original cancer, secondary cancers, or other secondary medical conditions than are former smokers or people who have never smoked. (Cancer Research UK, 2016)



Fig: 4.2 cancer possibilities from smoking (CDC, 2014)

Smoking is also a major cause of serious respiratory disease. One of the most serious is chronic obstructive pulmonary disease, or COPD. COPD includes several lung diseases such as emphysema and chronic bronchitis. People with COPD suffer from:

- shortness of breath,
- coughing,
- air trapped in their lungs,
- swollen airways, and
- Scar tissue.

COPD has no cure. (Badaran et al., 2012)

COPD is the third largest cause of death in the United States. Nearly 8 of 10 COPD deaths are due to smoking. Over time, COPD causes oxygen levels in the body to drop. People with COPD are at high risk for many other serious diseases, including lung cancer and heart disease. Findings from the 2014 report indicate that women are particularly vulnerable. Women who smoke are now dying from COPD at similar rates as men who smoke, and they appear to be more susceptible to developing severe COPD at younger ages. (Tønnesen, 2013)

When we think of diseases caused by smoking, we most often think of respiratory disease and cancer. However, there is an even bigger smoking-related killer which is cardiovascular disease. Cardiovascular disease is the single largest cause of all deaths in the United States. It kills more than 800,000 people a year. Smoking is a major cause of cardiovascular disease, and causes 240,000 of the. More than 16 million Americans have heart disease. Almost 8 million already have had a heart attack and 7 million have had a stroke. Even exposure to secondhand smoke can cause a heart attack or stroke. More than 33,000 nonsmokers die every year in the United States from heart disease caused by secondhand smoke.(CDC, 2014)

Most of the conditions that make up cardiovascular disease are caused or made worse by smoking. Chemicals in cigarette smoke cause the cells that line blood vessels to swell, and the opening in blood vessels to become more narrow. The longer you smoke, and the more cigarettes you smoke, the more serious the damage. But even new smokers, or people who only smoke a few cigarettes a day, are at risk. Autopsy studies have shown that the early signs of cardiovascular disease appear in young adults who began smoking as teenagers.

Cardiovascular disease includes several conditions:

- Coronary heart disease and peripheral arterial disease occur when arteries become blocked or narrow;
- Stroke and heart attack occur when normal blood flow to the brain or heart is interrupted;
- High blood pressure, or hypertension, is when the force of the blood against the artery walls is higher than it should be; and
- Triple A, or abdominal aortic aneurysm is when a bulge or weak area occurs in the main artery that feeds organs in the abdomen.

(Centers for Disease Control and Prevention, 2014)

Pregnant women who smoke endanger their unborn babies, as well as their own health. Every year more than 400,000 babies born in the United States are exposed to chemicals in cigarette smoke before birth because their mothers smoke or are exposed to secondhand smoke during pregnancy. Babies whose mothers smoked during pregnancy – and those who are exposed to secondhand smoke after birth – are more likely to die of SIDS, or Sudden Infant Death Syndrome. Since 1965, 100,000 babies have died of SIDS and other health conditions caused by exposure to chemicals in cigarette smoke. Smoking during pregnancy can also cause birth defects, including cleft lips and cleft palates – conditions in which the

lip or palate fails to form completely. Both conditions interfere with an infant's ability to eat properly, and both must be corrected with surgery.(CDC, 2014)

Smoking can cause ectopic pregnancy. The fertilized egg fails to move into the uterus and instead attaches in the fallopian tube or to other organs outside the womb in this condition. Ectopic pregnancy usually causes the fetus to die and poses a serious risk to the health of the mother. In addition, mothers who smoke during pregnancy are more likely to deliver their babies early. Preterm delivery is a leading cause of death, disability, and disease among newborns. Mothers who smoke during pregnancy are also more likely to deliver babies with low birth weight, even if the babies are full term. (Prelog, 2011)

Of course, not just women raise the reproductive risk by smoking; Men can also contribute to the risk. In the United States, 18 million men over age 20 suffer from erectile dysfunction, or ED. A man with ED cannot have and maintain an erection that is adequate for satisfactory sexual performance, which can affect reproduction. Recent evidence concludes that smoking is a cause of ED. Cigarette smoke alters blood flow necessary for an erection, and smoking interferes with the healthy function of blood vessels in erectile tissue. Men also need healthy sperm for fertility. Smoking damages DNA in sperm, which can lead to infertility or early fetal death. (Stein & Kline, 1983)

Chapter 5. Challenges and Future directions

Throughout my work, I have found contradicting information and mismatching of data. To void that problem, I have chosen the latest published information and data. Lot of work have been done on relative topic, because of that it become tough to prioritize data and information, which is required.

In case of future work, my plan is to conduct surveys in different local areas and universities of my country based on related issues. As well as I would like to work to develop different cessation therapy of smoking to minimise the nicotine abuse with a hope for a green universe.

Chapter 6. Conclusion

We need to raise prices on cigarettes. Many countries and some U.S. cities have successfully raised prices to ten dollars a pack. Higher prices are very effective at discouraging young people from starting in the first place. High prices also encourage adult smokers to quit.

We need to continue high-impact media campaigns that talk bluntly about the dangers of smoking and that tell people about resources to help them quit. We need more state and community programs that integrate tobacco control into medical, retail, education, and public health environments. These programs reach people who might not otherwise be exposed to tobacco control efforts.

Prevention is critical, and we need to continue focusing on keeping young people from starting to smoke in the first place. We cannot end the epidemic as long as there is a continuing pipeline of new smokers. However, we also cannot ignore the 42 million American adults who still smoke. The vast majority of them want to quit and we need to help them do that. Because quitting is hard, and usually takes several serious attempts, some smokers think they cannot quit. Nevertheless, that is not true. Half of this country's smokers have already quit and success rates are higher today than ever. Increasing insurance coverage of cessation treatment will help – and engaging the medical community to encourage patients to quit will help.

The bottom line is we need to make it as easy to get affordable cessation treatment, as it is to buy a pack of cigarettes. So that we can hope for a tobacco-free generation.

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