

**SURVEY ON DOCTOR'S ATTITUDE AND PERCEPTION
REGARDING SMOKING AND THEIR ADVISING
PREVALENCE TO THEIR PATIENTS**

*A Project Report to be submitted in the Department of Pharmacy for the
Partial Fulfillment of the Degree of Bachelor of Pharmacy.*

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DECLARATION BY THE RESEARCH CANDIDATE

I, Israt Jahan Orin, ID: 2012-1-70-011, hereby declare that the dissertation entitled **“SURVEY ON DOCTOR'S ATTITUDE AND PERCEPTION REGARDING SMOKING AND THEIR ADVISING PREVALENCE TO THEIR PATIENTS”** submitted to the Department of Pharmacy, East West University, in the partial fulfillment of the requirement for the degree of Bachelor of Pharmacy (Honors) is a genuine & authentic research work carried out by me. The contents of this dissertation, in full or in parts, have not been submitted to any other institute or University for the award of any degree or Diploma of Fellowship.

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DEDICATION

This research paper is dedicated to my beloved parents for their unconditional support.

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List of Abbreviations

ACS	American Chemical Society
CDC	Consultancy Development Centre
CHRNA	Cholinergic Receptos Nicotinic Alpha
CNS	Central Nervous System
COPD	Chronic Obstructive Pulmonary Disease
COX-2	Cyclooxygenase 2
DNA	Deoxy Ribonucleic Acid
ET-1	Endothelin 1
ETS	Environmental Tobacco Smoke
GABA	Gamma-Aminobutyric Acid
HDL	High Density Lipoprotein
LDL	Low Density Lipoprotein
NAc	Nucleus Accumbens
nAChRs	Nicotinic Acetylcholine Receptors
NNK	Nicotine-Derived Nitrosamine Ketone
NHS	National Health Services
PAHs	Polycyclic Aromatic Hydrocarbons
PFC	Prefrontal Cortex
RNA	Ribonucleic Acid
SIDS	Sudden Infant Death Syndrome
VTA	Ventral Tagmental Area

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Abstract

Smoking has been called the chief, single, avoidable cause of death in our society and the most important public health issue of our time. It is a leading modifiable global disease risk factor, with nearly 6 million premature deaths. 80% of the more than one billion smokers worldwide live in low- and middle-income countries, where the burden of tobacco-related illness and death is heaviest. The objectives of this study was to assess the rate of smoking tendency and attitude of doctors toward their own smoking practices and also to assess the prevalence of non-smoking advices given to their patients. A total number of 200 doctors with the structured questionnaire was presented to each of the doctors practicing in different hospital, private chambers in urban area of Bangladesh. They were surveyed with a questionnaire in order to assess the knowledge, perception and attitude regarding smoking practices. Most of the doctors are non smokers and of those who are smokers stated that the reason for smoking is stress relief. In answering the major facts majority of the doctors strongly agree that children under age of 16 shouldn't be allowed to buy cigarettes, should have strict law enforcement, prohibition of cigarette advertisement and necessity of smoking awareness programme. 33% did not ask patients about smoking and of those who asked 91% encourage their patients to quit smoking for better quality of life and discuss the risk factors of smoking with their patients. From the result, it can be concluded that attitude and patient advice rate about smoking of doctors are not at all in a satisfactory point. For obtaining a better viewpoint the doctors should be more heavily monitored and helped through both academically and professionally.

Keywords: *Smoking Rate, Patients, Doctors, Awareness, Prevalence*

Chapter 1

Introduction

1.1 Introduction

Smoking is a process of inhaling smoke from a device and then exhaling it into the environment. The person who is smoking directly from the device is an active smoker and the person who is inhaling the smoke indirectly is a passive smoker (Cancer Institute NSW, 2015).

More than 1 billion people smoke around the world. Tobacco kills around 6 million people each year. More than 5 million of those deaths are the result of direct tobacco use while more than 600 000 are the result of non-smokers being exposed to passive smoking (WHO, 2015).

Tobacco consumption continues to be the leading preventable cause of death in the world. As research and findings continue to show the negative effects of tobacco consumption on health and the number of affected people increases, the list of conditions caused by tobacco consumption has grown. Now it also includes cataracts, pneumonia, acute myeloid leukemia, abdominal aortic aneurysm, stomach cancer, pancreatic cancer, cervical cancer, kidney cancer, periodontitis and other diseases. These diseases join the familiar list of tobacco-related diseases such as vesicle, lung, esophagus, larynx, mouth and throat cancer; chronic pulmonary and cardiovascular diseases, and damage to the reproductive system. However, those who consume tobacco are not the only ones exposed to its negative effects. Millions of people, including one half of the world's children, are exposed to second-hand tobacco smoke, known also as passive smoking. There is conclusive evidence linking passive smoking to an increased risk of cardiovascular diseases, lung cancer and other respiratory diseases in adults and respiratory diseases, ear infection and sudden infant death syndrome in children, to name a few of passive smoking's harmful effects. Passive smoking is a health problem that requires society's active effort.

In addition to the diseases caused by tobacco consumption and those caused by exposure to second-hand tobacco smoke, tobacco dependence itself is a disease as described in the International Classification Disease (ICD-10) III. As a chronic disease, often involving relapses, nicotine addiction requires proper treatment. Despite what we know about tobacco today, tobacco consumption continues to increase worldwide. The epidemic is still expanding, especially in less-developed countries. The tobacco industry has a huge potential market in these countries, where they face weaker tobacco control measures and find a great number of possible new customers, among women in particular (World Health Organization, 2005)

Active smoking is dangerous for health so as the passive smoking. Tobacco is the compound that is mainly smoked all over the world. The active ingredient in the tobacco is nicotine which is responsible for the immediate effects that a smoker gets after smoking and in the long run it creates dangerous diseases (Encyclopedia Britannica, 2014).

Nicotine acts on the brain rapidly within 10 seconds and produce stimulation or sedation depending on the amount taken. It stimulates the adrenal gland and increase secretion of dopamine that affects the mood. Tobacco smoking can produce bronchospasm, destroy cilia that fails the system to trap toxins from entering into the lungs. These toxins produce different kind of bronchial diseases. Nicotine constrict the blood vessel, increases low density lipoprotein, increase thrombin level, decrease coronary artery elasticity all these jointly can produce cardiovascular disease. Smoking disturbs the gastric balance and produce gastric acid reflux, heart burn. It decreases the mucus secretion and that make the stomach susceptible to gastric acid which can result in ulceration. Smoking weakens the immune system of the body that allows many hidden pathogen to show their activity. It decreases the absorption of many essential nutrients trough intestinal wall. It can also interact with the drug metabolism and thus activity.

Each puff of a cigarette contains a mixture of thousands of compounds, including more than 60 well-established carcinogens. Long term exposure to tobacco smoke can produce diseases. Smoke damage the cell lining of epithelium in the lung and produce lung cancer, it also produce oral cancer, stain teeth, erectile dysfunction and abnormal sperm, premature birth, hearing loss and many other diseases(ACS, 2015).

1.2 Physician behavior and practice pattern related to smoking cessation:

Physicians can be major contributors to efforts to reduce smoking and tobacco use and remain one of the most important sources of information on health issues and health risks for patients and their families. More than 70% of smokers will visit a physician each year (AHCPR, 1997), and physician advice and encouragement have been shown to increase the number of patients who will attempt and succeed in quitting smoking. Recent studies suggest that physician interventions have the potential to increase long-term abstinence rates to 30% from only 7% among adult

smokers attempting to quit on their own (Orleans & Alper, 2003). Physicians do not yet play the role they might in helping patients to reduce their dependence on tobacco. Of the approximately 45 million Americans who smoke, an estimated 70% reported wanting to quit (Centers for Disease Control and Prevention, 2004). However, the number of patients reporting that they had received advice to quit smoking from their physicians fell short of national goals established to address smoking cessation (National Women's Law Center, 2003; Fiore, Bailey & Cohen, 2000; Schnoll & Engstrom, 2004; Katz et al., 2004; Soloe et al., 2003). In addition, physicians are not routinely prescribing medications or providing services such as counseling and other supports consistent with current practice guidelines (Thorndike et al., 1998; Borum, 1999). Greater understanding of the factors that facilitate or impede physician participation in activities to control use of tobacco is needed to inform the design of programs and policies aimed at further reducing smoking, the most preventable cause of death and illness in our country.

Physicians believe they have a significant role to play in helping patients control tobacco use. More than 90% believed their role included helping both motivated and unmotivated patients to quit, discussing smoking behavior and relapse with patients, referring smokers to others for appropriate treatment, and monitoring patients' progress in their attempts to quit. Perceptions varied little by medical specialty, organizational setting of practice, or demographic background. Physicians were much less likely to report that they regularly participated in the range of activities they recognized as part of their responsibilities. While a significant majority routinely asked patients about smoking status (84%) and advised smokers to stop (86%), fewer participated in activities such as counseling patients, enlisting support for quitting, monitoring progress, or prescribing medication. Physicians were least likely to arrange follow up visits to address smoking with patients or refer them to others for appropriate treatment. This broad variation in performance of tasks was generally consistent with findings of other physician studies.

Percent of Physicians who "Usually" Engage in Specific Cessation Activities with Patients who Smoke

Advise patients to stop smoking	86%
Ask about smoking status	84%
Discuss pharmacotherapies	68%
Assess patient willingness to quit	63%
Discuss counseling options	37%
Recommend nicotine replacement therapy	31%
Discuss enlisting support for quitting	29%
Monitor patient progress in attempting to quit	27%
Prescribe other medication	25%
Provide brochures/self-help materials	24%
Arrange follow-up visits with patient to address smoking	17%
Refer patients who smoke to	

others for appropriate cessation treatment 13% Refer patients to a quit line 7% (Association of American Medical Colleges, 2007).

1.3 Epidemiology

There are 7.2 billion people all over the world (Schlesinger, 2014) and more than 1.3 billion people smoke (WHO, 2015).

The death toll from tobacco consumption is now 4.9 million people a year; if present consumption patterns continue, the number of deaths will increase to 10 million by the year 2020, 70% of which will occur in developing countries (World Health Organization, 2005).

According to the recent study conducted on Bangladeshi people, 46.4% male adults smoke and 1.96% of female adults smoke tobacco (Trading economics, 2015). Available evidence suggests high rates of any tobacco use, particularly among men (Men in rural area – 52%, men in urban area 41%; women in rural area – 29%, women in urban area – 17%) (Bleicher et al., 2011).

Tobacco consumption alone accounts for nearly 5.4 million deaths per year and one billion people may die in this century if global tobacco consumption remained at the current levels. An international treaty spearheaded by WHO in 2003 and signed by 170 countries, aims to encourage governments to reduce the production, sales, distribution advertisement and promotion of tobacco products (WHO, 2015).

On average, 435,000 people in the United States die prematurely from smoking-related diseases each year; overall, smoking causes 1 in 5 deaths. The chance that a lifelong smoker will die prematurely from a complication of smoking is approximately 50%. Currently, about 45 million Americans smoke tobacco. Seventy percent of smokers say they would like to quit, and every year, 40% do quit for at least 1 day. Some highly addicted smokers make serious attempts to quit but are able to stop only for a few hours. Moreover, the 80% who attempt to quit on their own return to smoking within a month, and each year, only 3% of smokers quit successfully. Unfortunately, the rate at which persons, primarily children and adolescents become daily smokers nearly matches the quit rate, so the prevalence of cigarette smoking has declined only very slowly in recent years (Schwartz and Benowitz, 2010).

1.4 Smoking

Smoking is the inhalation of the smoke of burning tobacco and exhalation of the smoke in the environment. Tobacco is mainly burned and the smoke is inhaled through a device (American Cancer Society, 2015).

1.5 Categories of smoking

Smoking can be divided into two categories, active smoking and passive smoking. Active smoking is inhalation of smoke directly from cigarette, pipe or cigar. Passive smoking is when smoke is breathed in by someone other than the active smoker. It is also called second-hand smoking. Second-hand smoke is sometimes referred to as environmental tobacco smoke (Cancer Institute NSW, 2015).

1.6 Active smoking

Inhalation of tobacco smoke by a smoker intentionally. Active Smoking of tobacco is practiced worldwide by over one thousand million people. However, while smoking prevalence has declined in many developed countries, it remains high in others and is increasing among women and in developing countries. One-fifth and two-thirds of men in most populations smoke. Women's smoking rates vary more widely but rarely equal male rates (Greenfacts.org, 2016).

1.7 Active smoking is more dangerous than passive smoking

The smoke coming out from the cigarette tip is more dangerous than the inhaled smoke. The smoke that passes through the filter of the cigarette is less harmful because some of the carbon particles are deposited in the filter of the cigarette or the tobacco in the cigarette.

When the smoke is inhaled, most of the carbon will get deposited in the alveoli. This can be demonstrated by blowing the smoke forcefully against the finger nail. You take the smoke in mouth and blow it against the finger nail and you can see the formation of a dark spot. Next you take the smoke into your lungs and then blow it against the finger nail. This time it will fail to produce a stain or spot on your nail.

There is a general belief that the passive smoker is affected more than the active smoker because he inhales the smoke coming from the cigarette tip. This is not true. Because the active smoker inhales both smokes; passing through the filter and the tip of the cigarette, whereas the passive smoker inhales the smoke from the cigarette tip and also the carbon free smoke released from the lung of the smoker. Since the nose of the active smoker is nearer to the tip of the cigarette that he is smoking, he should get more direct smoke from cigarette tip than the passive smokers. So the belief that “the passive smoker is affected more” is meaningless (Nayak, 2016).

1.8 Devices of smoking

1.8.1 Roll-your own cigarettes

Roll-your-own cigarettes are hand-filled cigarettes made from loose tobacco and rolling papers. RYO cigarettes can be hand-rolled by the user or made with a hand-held rolling machine. A common misconception is that RYO cigarettes are more natural and therefore “safer” than manufactured cigarettes; however, both contain the same ingredients. Additionally, in all combustible tobacco products, it is the actual burning of the tobacco that produces many of the toxic chemical components in tobacco smoke (WHO, 2015).

1.8.2 Cigars

Cigars consist of tightly rolled dried and fermented tobaccos wrapped in tobacco leaf. The user draws the smoke into his or her mouth but typically does not inhale it. However, cigar smokers who also smoke cigarettes or are ex-smokers of cigarettes are significantly more likely to inhale the smoke than are users of cigars only. Cigars come in a variety of shapes and sizes, and they can also be “reverse smoked,” which means that the ignited end of the cigar is placed inside the mouth. Cigars have regained some popularity with both men and women in some parts of the world. In the United States, cigar smoking among women increased fivefold in a six-year period in the 1990s (WHO, 2015).

1.8.3 Pipes and water pipes

Pipes are made of a variety of substances, including wood, briar, slate, and clay. Tobacco is placed in the bowl of the pipe, and the smoke is inhaled through the stem. Clay pipes are used throughout South-East Asia. The water pipe (also known as narghile, shisha, hookah, or hubble-bubble) is widely used to smoke tobacco in the Middle East, Northern Africa, and some parts of Asia, and it has gained popularity in some Western countries. In some regions, use of the water pipe is more prevalent than use of cigarettes, and in some Arab countries, there is fewer stigmas associated with women's use of the water pipe than with cigarette smoking (WHO, 2015).

1.8.4 Bidis

Bidis are thin, hand-rolled, filter less cigarettes consisting of flavored or unflavored tobacco wrapped in a tendu or temburni leaf. They may be tied with a colored string at either end, and they come in a wide variety of flavors (e.g. vanilla, strawberry, and mango). Bidis may be perceived as less harmful or more natural than conventional cigarettes; however, bidi smoke contains higher concentrations of nicotine, tar, and carbon monoxide than conventional cigarettes sold in the United States. Tar and carbon monoxide levels of bidi smoke can be higher than those of manufactured cigarettes because the user needs to puff harder to keep a bidi lit. Bidis are India's most used type of tobacco. Jha and colleagues examined prevalence data from India and Sri Lanka and estimate that about half of the male smokers and roughly 80% of the female smokers smoke bidis (WHO, 2015).

1.8.5 Shishas or hookahs and mouassal

It is commonly thought that smoking shisha and hookah can be less harmful than cigarettes, but the truth is that one shisha is equivalent to 50 to 60 cigarettes, and a two hour to three hour session of smoking a shisha is equivalent to smoking 25 cigarettes.

There are several types of shisha that differ in shape and content, but its harmful effects are the same. One type is "mouassal" which is molasses tobacco, another is "jrak" which is tobacco added to a group of rotten fruits and the sweetened shisha

which contains tobacco and special kinds of fruits like apricot. All of these contain fermented material.

Smoking shisha is a leading cause of lip, mouth and throat cancer. It also leads to lung, esophagus, and stomach and bladder cancer. Smoking shisha can also be responsible for the spread of tuberculosis microbes that cause tuberculosis and help spread it between smokers who share the same shisha pipe. This can also spread to non-smokers who come in contact with smokers. Shisha are also a minimal source of air pollution as they spread smoke and toxic gases like carbon monoxide and are contaminated with pesticides, heavy metals and mycotoxins (Hamad, 2016).

1.8.6 Storing or chewing tobacco in the mouth

Chewed and smoke-free tobacco is consumed through the mouth; it is smoking without the smoke. The person chews the tobacco – mixed with other ingredients – in their mouth for a sustained period of time where the juice from the tobacco is absorbed to the bloodstream and hence to the rest of the body. The effects on the body are much the same as smoking. The user can also store it in the mouth cavity without chewing for the same result. This way of consuming tobacco is no less dangerous than smoking. Continuous use will expose the interior membranes of the mouth and throat to the harmful effects of tobacco with the potential to develop mouth and throat cancer. Chewing tobacco also increases the chances of increased blood pressure, heart diseases and peptic ulcers (Hamad, 2016).



Figure 1.1: Kinds of smoking device (Hamad, 2016).

1.9 Nicotine

Nicotine is the main ingredient released from tobacco. The chemical formula is $C_{10}H_{14}N_2$. It is the principal alkaloid of tobacco. Nicotine occurs throughout the tobacco plant and especially in the leaves. The compound constitutes about 5% of the plant by weight (Encyclopedia Britannica, 2014).

Nicotine was first extracted from tobacco by German physicians Wilhelm Heinrich Posselt and Karl Ludwig Reimann. Nicotine, a strong alkaloid, in its pure form is a clear liquid with a characteristic odor. It turns brown on exposure to air. It is water soluble and separates preferentially from organic solvents. It is an amine composed of pyridine and pyrrolidine rings. Nicotine is a dibasic compound and the availability and absorption in human body depends upon the pH of the solution. The absorption can occur through oral mucosa, lungs, skin or gut. The increase in pH of a solution causes an increase in concentrations of uncharged lipophilic nicotine, in this form it can actively pass through all biological membranes. Use of nicotine sustains tobacco addiction, which in turn causes devastating health problems, including heart disease, lung disease, and cancer, and increased susceptibility to a variety of infectious diseases. Smoking harms almost every organ of the body (Chaturvedi et al., 2015).

1.9.1 Mechanism of action of nicotine

Nicotine acts via 3 major mechanisms, producing physiological and pathological effects on a variety of organ systems.

1. Ganglionic transmission.
2. Nicotinic acetylcholine receptors (nAChRs) on chromaffin cells via catecholamines.
3. Central nervous system (CNS) stimulation of nAChRs.

Brain imaging studies demonstrate that nicotine acutely increases activity in the prefrontal cortex and visual systems. There is release of a variety of neurotransmitters important in drug-induced reward. Nicotine also causes an increased oxidative stress and neuronal apoptosis, DNA damage, reactive oxygen species and lipid peroxide increase. nAChRs were originally thought to be limited to neuronal cells, however, studies have identified functional nAChRs in tissues outside the nervous system. Actions on nicotinic receptors produce a wide variety of acute and long-term effects on organ systems, cell multiplication and apoptosis, throughout the body (Hammond, 2008; Committee of Smoking Cessation in Military and Veteran populations, 2009).

1.9.2 Nicotine and dependency

Although most of the toxicity of smoking is related to other components of cigarette smoke, it is primarily the pharmacologic effects of nicotine that produce the addiction to tobacco. Quitting smoking at any age leads to significant reductions in the risks associated with it, and the vast majority of smokers throughout the world indicate an interest in quitting. Despite these facts, however, approximately 80% of smokers who attempt to quit on their own relapse within the first month of abstinence, and only approximately 3% remain abstinent at six months. This illustrates the powerful force of tobacco addiction and the chronic nature of the disorder (Benowitz and Neal, 2009).

Nicotine dependence is characterized by three phases:

1. **Phase 1 (Acquisition and maintenance of nicotine-taking behavior):** The administration of nicotine through tobacco smoking produces a mild pleasurable rush, mild euphoria, increased arousal, decreased fatigue, and relaxation (Henningfield et al., 1985). These reinforcing effects play an

important role in the initiation and maintenance of tobacco smoking (Committee on Reducing Tobacco, 2007).

2. **Phase 2 (Withdrawal symptoms upon cessation of nicotine intake):** Chronic nicotine use induces neuroadaptations in the brain's reward system that result in the development of nicotine dependence. Thus, nicotine-dependent smokers must continue nicotine intake to avoid distressing somatic and affective withdrawal symptoms. Newly abstinent smokers experience symptoms such as depressed mood, anxiety, irritability, difficulty concentrating, craving, bradycardia, insomnia, gastrointestinal discomfort, and weight gain (Progress in Respiratory Research, 2015).
3. **Phase 3 (Vulnerability to relapse):** Abstinent smokers remain prone to relapse for weeks, months, or even years after cessation of tobacco smoking. Resumption of smoking, like relapse to other drugs of abuse, often occurs upon exposure to people, places, objects, or other stimuli that individuals have learned to associate with the positive rewarding effects of the drug. Stress and cigarette smoking itself can also precipitate resumption of habitual smoking (Progress in Respiratory Research, 2015).

1.9.3 The role of nicotinic receptors

Nicotine influences mood, cognition, and body function by binding to and activating nicotinic acetylcholine receptors (nAChRs) located on neurons in the brain. When activated by either nicotine or the endogenous neurotransmitter acetylcholine, the nAChR opens a channel that allows ions to pass through the neuron's membrane from the exterior to the interior of the cell and trigger changes that activate the cell.

Nicotine produces rewarding effects by interacting with nAChRs on neurons in the brain's mesolimbic reward system. This system comprises dopaminergic neurons that originate in the ventral tegmental area (VTA) and release the neurotransmitter dopamine in regions involved in information processing, memory, and emotions, such as the nucleus accumbens (NAc), hippocampus, amygdala, and prefrontal cortex (PFC). Increases in dopamine levels within the mesolimbic system give rise to rewarding effects. Nicotine directly enhances dopamine levels in the mesolimbic system by interacting with nAChRs on the dopaminergic neurons and causing them to release more of the neurotransmitter

Nicotine also modulates dopamine release indirectly by binding to nAChRs located on excitatory glutamatergic and inhibitory gamma aminobutyric acid neurons in the ventral tegmental area. These glutamatergic and GABAergic neurons originate from a number of brain areas, such as the NAc, hippocampus, PFC, amygdala, ventral pallidum, and pedunculo pontine tegmental nucleus, and regulate the activity of dopaminergic neurons (Balfour, 2009; Barrett et al., 2004; Koob and Volkow, 2010).

1.10 Effect of smoking

Smoking kills a person in the long run we all know but it has some acute effects too. There are so many effects that a person experiences immediately after inhaling tobacco smoke. The main ingredient a smoker gets from tobacco is nicotine which is inhaled into the lungs and most of it stays. The rest passes into the blood stream, reaching the brain and throughout the body. Smoking is the most common cause of death and disease that's entirely preventable (DeSanto et al., 2009).

1.10.1 Rapid addiction from early smoking

Many teenagers and younger children inaccurately believe that experimenting with smoking or even casual use will not lead to any serious dependency. In fact, the latest research shows that serious symptoms of addiction – such as having strong urges to smoke, feeling anxious or irritable, or having unsuccessfully tried to not smoke – can appear among youths within weeks or only days after occasional smoking first begins. The average smoker tries their first cigarette at age 12 and may be a regular smoker by age 14. Every day, more than 3,500 kids try their first cigarette and about 1,000 other kids under 18 years of age become new regular, daily smokers. Almost 90 percent of youths that smoke regularly report seriously strong cravings and more than 70 percent of adolescent smokers have already tried and failed to quit smoking (DeSanto et al., 2009).

1.10.2 Immediate and rapid effects on the brain

Part of the addictive power of nicotine comes from its direct effect on the brain. In addition to the well understood chemical dependency, cigarette smokers also show

evidence of a higher rate of behavioral problems and suffer the following immediate effects:

- A. **Increases stress.** Contrary to popular belief, smoking does not relieve stress. Studies have shown that on average, smokers have higher levels of stress than non-smokers. The feelings of relaxation that smokers experience while they are smoking are actually a return to the normal unstressed state that non-smokers experience all of the time.
- B. **Altered brain chemistry.** When compared to non-smokers, smokers brain cells- specifically brain cell receptors- have been shown to have fewer dopamine receptors. Brain cell receptors are molecules that sit on the outside of the cell interacting with the molecules that fit into the receptor, much like a lock and key. Receptors (locks) are important because they guard and mediate the functions of the cell. For instance when the right molecule (key) comes along it unlocks the receptor, setting off a chain of events to perform a specific cell function. Specific receptors mediate different cell activities. Smokers have fewer dopamine receptors, a specific cell receptor found in the brain that is believed to play a role in addiction. Dopamine is normally released naturally while engaging in certain behaviors like eating, drinking and copulation. The release of dopamine is believed to give one a sense of reward. One of the leading hypotheses regarding the mechanism of addiction theorizes that nicotine exposure initially increases dopamine transmission, but subsequently decreases dopamine receptor function and number. The initial increase in dopamine activity from nicotine results initially in pleasant feelings for the smoker, but the subsequent decrease in dopamine leaves the smoker craving more cigarettes.

New animal studies have shown that brain chemistry and receptors may be altered early in the smoking process. Habitual smoking may continue to change brain chemistry, including decreasing dopamine receptors and thus yielding a more intense craving and risk of addiction. These brain chemistry changes may be permanent. In addition, because the role played by receptors in other cognitive functions, such as memory and intelligence (DeSanto et al., 2009).

1.10.3 Immediate and rapid effects on the respiratory system

The respiratory system includes the passages from the nose and sinuses down into the smallest airways of the lungs. Because all of these spaces are in direct communication with one another, they can all be affected by tobacco smoke simultaneously.

A. Bronchospasm. This term refers to “airway irritability” or the abnormal tightening of the airways of the lungs. Bronchospasm makes airways smaller and leads to wheezing similar to that experienced by someone with asthma during an asthma attack. While smokers may not have asthma, they are susceptible to this type of reaction to tobacco smoke. An asthmatic that starts smoking can severely worsen his/her condition. Bronchospasm makes breathing more difficult, as the body tries to get more air into irritated lungs.

B. Increased phlegm production. The lungs produce mucus to trap chemical and toxic substances. Small “finger like” hairs, called cilia, coat the lung's airways and move rhythmically to clear this mucus from the lungs. Combined with coughing, this is usually an effective method of clearing the lungs of harmful substances. Tobacco smoke paralyzes these hairs, allowing mucus to collect in the lungs of the smoker. Cigarette smoke also promotes goblet cell growth resulting in an increase in mucus. More mucus is made with each breath of irritating tobacco and the smoker cannot easily clear the increased mucus.

C. Persistent cough. Coughing is the body's natural response to clear irritants from the lungs. Without the help of cilia (above), a smoker is faced with the difficult task of clearing increased amounts of phlegm with cough alone. A persistent cough, while irritating, is the smoker's only defense against the harmful products of tobacco smoke. A smoker will likely have a persistent, annoying cough from the time they start smoking. A smoker who is not coughing is probably not doing an effective job of clearing his/her lungs of the harmful irritants found in tobacco smoke.

D. Decreased physical performance. When the body is stressed or very active (for example, running, swimming, playing competitive sports), it requires that more oxygen be delivered to active muscles. The combination of bronchospasm and increased phlegm production result in airway obstruction and decreased lung function, leading to poor physical performance. In addition, smoking has been shown to stunt lung development in adolescent girls, limiting adult breathing

capacity. 19 Smoking not only limit one's current state of fitness, but can also restricts future physical potential (DeSanto et al., 2009).

1.10.4 Immediate and rapid effects on the cardiovascular system

The cardiovascular system includes the heart and all of the blood vessels that carry blood to and from the organs. Blood vessels include arteries, veins, and capillaries, which are all connected and work in unison with the lungs to deliver oxygen to the brain, heart, and other vital organs.

- A. Adverse lipid profile.** Lipids, a form of fat, are a source of energy for the body. Most people use this fat in its good form, called high-density lipoproteins, or HDLs. Some forms of fat, such as low density lipoproteins (LDLs, triglycerides and cholesterol) can be harmful to the body. These harmful forms have their greatest effects on blood vessels. If produced in excess or accumulated over time, they can stick to blood vessel walls and cause narrowing. Such narrowing can impair blood flow to the heart, brain and other organs, causing them to fail. Most bodies have a balance of good and bad fats. However, that is not the case for smokers. Nicotine increases the amount of bad fats (LDL, triglycerides, cholesterol) circulating in the blood vessels and decreases the amount of good fat (HDL) available. These silent effects begin immediately and greatly increase the risk for heart disease and stroke. In fact, smoking 1-5 cigarettes per day presents a significant risk for a heart attack.
- B. Atherosclerosis.** Atherosclerosis is a process in which fat and cholesterol form "plaques" and stick to the walls of an artery. These plaques reduce the bloods flow through the artery. While this process starts at a very young age (Some children younger than 1 year of age already show some of the changes that lead to plaque formation).There are several factors that can accelerate atherosclerosis. Nicotine and other toxic substances from tobacco smoke are absorbed through the Tobacco's Immediate Effects on the Body / 3 lungs into the blood stream and are circulated throughout the body. These substances damage the blood vessel walls, which allow plaques to form at a faster rate than they would in a non-smoker. In this way, smoking increases the risk of heart disease by hastening atherosclerosis. In addition, a recent study in Japan showed a measurable decrease in the elasticity of the coronary arteries of nonsmokers after just 30 minutes of exposure to second hand smoke.

- C. Thrombosis.** Thrombosis is a process that results in the formation of a clot inside a blood vessel. Normally, clots form inside blood vessels to stop bleeding, when vessels have been injured. However, components of tobacco smoke result in dangerously increased rates of clot formation. Smokers have elevated levels of thrombin, an enzyme that causes the blood to clot, after fasting, as well as a spike immediately after smoking. This process may result in blockage of blood vessels, stopping blood flow to vital organs. In addition, thrombosis especially occurs around sites of plaque formation (above). Because of this abnormal tendency to clot, smokers with less severe heart disease, have more heart attacks than nonsmokers. In addition, sudden death is four times more likely to occur in young male cigarette smokers than in nonsmokers.
- D. Constricts Blood Vessels.** It has been shown that smoking, even light smoking, causes the body's blood vessels to constrict (vasoconstriction). Smoking does this by decreasing the nitric oxide (NO₂), which dilates blood vessels, and increasing the endothelin-1 (ET-1), which causes constriction of blood vessels. The net effect is constriction of blood vessels right after smoking and transient reduction in blood supply. Vasoconstriction may have immediate complications for certain persons, particularly individuals whose blood vessels are already narrowed by plaques (atherosclerosis), or partial blood clots, or individuals who are in a hyper-coagulable state (i.e. have sickle cell disease). These individuals will be at increased risk of stroke or heart attack.
- E. Increases Heart Rate.** Heart rate is a measure of how fast your heart is pumping blood around your body. Young adult smokers have a resting heart rate of two to three beats per minute faster than the resting heart rate of young adult nonsmokers.³⁰ Nicotine consumption increases a resting heart rate, as soon as 30 minutes after puffing; and the higher the nicotine consumption (through deep inhalation or increased number of cigarettes) the higher the heart rate.³¹ Smokers' hearts have to work harder than nonsmokers' hearts. A heart that is working harder is a heart that can tire-out faster and may result in an early heart attack or stroke.
- F. Increases Blood Pressure.** Blood pressure is a measure of tension upon the walls of arteries by blood. It is reported as a fraction, systolic over diastolic pressure. Systolic blood pressure is the highest arterial pressure reached during contraction of the heart. Diastolic blood pressure is the lowest pressure, found during the heart's relaxation phase. Nicotine consumption increases blood pressure. Older male smokers have been found to have higher systolic

blood pressure than nonsmoking men do. Higher blood pressure requires that the heart pump harder in order to overcome the opposing pressure in the arteries. This increased work, much like that related to increased heart rate, can wear out a heart faster. The higher pressure can also cause organ damage where blood is filtered, such as in the kidneys (DeSanto et al., 2009).

1.10.5 Immediate and rapid effects on the gastrointestinal system

The gastrointestinal system is responsible for digesting food, absorbing nutrients, and dispensing of waste products. It includes the mouth, esophagus, stomach, small and large intestines, and the anus. These continuous parts are all easily affected by tobacco smoke.

- A. Gastro esophageal reflux disease.** This disease includes symptoms of heartburn and acid regurgitation from the stomach. Normally the body prevents these occurrences by secreting a base to counteract digestive acids and by keeping the pathway between the esophagus (the tube between the mouth and stomach) and stomach tightly closed; except when the stomach is accepting food from above. The base smokers' bodies secrete is less neutralizing than nonsmokers and thus allows digestive acids a longer period of time to irritate the esophagus. Smokers also have an intermittent loosening of the muscle separating the esophagus and stomach, increasing the chance of stomach acid rising up to damage the esophagus. These immediate changes in base secretion and esophagus/stomach communication cause painful heartburn and result in an increased risk of long-term inflammation and dysfunction of the esophagus and stomach. Smoking also increases reflux of stomach contents into the esophagus and pharynx. Occurring regularly over time, this reflux may cause ulcerations of the lower esophagus, called Barrett's esophagus, to develop. Barrett's esophagus may develop into esophageal cancer, which has a poor prognosis in most patients.
- B. Peptic ulcer disease.** Peptic ulcers are self-digested holes extending into the muscular layers of the esophagus, stomach, and a portion of the small intestine. These ulcers form when excess acid is produced or when the protective inner layer of these structures is injured. Mucus is produced in the stomach to provide a protective barrier between stomach acid and cells of the stomach. Unlike in the lungs where mucus production is stimulated by cigarette

smoke, mucous production in the stomach is inhibited. Peptic ulcers usually result from a failure of wound-healing due to outside factors, including tobacco smoke. Cigarette smoking increases acid exposure of the esophagus and stomach, while limiting neutralizing base production (above). Smoking also decreases blood flow to the inner layer of the esophagus, stomach and small intestine. In these ways, cigarette smoking immediately hinders gastrointestinal wound healing, which has been shown to result in peptic ulcer formation, when not treated. Peptic ulcers are terribly painful and treatment involves the long-term use of medications. Complications of peptic ulcers often require hospitalization and may be fatal secondary to excessive blood loss.

- C. **Periodontal diseases.** These occur when groups of bacteria are able to form colonies that cause infections and diseases of the mouth. Smoking quickly changes the blood supply, immune response, and healing mechanisms of the mouth, resulting in the rapid initiation and progression of infections. In this way, smoking makes the mouth more vulnerable to infections and allows the infections to become more severe. The bacterial plaques of smoking also cause gum inflammation and tooth decay. In addition, smoking increases tooth and bone loss and hastens deep gum pocket formation.
- D. **Halitosis.** This is a fancy word for bad breath. Everybody knows that smoking makes individuals and everything around them smell bad. Bad breath, smelly hair and clothes, and yellow teeth are among the most immediate and unattractive effects of smoking (DeSanto et al., 2009).

1.10.6 Immediate and rapid effects on the immune system

The immune system is the body's major defense against the outside world. It is a complicated system that involves several different types of cells that attack and destroy foreign substances. It begins in the parts of the body, which are in direct contact with the environment, such as the skin, ears, nose, mouth, stomach, and lungs. When these barriers become compromised, there are serious health consequences. Tobacco smoke weakens the immune system in a number of ways.

- A. **Otitis Media.** This is inflammation of the middle ear. The middle ear is the space immediately behind the eardrum. It turns received vibrations into sound. The middle ear is very vulnerable to infection. Children exposed to environmental tobacco smoke (ETS) have more ear infections than those not

exposed. Tobacco smoke disrupts the normal clearing mechanism of the ear canal, facilitating infectious organism entry into the body. The resulting middle ear infection can be very painful, as pressure and fluid buildup in the ear. Continued exposure to tobacco smoke may result in persistent middle ear infections and eventually, hearing loss.

- B. **Sinusitis.** Sinusitis is sinus inflammation. Sinuses are spaces in the skull that are in direct communication with the nose and mouth. They are important for warming and moisturizing inhaled air. The lining of the sinuses consists of the same finger-like hairs found in the lungs. These hairs clear mucus and foreign substances and are therefore critical in preventing mucus buildup and subsequent infection. Cigarette smoke slows or stops the movement of these hairs, resulting in inflammation and infection. Sinusitis can cause headaches, facial pain, tenderness, and swelling. It can also cause fever, cough, runny nose, sore throat, bad breath, and a decreased sense of smell. Sinusitis is more serious and requires a longer course of medical treatment than the common cold. Long-term smoke exposure can result in more frequent episodes and chronic cases of sinusitis; and the rate of sinusitis among smokers is high.
- C. **Rhinitis.** This is an inflammation of the inner lining of the nasal passages and results in symptoms of sneezing, congestion, runny nose, and itchy eyes, ears, and nose. Similar to symptoms of the common cold, rhinitis may begin immediately in the regular smoker. Smoking causes rhinitis by Tobacco's Immediate Effects on the Body / 5 damaging the same clearing mechanism involved in sinusitis (above). Rhinitis can cause sleep disturbances, activity limitations, irritability, moodiness, and decreased school performance. Smoking causes immediate and long-lasting rhinitis.
- D. **Pneumonia.** Pneumonia is an inflammation of the lining of the lungs. This inflammation causes fluid to accumulate deep in the lung, making it an ideal region for bacterial growth. Pneumonia results in a persistent cough and difficulty breathing. A serious case of pneumonia often requires hospitalization. Smoking increases the body's susceptibility to the most common bacterial causes of pneumonia and is therefore a risk factor for pneumonia, regardless of age. Pneumonia, if left untreated, can lead to pus pocket formation, lung collapse, blood infection, and severe chest pain (DeSanto et al., 2009).

1.10.7 Immediate and rapid effects on the metabolic system

In metabolic system includes a complicated group of processes that break down foods and medicines into their components. Proteins, called enzymes, are responsible for this breakdown. The metabolic system involves many organs, especially those of the gastrointestinal tract.

- A. Scurvy and other micronutrient disorders.** Micronutrients are dietary components necessary to maintain good health. These include vitamins, minerals, enzymes (above) and other elements that are critical to normal function. They must be consumed and absorbed in sufficient quantities to meet the body's needs. The daily requirement of these micronutrients changes naturally with age and can also be affected by environmental factors, including tobacco smoke.⁶⁴ Smoking interferes with the absorption of a number of micronutrients, especially vitamins C, E, and folic acid that can result in deficiencies of these vitamins. A deficiency in Vitamin C can lead to scurvy which is a disease characterized by weakness, depression, inflamed gums, poor wound healing, and uncontrolled bleeding. Vitamin E deficiency may cause blood breakdown, eye disease, and irreversible nerve problems of the hands, feet, and spinal cord. Folic acid deficiency may result in long-lasting anemia, diarrhea, and tongue swelling
- B. Oxidative damage.** Oxidants are active particles that are byproducts of normal chemical processes that are constantly underway inside the body. Their formation is called oxidation. These particles are usually found and destroyed by antioxidants, including vitamins A, C, and E. The balance of oxidation and anti-oxidation is critical to health. When oxidation overwhelms anti-oxidation, harmful consequences occur. Oxidants directly damage cells and change genetic material, likely contributing to the development of cancer, heart disease, and cataracts. Oxidants also speed up blood vessel damage due to atherosclerosis (above) which is a known risk factor for heart disease. Because smoking increases the number of circulating oxidants, it also increases the consumption of existing antioxidants. This increase in antioxidant consumption reduces the levels of antioxidants such as alpha-tocopherol, the active form of vitamin E. Smoking immediately causes oxidant stress in blood while the antioxidant potential is reduced because of this stress. This dangerous imbalance cannot be neutralized and results in immediate cell, gene, and blood vessel damage. In addition, a National

Cancer Institute study found that beta-carotene supplements, which contain precursors of vitamin A, modestly increase the incidence of lung cancer and overall mortality in cigarette smokers (DeSanto et al., 2009).

1.10.8 Immediate and rapid effects on drug interactions

Drug breakdown, or metabolism, is important to drug effectiveness and safety. Medicines are naturally broken down into their components by enzymes. Factors that affect drug metabolism effect drug function. Factors that speed up drug metabolism decrease drug exposure time and reduce the circulating concentrations of the drug, which compromises the effectiveness of the prescription. Conversely, factors that slow down drug metabolism increase the circulating time and concentration of the drug, allowing the drug to be present at harmful levels. Tobacco smoke interferes with many medications by both of these mechanisms. For example, the components of tobacco smoke hasten the breakdown of some blood-thinners, antidepressants, and anti-seizure medications; and tobacco smoke also decreases the effectiveness of certain sedatives, painkillers, heart, ulcer, and asthma medicines (DeSanto et al., 2009).

1.10.9 Especially vulnerable populations

A. Asthmatics. Mainstream or Environmental Tobacco Smoke (ETS) exacerbates asthma in known asthmatics. In addition, some studies have shown a link between ETS in childhood and a higher prevalence of asthma in adulthood.

B. Infants and children. Infants and children exposed to Environmental Tobacco Smoke (ETS) are at increased risk for death and disease. Mothers who smoke during pregnancy are known to have low birth-weight babies. In breastfeeding women who smoke, there is a decrease in maternal milk production and less weight gain in the exposed infant.⁸⁰ In addition, infants whose mothers smoke have an increased risk of Sudden Infant Death syndrome (SIDS), and their overall perinatal mortality rate is 25 to 56 percent higher than those infants of mothers who choose not to smoke.⁸¹ Children exposed to ETS are at increased risk of many infections, most commonly middle ear and respiratory infections, and thus require more doctor visits and hospital stays.

C. Sickle cell patients. Patients with sickle cell anemia who smoke are known to have increased incidence of Acute Chest Syndrome.⁸² Acute Chest syndrome is a condition that presents with severe chest pain, and is a life-threatening emergency (DeSanto et al., 2009).

1.11 Smoking and tuberculosis

Smoking impairs the host immune defenses right from the beginning. Smoking impairs the clearance of secretions present on tracheobronchial mucosa. This is the first line of defense which aids in clearance of inhaled particles. Thus, by impairing the clearance, it allows the tubercle bacilli to escape the defense and propels it to reach alveoli. Pulmonary alveolar macrophages constitute early defense mechanism against the tubercle bacilli. Studies have shown that smoking alters the function of these macrophages and thus impairing their ability to clear the bacilli from airways. The macrophages from smokers were bigger in size, had abnormal surface morphology which led to impaired antigen presenting function. The alveolar macrophages of smokers had reduced phagocytic activity and low levels of pro-inflammatory cytokines. (Indian J Tuberc, 2012)

1.12 Smoking and diabetes

There is a growing body of evidence to show that smoking is a risk factor for Type 2 Diabetes. Several hypotheses have been proposed to explain this link. Smoking has been identified as a possible risk factor for insulin resistance, a precursor for diabetes. Smoking has also been shown to deteriorate glucose metabolism which may lead to the onset of Type 2 diabetes. There is also some evidence which suggests that smoking increases diabetes risk through a body mass index independent mechanism. Smoking has further been associated with a risk of chronic pancreatitis and pancreatic cancer, suggesting that tobacco smoke may be toxic to the pancreas. Cigarette smoking and nicotine intake increase the circulating levels of hormones, such as catecholamine's, glucagon and growth hormone, which impair the action of insulin. Interestingly, it was recently shown that nicotine administered intravenously in non-smokers caused a marked reduction (about 30%) in insulin sensitivity in people with type 2 diabetes but not in those without the condition. These results suggest that

nicotine may be particularly damaging to people who, due to a health condition such as diabetes, are already vulnerable. (Eliasson, 2005).

Table1.1: Effects of smoking on the body

Organ/ System on the body	Major effects
Brain	Smoking increases the risk of stroke by at least 50%, which can cause brain damage and death.
Heart	Smoking damages the heart and blood circulation, increasing the risk of conditions such as coronary heart disease, heart attack, stroke, peripheral vascular disease and cerebrovascular disease.
Lungs	Smoking can cause fatal diseases such as pneumonia, emphysema and lung cancer. Smoking causes 84% of deaths from lung cancer and 83% of deaths from chronic obstructive lung disease.
Stomach	Smokers have an increased chance of getting stomach cancer or ulcers.
Skin	Smoking reduces the amount of oxygen supply to the skin, causes premature ages of skin and makes it three times more likely facial wrinkling, particularly around the eyes and mouth, gives yellow-grey complexion, hollow cheeks and dull.
Mouth and throat	Smoking causes bad breath, stained teeth, gum disease and damage sense of taste. More than 93% of oropharangeal cancers (cancer in part of the throat) are caused by smoking.
Bones	Smoking can cause the bones to become weak and brittle. Women are more likely to suffer from brittle bones (osteoporosis) than non-smokers.
Reproduction and fertility	Smoking can cause male impotence, as it damages the blood vessels that supply blood to the genital organ. It can also damage sperm, reduce sperm count and cause testicular cancer. One study found that the fertility of smoking women was 72% that of nonsmokers.

Respiratory System	Lung diseases caused by smoking include COPD, which includes emphysema and chronic bronchitis.
Cardiovascular System	Smoking damages blood vessels and can make them thicken and grow narrower resulting stroke and coronary heart disease as a leading cause of death in the globe.

(Adak, 2014).

1.13 Deadly compounds from tobacco

Long time exposure of tobacco smoke produces disease some of which can cause death. Each puff of each cigarette contains a mixture of thousands of compounds, including more than 60 well-established carcinogens. The carcinogens in cigarette smoke belong to multiple chemical classes, including polycyclic aromatic hydrocarbons, *N*-nitrosamines, aromatic amines, aldehydes, volatile organic hydrocarbons, and metals. In addition to these well-established carcinogens, others have been less thoroughly investigated. These include alkylated PAHs, oxidants, free radicals, and ethylating agents. Considerable evidence indicates that in human cancers caused by cigarette smoking, PAHs, *N*-nitrosamines, aromatic amines, and certain volatile organic agents play a major role (CDC, 2010).

1.13.1 Polycyclic aromatic hydrocarbons

PAHs are incomplete combustion products first identified as carcinogenic constituents of coal tar. These products occur as mixtures in tar, soot, broiled foods, automobile engine exhaust, and other materials generated by incomplete combustion. Generally, PAHs are carcinogens that act locally. Some PAHs, such as benzopyrene, have powerful carcinogenic activity (CDC, 2010).

1.13.2 Heterocyclic compounds

These include analogs of PAHs containing nitrogen, as well as simpler compounds such as furan, which is a liver carcinogen. N-nitrosamines are a large class of carcinogens with demonstrated activity in at least 30 animal species. They are potent and systemic carcinogens that affect different tissues depending on their structure. Two of the most important N-nitrosamines in cigarette smoke are the tobacco-specific 4-(methylnitrosamino)-1-(3-pyridyl)-1-butanone and N'-nitrosonornicotine. (CDC, 2010).

1.13.3 Aromatic amines

These are combustion products that include the well-known human bladder carcinogens 2-naphthylamine and 4 aminobiphenyl, which were first characterized as human carcinogens attributable to industrial exposures in the dye industry. Heterocyclic aromatic amines are also combustion products and are best known for their occurrence in broiled foods, but they also occur in cigarette smoke (CDC, 2010).

1.13.4 Aldehydes

Formaldehyde and acetaldehyde occur widely in the human environment and are endogenous metabolites found in human blood. The phenolic compounds cat-echol and caffeic acid are common dietary constituents. High doses of catechol cause glandular stomach tumors when administered in the diet. Catechol can also act as a cocarcinogen, enhancing the activity of carcinogens such as Benzo alpha pyrine (CDC, 2010).

1.13.5 Oxidants

Cigarette smoke also contains oxidants such as nitric oxide and related species. Free radicals have been detected by electron spin resonance and spin trapping. Researchers postulate that the major species of free radicals are a quinone-hydroquinone complex. Other compounds may also be involved in the oxidative damage produced by cigarette smoke. In addition, several studies demonstrate the

presence in cigarette smoke of an uncharacterized ethylating agent, which ethylates both DNA and hemoglobin.

Most carcinogens in cigarette smoke require a metabolic activation process, generally catalyzed by cytochrome P-450 enzymes, to convert the carcinogens to forms that can covalently bind to DNA and form DNA adducts. P-450s 1A1 and 1B1, which are inducible by cigarette smoke through interactions with the aryl hydrocarbon receptor, are particularly important in the metabolic activation of PAHs. The inducibility of these P-450s may be a critical aspect of cancer susceptibility in smokers. Competing with the activation process is metabolic detoxification, which excretes carcinogen metabolites in generally harmless forms and is catalyzed by a variety of enzymes, including glutathione-S-transferases, uridine-5'-disphosphate-glucuronosyltransferases, epoxide hydrolases, and sulfatases. The balance between metabolic activation and detoxification of carcinogens varies among persons and likely affects cancer susceptibility. Persons with a higher activation and lower detoxification capacity are at the highest risk for smoking-related cancers.

Other carcinogenic organic compounds in cigarette smoke include the human carcinogens vinyl chloride in low amounts and ethylene oxide in substantial quantities. Ethylene oxide is associated with malignancies of the lymphatic and hematopoietic systems in both humans and laboratory animals. Diverse metals such as the human carcinogen cadmium are also present in cigarette smoke, as is the radioisotope polonium 210, which is carcinogenic to humans (CDC, 2010).

1.14 Tobacco smoking and cancer

The stimulation of nAChRs by nicotine has biologic effects on cells important for initiation and progression of cancer. It activates signal transduction pathways directly through receptor-mediated events, allowing the survival of damaged epithelial cells. In addition, nicotine is a precursor of tobacco specific nitrosamines (TSNAs), through nitrosation in the oral cavity. It is shown that nitrosation of nicotine could lead to formation of N'-nitrosonornicotine (NNN) and 4-(methylnitrosamino)-1-(3-pyridyl)-1-butanone (NNK). This effect of nicotine may be important because of its high concentration in tobacco and nicotine replacement products. NNN and NNK are strongly carcinogenic.

Nicotine forms arachidonic acid metabolites which cause increased cell division. Binding to B cell lymphoma-2 and action on vascular endothelial growth factor and cyclooxygenase-2 (COX-2) causes increased cancer proliferation and survival. Promotion of tumor angiogenesis accelerates tumor growth which is mediated by β -adrenergic activation and stimulation of nAChRs. Nicotine also suppresses apoptosis by phosphorylation mediated extracellular signal regulated kinases of Bcl-2. Recent studies show that nicotine, activates nuclear factor kappa B (NF- κ B)-dependent survival of cancer cell and proliferation.

In normal cells, nicotine can stimulate properties consistent with cell transformation and the early stages of cancer formation, such as increased cell proliferation, decreased cellular dependence on the extracellular matrix for survival, and decreased contact inhibition. Thus, the induced activation of nAChRs in lung and other tissues by nicotine can promote carcinogenesis by causing DNA mutations. Through its tumor promoter effects, it acts synergistically with other carcinogens from automobile exhausts or wood burning and potentially shorten the induction period of cancers. (Mishra et. al., 2015).

1.14.1 Smoking and lung cancer

Smoking causes lung cancer by damaging the cells that line the lungs. When someone inhales cigarette smoke, which is full of cancer-causing substances, changes in the lung tissue begin almost immediately. At first the body may be able to repair this damage. But with each repeated exposure, normal cells that line your lungs are increasingly damaged. Over time, the damage causes cells to act abnormally and eventually cancer may develop. (Warren and Singh, 2014).

The two general types of lung cancer include:

- **Small cell lung cancer**

Small cell lung cancer occurs almost exclusively in heavy smokers and is less common than non-small cell lung cancer.

- **Non-small cell lung cancer**

Non-small cell lung cancer is an umbrella term for several types of lung cancers that behave in a similar way. Non-small cell lung cancers include squamous cell carcinoma, adenocarcinoma and large cell carcinoma. (ACS, 2015).

A study relates lung carcinogenesis by nicotine due to genetic variation in Cytochrome P2B6. Cotinine has been found to promote lung tumorigenesis by inhibiting anti-apoptotic pathway. Nuclear translocation of ARB1 - Androgen receptor beta 1 gene by nicotine has found in proliferation and progression of nonsmall-cell lung cancer. Several Studies have shown that nicotine has significant role in tumor progression and metastasis via C-X-C chemokine receptor type 4 and increased angiogenesis. Carriers of the lung-cancer-susceptibility loci in their DNA extract more nicotine. Smokers carrying the gene cholinergic receptor nicotinic alpha 3 (CHRNA3) and CHRNA5 were found to extract more nicotine and cells were thus exposed to a higher internal dose of carcinogenic nicotine-derived nitrosamines. Additionally modulation of the mitochondrial signaling pathway leads to resistance to the chemotherapeutic agents (Nakadaet. et al., 2013).

Cotinine is an alkaloid found in tobacco and is also the predominant metabolite of nicotine. Cotinine has been found to promote lung tumorigenesis by inhibiting anti-apoptotic pathway. Nuclear translocation of ARB1 gene by nicotine has found in proliferation and progression of nonsmall-cell lung cancer. Several Studies have shown that nicotine has significant role in tumor progression and metastasis via CXCR4 and increased angiogenesis. Carriers of the lung-cancer-susceptibility loci in their DNA extract more nicotine. Smokers carrying the gene CHRNA3 and CHRNA5 were found to extract more nicotine and cells were thus exposed to a higher internal dose of carcinogenic nicotine-derived nitrosamines. Additionally modulation of the mitochondrial signaling pathway leads to resistance to the chemotherapeutic agents (Improgo, 2013).

Nicotine may have a broad spectrum of tumor-promoting activities in lung cancer. Nicotine and its metabolites increase proliferation, migration, invasion, EMT, and angiogenesis with a concomitant decrease in sensitivity to chemotherapy and/or radiotherapy. The effects of nicotine occur through activation of nAChRs and β -AdRs leading to common downstream activation of Src, Ras-Raf-MAPK-MEK-ERK pathways, and PI3K-Akt pathways that further drive several parallel oncogenic pathways. Nicotine and its metabolites can promote tumor progression through modulation of oncogenic signals in both cancerous and non-cancerous tissues. Substantial work is required to definitively test the effects of nicotine on clinical outcomes in cancer patients, but current data suggest that nicotine is not a benign substance in cancer progression and therapy (Warren and Singh, 2013).

1.14.2 Smoking and oral cancer

Oral cancer represents about 4 percent of all cancers and 2.2 percent of all cancer deaths in the U.S. In the western world in general, oral cancer accounts for 2-6 percent of all malignancies. In Asia, oropharyngeal cancer is the leading cancer in men, and in Africa and Asia it is the third most frequent cancer site in women. The average five-year survival rate of patients with oral cancer is about 50 percent. This is primarily due to late detection of the disease. Early detection and prevention is the key to fighting this deadly disease. Squamous cell carcinoma is the most common cancer of the oral cavity. In men, most oral cancers are found on the floor of the mouth and tongue; in women, the most common sites are the tongue and gums (Oral Cancer Foundation, 2014).

1.14.3 Gastrointestinal cancer

The carcinogenic role may be mediated by the MAPK/COX-2 pathways, α -7 nAChR and β -adrenergic receptor expression, and mi RNAs α -BTX antagonist. Nicotine forms adducts with liver DNA which enhances its mutagenic potential. Activation of cell-surface receptors by nicotine stimulates downstream kinases that can mediate resistance to chemotherapy. It has been shown by the finding that smokers who continue to smoke during chemotherapy have a worse prognosis. Moreover they also have increased toxicity and lower efficacy of chemo therapeutic drugs. Nicotine affects the periostin gene, α -7-nAChR and e-cadherin suppression which explains the mechanism of gastric cancer growth, invasion and metastasis. Nicotine negatively impacts tumor biology by promoting angiogenesis, tumor invasion and increased risk of metastasis (Jensen, 2012; Liu, 2011).

1.14.4 Breast cancer

Nicotine causes α 9-nAChR-mediated cyclin D3 over expression which might cause transformation of normal breast epithelial cells and induce cancer. Nicotine and cotinine has been found to be present in the breast fluid of lactating women. α 9-nAChR mediated mechanism leads to increased tumor growth, metastasis and tumor cells resistant to chemotherapeutic drugs in breast cancer (Nishioka, 2011).

1.15 How many medical doctors smoke?

In many countries medical doctors have been at the forefront of attempts to reduce the number of people who smoke. The medical doctor is one of the most highly respected professionals and patients place a large amount of faith in their doctor's advice. However, concerns have been expressed about the willingness of doctors who smoke themselves to advise their patients to quit, and about the likelihood of patients taking such advice seriously if they are aware that the doctor is a smoker him/herself. So what proportion of medical doctors smoke

In the past month Drs Derek Smith and Peter Leggat published a comprehensive international review of tobacco smoking in the medical profession from 1974-2004. The study showed that in countries like the United States, UK, Canada, Australia and New Zealand, smoking rates have dropped dramatically among doctors, from 15-20% in the 1970's to around 5% at the end of the 20th century. However, such low smoking rates are not uniform among doctors across the world. In China, 32% of male doctors smoke (but 0% of females doctors smoke), in Italy 28% of doctors smoke (32% among men), and in Turkey or Bosnia & Herzegovina around 40% of doctors smoke.

Some may be surprised to hear that as many as 5% of US doctors smoke. But remember that doctors are human beings like the rest of us, and not immune to either infections or addictions. Many smoking doctors report that they (like most smokers) started in their teen years and so were likely addicted even prior to the decision to study medicine at college. I prefer to look at the low (and still falling) smoking rates among doctors in some countries as a very positive sign. It provides an indication of how low it is possible for smoking prevalence to go in a population that is well informed of the health risks, has relatively good access to treatment, and generally works in a smoke-free environment where smoking is not considered to be socially acceptable. It suggests that 5% may be a reasonable target for the rest of the population as well (Foulds and Raquo;, 2016).

1.16 Doctor's knowledge, perception and attitudes related to smoking towards themselves and for their patients

A survey was done in Mongolia in 2004 regarding doctor's attitude knowledge towards smoking cessation. The full topic title was "Knowledge, Attitude and Practice on

Smoking and Smoking Cessation among Health Profession Students and Family Doctors in Mongolia”. The result showed that current cigarette smoking prevalence among family doctors is 10.5%. Female doctors were significantly lower than their male counterparts to smoke cigarette. Most family doctors (92.1%) said they were willing to counsel patients to quit smoking and 95.4% said that they advised smoker to stop smoking during most or all consultations. Only a third of family doctors said they had recommended NRTs to patients. However, only 11.2% of participants received formal training in cessation, and most of them (95.4%) would like to attend such a training course. Some difficulties and barriers were reported in smoking cessation practice such as perceived ineffectiveness of smoking cessation techniques, lack of family doctors’ time, lack of knowledge about smoking cessation techniques, lack of space in their office to counsel patients, lack of smoking cessation materials and lack of patients’ interest to quit smoking (Migiddorj, 2008).

Another survey was done in china in 2011 regarding Smoking Cessation Knowledge, Attitudes, and Practice Among Community Health Providers, and the result was that the majority of Community Health Services providers surveyed feel they should offer to help smokers quit. Although 78% of them report that they have asked patients to stop smoking, only 13.3% believe that their patients will follow their advice to quit. More than half have not received training in smoking cessation counseling. Only 13.7% of providers report they have used nicotine replacement therapy when helping smokers to quit, and 55.3% have never heard of it, yet 24.5% have used Chinese herbs or acupuncture. No significant statistical differences were observed between physicians and nurses in the survey responses presented (Klink et al., 2011).

All physicians surveyed believe it is their role to help patients quit smoking. While most physicians consistently ask patients who smoke about their smoking status and advise them to stop (86%), they do not regularly provide extensive assistance to help patients try to quit. For example, only 13% say they usually refer smokers to others for appropriate treatment and only 17% say they usually arrange for follow-up visits to address smoking. Physicians regard current smoking cessation tools as inadequate, Insufficient services, resources, and organizational supports; o Interventions that have only limited effectiveness; and o Limited education and training for physicians on addressing tobacco use and cessation interventions. The five factors cited most often by physicians as significant barriers to successful interventions are: (1) lack of patient motivation (63%); (2) limited coverage for interventions (54%); (3) limited reimbursement for a physician’s time (52%); time with patients is limited (41%); and too few available cessation programs (39%). Physicians believe patients bear a

significant responsibility for both smoking and quitting. However, these beliefs were not found to be associated with levels of participation in cessation activities. Physicians identified “More effective interventions” (78%) and “Increased availability of interventions” (60%) as the factors that would most motivate them to more frequently assist patients quit smoking. Increased insurance coverage for both cessation interventions (61%) and physician services (43%) to support their helping patients to quit smoking would also motivate physicians. Physicians who viewed incremental reductions in levels of tobacco use as successful outcomes were more likely to participate in cessation activities than those regarding success as complete abstinence only (Association of American Medical Colleges, 2007).

1.17 Necessity of doctor’s advice against smoking

Advice from doctors helps people who smoke to quit. Even when doctors provide brief simple advice about quitting smoking this increases the likelihood that someone who smokes will successfully quit and remain a nonsmoker 12 months later. More intensive advice may result in slightly higher rates of quitting. Providing follow-up support after offering the advice may increase the quit rates slightly (Stead et al., 2013).

The prevalence of advice to quit differed across studies. In Estonia, nearly all physicians (96%) reported advising patients to quit. In China, 70% of physicians had counseled patients to quit within the last year. About half the physicians in Malaysia, Guatemala, and Russia advised patients to quit, while less than one third of physicians in a Chinese study did so. In South Africa and Malaysia, advice to quit depended upon the patient having a condition associated with smoking. The most commonly used methods to encourage patients to quit were brief counseling and education about the dangers of smoking in several studies (Abdullah et al., 2013).

1.17.1 How to advise a patient to quit tobacco

1. The timing of advice

- First and every patient.
- Repetition of advice in each patient visit.
- Documentation of tobacco cessation advice on the prescription pad/ discharge slip.

- If patient visits with an acute illness (e.g. pain in tooth) then that should be addressed first, and advice should be given at 1st and all subsequent visits.

2. The type of advice

- Customize the ill effects of tobacco as per tobacco user profile. Need to emphasize the ill effects of tobacco usage that would be most relevant to each particular tobacco user.
- The patient's current illness needs to be linked to tobacco use. Clarify that the presenting illness will not resolve unless tobacco usage is discontinued.
- Communicate to the tobacco user that there is help available and that the doctor and his staff are there to help if the tobacco user is interested.
- On the basis of patient co- morbidities, age and motivation quotient, dental clinicians need to decide and advice on a preventive or interventional approach for individual tobacco users
- Illustrating the other ill-effects of tobacco use and the positives of quitting
- Creating awareness on the availability of medicines to aid in tobacco cessation
- Using successful ex-tobacco users to motivate new patients
- Emphasizing and /or demonstrating that tobacco use is an addiction and not a personal choice or life style.

However, if a tobacco user is not feeling fully motivated to quit and instead chooses to reduce the number of cigarettes/bidis/gutkha packets then the clinician should utilize this period to reinforce motivation and eventually drive complete tobacco cessation. This can be done by analyzing the reasons not to quit and addressing them appropriately. As a last resort a clinician may use a strategy called “paradoxical intentional” to motivate the tobacco user. Under this strategy, the clinician should ask the tobacco user to choose between continuing to take numerous medications for the primary illness and quitting tobacco use. This strategy has been found to be effective in day to day practice.

If there are tobacco users who insist that this is a matter of personal choice and they can give up whenever they decide to, a clinician can demonstrate to them that tobacco use is an addiction. Request the user to give up tobacco use for just one day and if they find it difficult, they can come back to the clinician for help. In addition to

clinician's individual efforts with tobacco users, they can be also motivated by displaying educational posters in the clinic and distributing educational material in the form of newsletters, booklets, audio-visual aids and leaflets.

For tobacco users who express willingness to try and quit, help set a quit date approximately two weeks away. A day personally significant to the tobacco user makes it more relevant e.g. birthday, anniversary etc. The tobacco user should be encouraged to announce his/her decision to family members, friends and colleagues so as to mobilize their support as well as induce accountability. It is strongly recommended that the tobacco user give up completely in one go on the quit date (Mehta and Kaur, 2011)

1.17.2 Why doctor's advice is necessary to quit smoking

Doctor's advice is necessary to quit smoking because

1. If patients stop smoking patient:
 - Reduce the risk of getting serious smoking-related diseases such as heart disease, cancers, chronic obstructive pulmonary disease (COPD) and peripheral vascular disease (PVD).
 - Reduce the risk of getting various other conditions which, although not life-threatening, can cause unpleasant problems. For example:
 - A breakdown of the tissue at the back of the eye (macular degeneration).
 - A skin condition called psoriasis.
 - Cataracts.
 - Erection problems (impotence).
 - Fertility problems.
 - Gum disease.
 - Optic neuropathy - this is a condition affecting the nerve supplying the eye.
 - Raynaud's phenomenon - in this condition, fingers turn white or blue when exposed to cold.
 - Reduce the risk of pregnancy complications if you are pregnant.
 - 'Thinning' of the bones (osteoporosis).

- Tooth loss.
2. If patients have smoked since being a teenager or young adult:
 - If patient stop smoking before the age of about 35, his/her life expectancy is only slightly less than it is for people who have never smoked.
 - If patient stop smoking before the age of 50, patient decrease the risk of dying from smoking-related diseases by 50%.
 3. But it is never too late to stop smoking to gain health benefits. Even if patient already have COPD or heart disease, patients outlook (prognosis) is much improved if patient stop smoking (Tedy, 2015).

1.17.3 Tips to help patient to stop smoking

A. Setting up a date for stopping and stop completely. (Some people prefer the idea of cutting down gradually. However, research has shown that if a user smoke fewer cigarettes than usual, the user is likely to smoke more of each cigarette and nicotine levels remain nearly the same. Therefore, it is usually best to stop once and for all from a set date.)

B. Telling everyone that user is giving up smoking. Friends and family often give support and may help the user. Smoking by others in the household makes giving up harder. If appropriate, it is tried to get other household members who smoke, or friends who smoke, to stop smoking at the same time. A team effort may be easier than going it alone.

C. Being prepared for some withdrawal symptoms. When user stop smoking, useris likely to get symptoms which may include feeling sick (nausea), headaches, anxiety, irritability, craving, and just feeling awful. These symptoms are caused by the lack of nicotine that user`s body has been used to. They tend to peak after 12-24 hours and then gradually ease over 2-4 weeks.

D. Anticipating a cough. It is normal for a smoker's cough to become worse when the past user stopped smoking (as the airways 'come back to life'). Many people say that this makes them feel worse for a while after stopping

smoking and makes them tempted to restart smoking. The temptation must be resisted. The cough usually gradually eases.

- E. Being aware of situations.** In which user is most likely to want to smoke. In particular, drinking alcohol is often associated with failing in an attempt to stop smoking. The user should consider not drinking much alcohol in the first few weeks after stopping smoking. Changing the routine for the first few weeks. For example, despite the UK ban on indoor smoking in pubs, outside the pub might still be a tempting place to drink alcohol and smoke. Also, if drinking tea and coffee are difficult times, drinking mainly fruit juice and plenty of water instead may be tried.
- F. Taking one day at a time.** Marking off each successful day on a calendar. Looking at it when the user feel tempted to smoke, and tell himself that you don't want to start all over again.
- G. Being positive.** The user can tell people that he/she don't smoke. The user will smell better. After a few weeks he/she should feel better, tasting food more and cough less, will have more money. Perhaps putting away the money which user would have spent on cigarettes for treats.
- H. Food.** Some people worry about gaining weight when they give up smoking, as the appetite may improve by anticipate an increase in appetite and trying not to increase fatty or sugary foods as snacks. Trying fruit and sugar-free gum instead.
- I. Don't despair if User fail.** Examine the reasons why the user felt it was more difficult at that particular time. It will make the user stronger next time. On average, people who eventually stop smoking have made three or four previous attempts.
- J. Stop Smoking Clinics.** They are available on the NHS. They have good success in helping people to stop smoking. Doctor may refer him/her to one if he/she is keen to stop smoking but are finding it difficult to do so.

Various medicines can increase ones chance of quitting. These include nicotine replacement therapy (NRT) which comes as gums, sprays, patches, tablets, lozenges

and inhalers. One can buy NRT without a prescription. Also, medicines called Bupropion and Varenicline can help. These are available on prescription.

There are also electronic cigarettes (e-cigarettes). They are designed to look and feel like normal cigarettes. They have a heating element inside that vaporizes a solution - this looks like smoke. It may also contain nicotine. They are substituted for normal cigarettes or cigars. There is some uncertainty whether this is more effective than the other ways of stopping smoking. A recent research paper from The Lancet showed that the e-cigarettes were as effective as nicotine patches. Further studies are needed to ensure they are safe to use over a length of time (Teddy, 2015).

1.18 Causes and symptoms after quitting smoking

No one starts smoking to become addicted to nicotine. It isn't known how much nicotine maybe consumed before the body becomes addicted. However, once smoking becomes a habit, the smoker faces a lifetime of health risks associated with one of the strongest addictions known to man (Lerman and Berrettini, 2003).

Table 1.2: Symptoms That Occur After Quitting Smoking

Symptom	Cause	Duration	Relief
Craving for cigarette	Nicotine craving	First week can Linger for months	Distract yourself with other activity
Irritability, Impatience	Nicotine craving	2 to 4 weeks	Exercise, relaxation techniques, avoid caffeine
Insomnia	Nicotine craving temporarily reduces deep sleep	2 to 4 weeks	Avoid caffeine after 6 PM relaxation techniques; exercise
Fatigue	Lack of nicotine stimulation	2 to 4 weeks	Nap
Lack of concentration	Lack of nicotine stimulation	A few weeks	Reduce workload; avoid stress
Hunger	Cigarettes craving confused hunger pangs	Up to several weeks	Drink water or low calorie drinks ; eat low-calorie snacks

Coughing, dry throat, nasal drip	Body ridding itself of mu cus in lungs and airways	Several weeks	Drink plenty of fluids; use cough drops
Constipation, gas	Intestinal movement decreases with lack of nicotine	1 to 2 weeks	Drink plenty of fluids; add fiber to diet; exercise

(Lerman and Berrettini, 2003)

About 70% of smokers in the United States would like to quit; in any given year, however, only about 3.6% of the country's 47 million smokers quit successfully.

Although specific genes have not yet been identified as of 2003, researchers think that genetic factors contribute substantially to developing a smoking habit. Several twin studies have led to estimates of 46-84% heritability for smoking. It is thought that some genetic variations affect the speed of nicotine metabolism in the body and the activity level of nicotinic receptors in the brain (Lerman and Berrettini, 2003).

Significance of the study

Tobacco smoking is dangerous for both the active and passive smokers. Active smokers directly inhale the smoke and passive smokers indirectly. The indirect inhalation of the smoke is sometimes more dangerous than the direct smoking because the smoke exhaled by the smoker contains chemical that is converted into more deadly compound inside the smoker's system (ACS, 2015).

Tobacco smoking is a leading modifiable global disease risk factor, with nearly 6 million premature deaths, 6.90% of years of life lost, and 5.5% disability-adjusted life-years (DALYs) in 2010. Global age-standardized prevalence of daily tobacco smoking was 31.1% in 2012 for men. Nearly 80% of the more than one billion smokers worldwide live in low- and middle-income countries, where the burden of tobacco-related illness and death is heaviest. Given the importance of tobacco as a risk to health, monitoring the distribution and intensity of tobacco use is critical particularly for low- and middle- income countries. Bangladesh is a low-income country and one of the largest tobacco consuming countries in the world. According to a previous study of Bangladesh, smoking causes about 25% of all deaths in Bangladeshi men aged 25 to 69 years and an average loss of seven years of life per smoker. Tobacco-use results in both health and economic costs that is large and growing. Due to its easy accessibility and social acceptability, there are now more young women and teenagers having access to cigarettes and hence getting addicted. Its losses are immeasurable or uncountable. Some losses are directly related and others are related indirectly. Smoking affects individual smoker, his/her family and society as a whole. Significant costs are being used for medicine purpose. It reduces the strength of individuals working capacity. As tobacco smoking is becoming a threat of the health of population and an economic burden, use of tobacco is not stopped and no effective anti-smoking efforts are made in Bangladesh (Sultana, P et al., 2016).

There are several studies conducting and ongoing on knowledge attitude and perception on smoking towards doctors and their patients around in different countries. Here we see that the rate of smoking is higher in general population than the patients. Smoking causes various types of cancers such as larynx (voice box), esophagus (gullet), mouth and pharynx (throat), bladder, pancreas, kidney, liver, stomach, bowel, cervix, ovary, nose and sinuses and some types of leukemia. From this survey we want to know that the doctors consciousness about smoking in our country. Advertisement about the dangerous health effects of active smoking is common. In newspaper, television radio this kind of advertisement is always found, even on the

packet of cigarette it is written that 'smoking is injurious to health'. And we see that when doctor's gives knowledge about smoking to their patients, most of the patients are quitting smoking. So doctor's awareness towards smoking is too much essential both for the patients and themselves.

Aims and Objective of the Study

The aims and objectives of this study were to:

- To assess the rate of smoking tendency of Doctors.
- To assess the prevalence of non-smoking advice towards patients.
- To assess the reason behind doctors' smoking.
- To assess the thinking of doctors towards restricting or banning smoking.
- To assess the concern of doctors towards raising awareness about smoking.

Chapter 2

Literature

Review

2.1 Physician smoking status, attitudes toward smoking, and cessation advice to patients: An international survey

The smoking status of physicians can impact interactions with patients about smoking. The 'Smoking: The Opinions of Physicians' (STOP) survey examined whether an association existed between physician smoking status and beliefs about smoking and cessation and a physician's clinical interactions with patients relevant to smoking cessation, and perceptions of barriers to assisting with quitting. General and family practitioners across 16 countries were surveyed via telephone or face-to-face interviews using a convenience-sample methodology. Physician smoking status was self-reported. Of 4473 physicians invited, 2836 (63%) participated in the survey, 1200 (42%) of whom were smokers. Significantly fewer smoking than non-smoking physicians volunteered that smoking was a harmful activity (64% vs. 77%). More non-smokers agreed that smoking cessation was the single biggest step to improving health (88% vs. 82%) and discussed smoking at every visit (45% vs. 34%). Although more non-smoking physicians identified willpower (37% vs. 32%) and lack of interest (28% vs. 22%) as barriers to quitting, more smoking physicians saw stress as a barrier (16% vs. 10%). Smoking physicians are less likely to initiate cessation interventions (Pipe, Sorensen and Reid, 2009).

2.2 Smoking Habits and Attitudes of Medical Students towards Smoking and Antismoking Campaigns in Nine Asian Countries

As part of a world survey of the habits, knowledge and attitudes of medical students regarding tobacco a reported study in 15 medical schools from nine Asian countries. Some 1646 first year and 1587 final year students were included, of whom 59% were male. The prevalence of daily smoking in males was 4% in first year and 11% in final year; of occasional smoking 18% and 24% respectively, both with considerable variations between countries. The rates were very low in women. Male ex-smokers varied from 3% to 24% in different canters. Overall, 33% of smokers had made a serious attempt to quit; 44% expected to have succeeded within 5 years. Over 80% of non- or ex-smokers, but only 60% of smokers, thought smoking was harmful to health. There was gross underestimation of tobacco's causal role in a number of important diseases, e.g. coronary artery disease, peripheral vascular disease, emphysema, bladder cancer and neonatal mortality. There were notable defects both in training and in motivation to counsel smoking patients. There was only partial knowledge of

legislative and other measures to discourage smoking, e.g. only 44% of final year students (26% of smokers) thought increased taxation an important measure. In knowledge and attitudes there was little difference between the sexes, but in most aspects smokers had notably lower scores (Tessier et al., 1992).

2.3 Knowledge of and attitudes towards tobacco control among smoking and non-smoking physicians in 2 Gulf Arab states

The global health professional survey is a project organized by the World Health Organization, to determine the smoking habits, knowledge and attitude towards tobacco control of health professionals in several countries around the world. This paper presents data from Kuwait and Bahrain. The survey period was between May 2000 and March 2001. A questionnaire was distributed to all physicians in Bahrain and to a random sample from Kuwait. The responses to knowledge and attitude questions were on a scale of 1-5, (1 strongly agree, 2 agree, 3 unsure, 4 disagree and 5 strongly disagree). Four hundred and seventy physicians from Bahrain and 1095 from Kuwait completed the questionnaire. The prevalence of cigarette smoking in Kuwait was: current smokers 18.4%, previous smokers 15.8%, Bahrain 14.6% and 14.3%. The prevalence of shisha smoking was 12% and 6.4% for Kuwait and Bahrain, ($p=0.004$). The mean scores of agreement with the association between passive smoking and lung diseases, lower respiratory tract infections in children were 1.6, 1.7 and 1.8, 1.9 for non-smoking physicians and smoking physicians ($P<0.01$). The mean scores of agreement with the following policies: large health warning on cigarette packages, complete ban on tobacco advertisement and an increase in the price of cigarette were 1.3, 1.4, 1.7 and 1.7, 1.7, 2.5 for smoking and non-smoking physicians ($p<0.01$). Smoking physicians have less knowledge and less favorable attitude towards tobacco control compared to non-smokers. There was no difference in the prevalence of cigarette smoking between Kuwait and Bahrain, but the prevalence of shisha smoking was higher in Kuwait (Behbehani, Hamadeh and Macklai, 2004).

2.4 Attitudes and opinions of French cardiologists towards smoking

To assess attitudes and opinions of French cardiologists towards tobacco, a postal survey was performed in 1993 of all members of the French Society of Cardiology using a questionnaire designed by the World Health Organization (WHO) and the International Union against tuberculosis and lung diseases (IUATLD) for health professionals. 730 cardiologists responded to the mailing. The mean age of them was 47 ± 9 years, 84% were males. The prevalence of smoking was 27% (14% daily smokers and 13% occasionally smokers). There were more never smokers in age group <45 than in those aged 45 and more (33% vs. 21%). Of daily smokers, 42% claimed to have made a serious attempt to stop smoking, but only 16% expected to have stopped within five years of the survey. French cardiologists aged 29–45 years had a better knowledge of tobacco related respiratory and cardiovascular diseases than those over 45 years old. Only 64% (54% of daily smokers) would counsel a patient to stop smoking if he did not have a smoking related illness and did not raise the question. 53% thought they had sufficient knowledge to advise their patients on stopping smoking. The results compared to those of the French general practitioners survey, showed a lower prevalence of daily smokers. French cardiologists especially those aged 29–45, have a better knowledge of the risk of cardiovascular diseases. But only 64% of them would advise any smoker patients. These results also demonstrated the influence of personal smoking of the attitude of cardiologists towards smoker patients (Tessier et al., 1995).

2.5 Smoking habits and attitudes towards smoking among Estonian physicians

This study examined the smoking habits and attitudes towards smoking among Estonian physicians. Cross-sectional data for 2668 physicians were gathered by a self-administered postal survey. The current smoking prevalence was 24.9% for male physicians and 10.8% for female physicians. The percentages of ex-smokers were 32.9 and 16.8%, respectively. Smoking prevalence among physicians was below the levels reported for the highest educational bracket of the total population in Estonia. Non-smoking physicians had more unfavorable views towards smoking than those who smoked. The majority of physicians were aware of the association between

smoking and various diseases, with significant differences between smokers and non-smokers. Non-smoking physicians were more active in asking patients about smoking habits than those who smoked. Most Estonian physicians, especially those who smoked, failed to perceive themselves as positive role models. This study found a lower prevalence of smoking among physicians compared with the general population, and demonstrated the impact of personal smoking on physicians' attitudes towards smoking. The results provide an important challenge to medical education in Estonia (Pärna, Rahu and Rahu, 2005).

2.6 Smoking Prevalence and Attitudes toward Smoking among Japanese Physicians

To estimate the nationwide prevalence of smoking and determine the attitudes toward smoking among Japanese physicians descriptive study in which anonymous questionnaires were mailed to 4500 randomly selected physician members of the Japan Medical Association in the year 2000, which represents 63% of all Japanese physicians; 3771 (84%) respondents were included in the analysis of Smoking prevalence among physicians, history of smoking, and attitudes toward smoking. The prevalence of cigarette smoking among physicians was 27.1% for men and 6.8% for women, about half the age-adjusted prevalence among the general Japanese population. Smoking prevalence was higher among male physicians in Japan than those in the United States (3%-10%) and the United Kingdom (4%-5%). Smoking prevalence differed by age, with the highest prevalence among male past smokers aged 70 years or older (51.8%; 95% confidence interval [CI], 47.4%-56.2%). Among male current smokers, the highest rates were for those aged 40 to 49 years (31%; 95% CI, 27.5%-34.5%); rates for female past smokers were highest among those aged 50 to 59 years (10.7%; 95% CI, 6.6%-14.8%) and for female current smokers were highest among those aged 70 years or older (8.2%; 95% CI, 4.8%-11.6%). Nonsmoking physicians had more unfavorable views toward smoking and were more active in encouraging patients not to smoke than those physicians who smoked. The survey concluded that smoking cessation programs should be introduced among Japanese physicians to reduce the number of smoking physicians. Also, a continuing education program should be instituted to motivate physicians about their role in society (Ohida, 2001).

2.7 Physician assessment of patient smoking in Indonesia: A public health priority

To explore Indonesian physician's smoking behaviors, their attitudes and clinical practices towards smoking cessation this Cross-sectional survey was done. Physicians working in Jogjakarta Province, Indonesia, between October and December 2003. 447 of 690 (65%) physicians with clinical responsibilities responded to the survey (236 men, 211 women), of which 15% were medical faculty, 35% residents and 50% community physicians. 22% of male (n=50) and 1% of female (n=2) physicians were current smokers. Approximately 72% of physicians did not routinely ask about their patient's smoking status. A majority of physicians (80%) believed that smoking up to 10 cigarettes a day was not harmful for health. The predictors for asking patients about smoking were being male, a non-smoker and a medical resident. The odds of advising patients to quit were significantly greater among physicians who perceived themselves as sufficiently trained in smoking cessation. Lack of training in smoking cessation seems to be a major obstacle to physicians actively engaging in smoking cessation activities. The result concluded that Indonesian physicians need to be educated on the importance of routinely asking their patients about their tobacco use and offering practical advice on how to quit smoking (Ng et al., 2007).

2.8 Tobacco use prevalence, knowledge, and attitudes among newly diagnosed tuberculosis patients in Penang State and Wilayah Persekutuan Kuala Lumpur, Malaysia

There is sufficient evidence to conclude that tobacco smoking is strongly linked to tuberculosis (TB) and a large proportion of TB patients may be active smokers. In addition, a previous analysis has suggested that a considerable proportion of the global burden of TB may be attributable to smoking. However, there is paucity of information on the prevalence of tobacco smoking among TB patients in Malaysia. Moreover, the tobacco-related knowledge, attitudes, and behaviors of TB patients who are smokers have not been previously explored. This study aimed to document the prevalence of smoking among newly diagnosed TB patients and to learn about the tobacco use knowledge and attitudes of those who are smokers among this population. Data were generated on prevalence rates of smoking among newly diagnosed TB patients in the State of Penang from January 2008 to December 2008. The data were obtained based on a review of routinely collated data from the quarterly report on TB case registration. The study setting comprised of five healthcare facilities

(TB clinics) located within Penang and Wilayah Persekutuan, Kuala Lumpur health districts in Malaysia, which were involved in a larger project, known as SCIDOTS Project. A 58-item questionnaire was used to assess the tobacco use knowledge, attitudes and behaviors of those TB patients who were smokers. Smoking status was determinant in 817 of 943 new cases of TB from January to December 2008. Of this, it was estimated that the prevalence rates of current- and ex-smoking among the TB patients were 40.27% (329/817) and 13.95% (114/817), respectively. The prevalence of ever-smoking among patients with TB was estimated to be 54,220 per 100,000 population. Of 120 eligible participants for the SCIDOTS Project, 88 responded to the survey (73.3% response rate) and 80 surveys were analyzed (66.7% usable rate). The mean (\pm SD) total score of tobacco use knowledge items was 4.23 ± 2.66 (maximum possible score=11). More than half of the participants (51.3%) were moderately dependent to nicotine. A moderately large proportion of the respondents (41.2%) reported that they have ever attempted to quit smoking, while more than half (56.3%) have not. Less than half (47.5%) of the study participants had knowledge about the body system on which cigarette smoking has the greatest negative effect. The majority wrongly believed that smokeless tobacco can increase athletic performance (60%) and that it is a safe and harmless product (46.2%). An overwhelming proportion (>80%) of the patients believed that: smoking is a waste of money, tobacco use is very dangerous to health, and that smokers are more likely to die from heart disease when compared with non-smokers. The use of smokeless tobacco was moderately prevalent among the participants with 28.8% reporting ever snuffed, but the use of cigar and pipe was uncommon (Awaisu et al., 2010).

2.9 Smoking Habits among Physicians in Two Gulf Countries

The smoking habit of physicians in United Arab Emirates (UAE) and Kuwait were studied as first step towards surveying the habit among medical professionals. A cross-sectional survey was conducted in Kuwait between January-June 1990. Out of the 300 physicians who were contacted 252 (84%) completed the questionnaires, 190 (75%) were males and 62 (25%) were females. Among male physicians, current smokers were 86 (45.3%), ex-smokers were 34 (17.9%) and non-smokers were 70 (36.8%), while among the female physicians 10 (16%) were smokers and 52 (84%) were non-smokers. This cross-sectional study was conducted between December 1991-November 1992 to identify the extent of smoking among physicians in UAE. Of the 300 physicians, 275 (91.6%) responded, 214 (77.8%) were males and 61 (22.2%)

were females. Among the males, current smokers were 94 (43.9%), ex-smokers were 32 (14.9%) and non-smokers were 88 (41.2%), while among the females 5 (8.2%) were smokers, 3 (4.9%) were ex-smokers and 53 (86.9%) were non-smokers. Most important factors responsible for non-smoking doctors for not taking up smoking were: 'Protection of health', 'Self- discipline' and 'to set a good example to others'. The majority of physicians in UAE (91.3%) and Kuwait (75.6%) strongly agreed that smoking is hazardous to health. The results revealed that less than 50% of physicians provide information to over 70% of smoking patients. The majority of physicians and health professionals were aware of association between smoking and various diseases. The ill- effects of tobacco smoking particularly as a major cause in relation to lung cancer, chronic bronchitis, coronary artery diseases, and pulmonary emphysema and laryngeal cancer were widely and correctly known by all categories of doctors in both Gulf countries, UAE and Kuwait. The options favored by doctors for preventing smoking included a ban on tobacco advertising, specific health warning on cigarette packs and restriction of smoking in public places, particularly hospitals and primary health clinics (Bener, Gomes and Anderson, 1993).

2.10 Prevalence of smoking habits, attitudes, knowledge and beliefs among Health Professional School students: a cross-sectional study

A cross-sectional study was carried out in Catania University Medical Schools. The GHPSS questionnaires were self-administered. Logistic regression model was performed. The level of significance was $p < 0.05$. 422 students answered to the questionnaire. Prevalence of current smokers was 38.2%. 94.3% of the total sample believes that health professionals should receive specific training to quit smoking, but only 21.3% of the sample received it during the study courses. Given the high prevalence of smokers among health professionals and their key role both as advisers and behavioral models, our results highlight the importance of focusing attention on smoking cessation training addressed to them (Ferrante et al., 2013).

Chapter 3

Methodology

3.1 Type of the Study

It was a survey based study.

3.2 Study Area

The name of urban area hospital list is given below:

3.3 Study Population

In this study, a total number of 200 doctors with the age range of 25 to 53 years. All were practicing doctors in different hospitals and private chambers in urban area of Bangladesh. They were surveyed with a questionnaire in order to assess the knowledge, perception and attitude regarding smoking. Informed consent was obtained from the eligible participants before interviewed and participants who agreed to join the study provided the required information for the studies.

3.4 Study Period

The duration of the study was about five months starting from January to May in 2016 and conducted in 58 hospitals. The list of hospitals are given below:

1. Ad Din Hospital
2. Aichi Hospital
3. Al Ahsraf General Hospital
4. Al Biruni Hospital
5. Al Halal Specialist
6. Al Madina Hospital
7. Al Markazul Islami Hospital
8. Anjuman Mofidul Hospital
9. Anwar Khan Modern Hospital
10. Appollo Hospital
11. Ayesha Medical Specialized Hospital
12. Bangabondhu Sheikh Mujib Medical
13. Bangladesh Eye Hospital
14. Bangladesh Heart Office
15. Bangladesh Telemedicine Services Hospital
16. Bengal Nursing Home
17. Birdem
18. Care Medical Center

19. Cencer Home
20. Central Hospital
21. China Bangla Hospital
22. Cholera Hospital
23. City Dental Hospital
24. CMH
25. Community Maternity Hospital
26. Cresnet Gastro Liver And General Hospital
27. Delta Medical Centre Limited Al Jabels-E-Nur Hospital
28. Dhaka Community Hospital
29. Dhaka Medical College And Hospital
30. Dhaka Monorog Hospital
31. Dhaka National Hospital
32. Dhaka Renal Center And General Hospital
33. Dhaka Shishu Hospital
34. Doctors General Hospital
35. Eden Multicare Hospital
36. Fashion Eye Hospital
37. General Hospital
38. Greenlife Hospital
39. Health And Hope Hospital
40. I Care Medical Hospital
41. Islami Bank Hospital
42. Khidmah Hospital
43. Lab Aid Hospital
44. Monowara Hospital
45. Mugda General Hospital
46. Nagar Marisuddan
47. National Kidney Foundation
48. Rushmono General Hospital
49. Safena Hospital
50. Salena Hospital
51. Shahid Suhrawardy Hospital
52. Shamorita Hospital
53. Sir Salimullah Medical College And Hospital
54. Sirajul Islam Medical College
55. Square Hospital

- 56. Sumona Hospital
- 57. United Hospital
- 58. Uttara Adhunic Hospital

3.5 Questionnaire Development

The pre-tested questionnaire was specially designed to collect the simple background data and the needed information. The questionnaire was written in simple English in order to avoid unnecessary semantic misunderstanding. The questionnaire was pilot tested to ensure it was understandable by the participants. Extra space was however, allowed after some questions for the participants' comments; and in most cases, these were used as qualifying remarks which aided considerably in giving answers to specific questions and in providing additional information which assisted the interviewers in drawing up conclusions.

3.6 Sampling Technique

In this study purposive sampling technique was followed.

3.7 Data analysis

After collecting, the data were checked and analyzed with the help of Microsoft Excel 2010. The result was shown in bar, pie and column chart and calculated the percentage of the knowledge attitude and perception regarding smoking.

3.8 Model of questionnaire

1. Age: _____
2. Gender: Male Female
3. Hospital: _____
4. Hospital Area: Rural Urban
5. Your smoking status: Never smoked Current smoker Former smoker
8. What do you think are the reasons for your smoking?
 - Stress relief
 - Image perception
 - Companionship / Peer Pressure
 - Leisurely Independence
 - Sign of masculinity
 - Relief of anger and frustration

Chapter 4

Result

4.1 Gender Distribution

Table 4.1: Gender distribution

Gender distribution	No of respondents	Percentage %
Male	168	84%
Female	32	16%

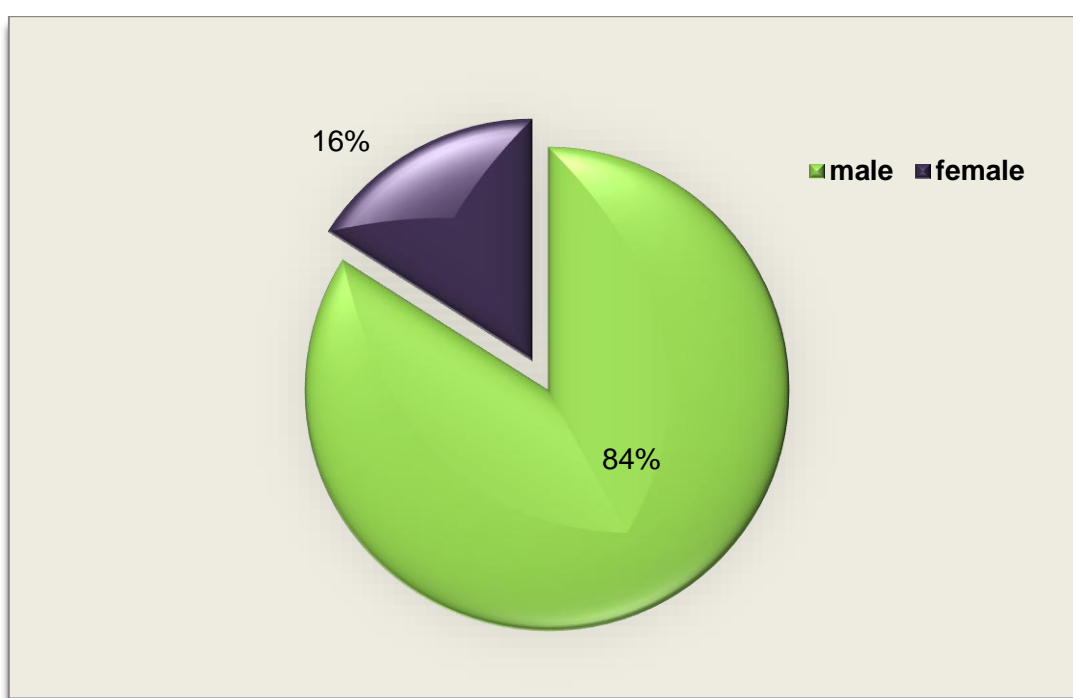


Figure 4.1: Gender Distribution

Most of the respondents were male (84%).

4.2 Smoking status of Doctors

Table 4.2: Smoking status of Doctors

	Never smoker		Current smoker		Former smoker	
	Male	Female	Male	Female	Male	Female
NO	50	30	61	2	57	0%
Percentage (%)	29.76%	93.75%	36.31%	6.25%	33.93%	0%

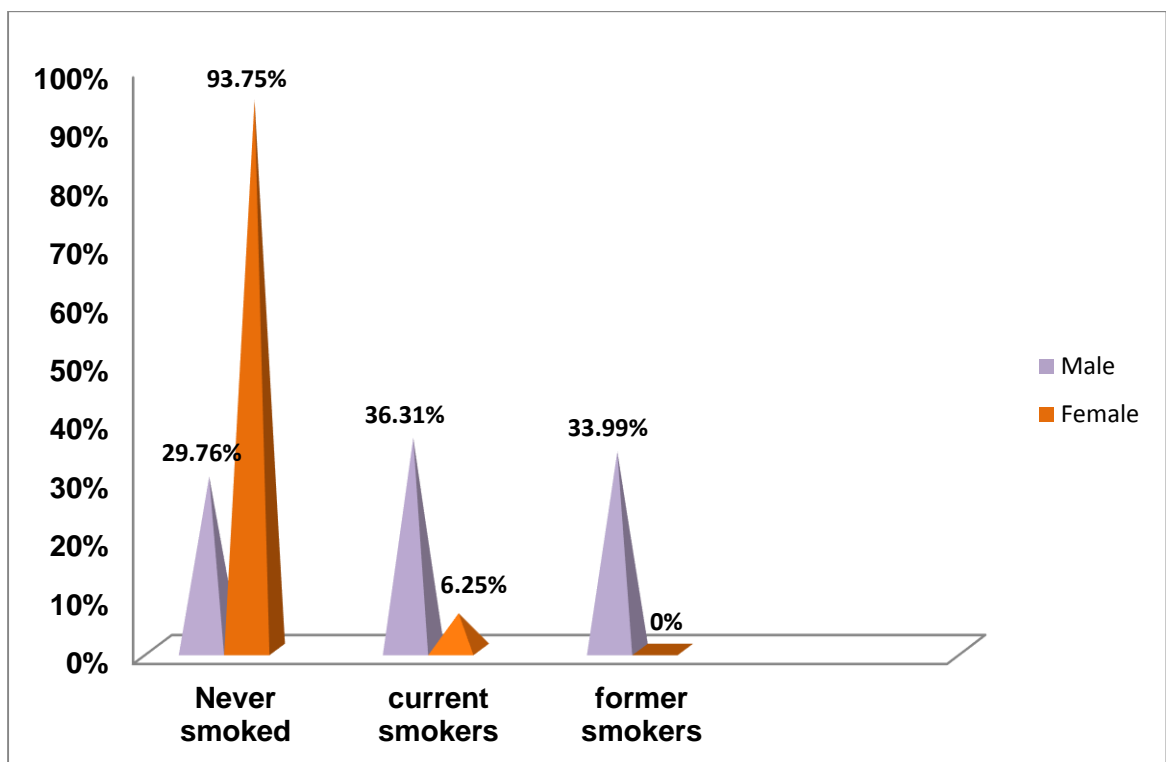


Figure 4.2: Smoking status of Doctors

Most doctor respond to that they never smoked in their life. A significant number of doctors (36.31% male and 6.25% female doctors) are current smokers and rests of them were former smokers.

4.3 Statements of Doctors

4.3.1 Restriction of buying cigarettes under age 16

Table 4.3: Restriction of buying cigarettes under age 16

	Agree		Disagree		Either agree or disagree	
	Male	Female	Male	Female	Male	Female
NO	161	30	2	0	5	2
Percentage (%)	95.83%	93.75%	1.2%	0	2.98%	6.25%

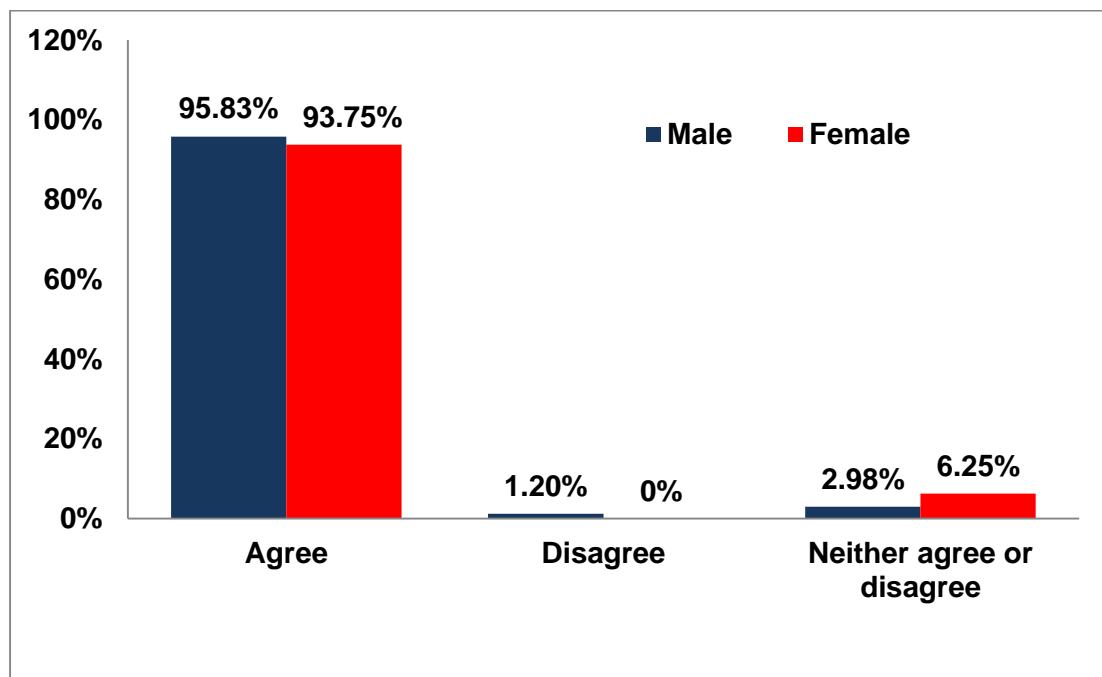


Figure 4.3: Restriction of buying cigarettes under age 16

The doctors (95.5% male, 93.75% female) strongly agree to the fact that children under age of 16 shouldn't be allowed to buy cigarettes.

4.3.2 Strict law against public smoking

Table 4.4: Strict law against public smoking

	Agree		Disagree		Either agree or disagree	
	Male	Female	Male	Female	Male	Female
NO	129	32	22	0	17	0
Percentage (%)	76.79%	100%	13.1%	0%	10.12%	0%

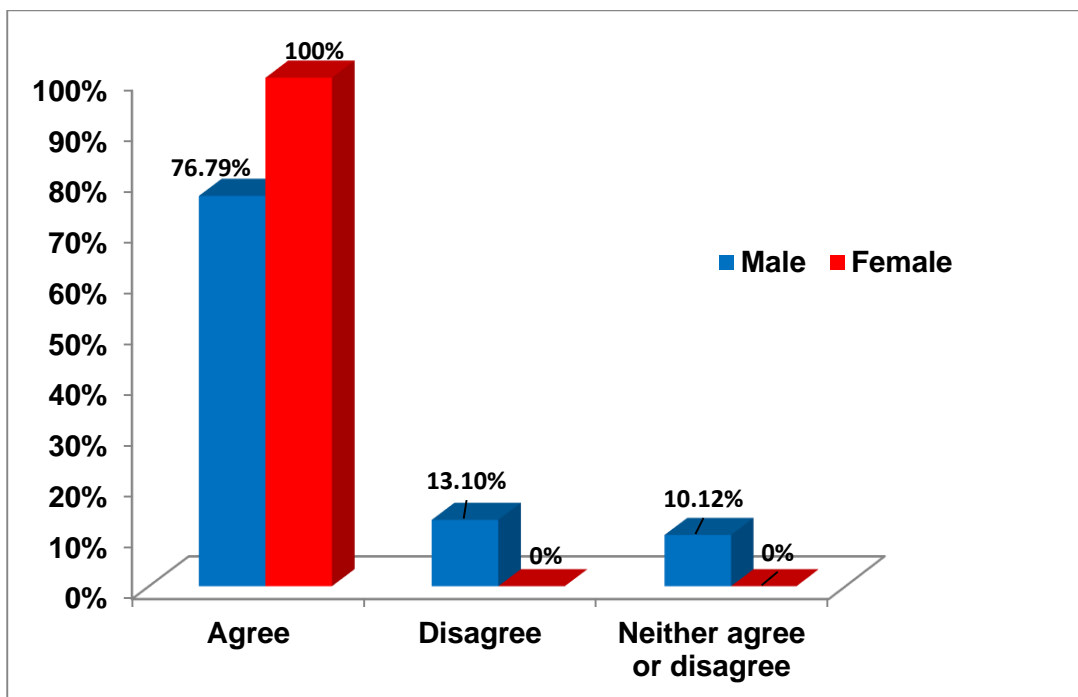


Figure 4.4: Strict law against public smoking

Most of the doctors (100% female, 76.79% male) agreed to the fact that there should be strict law enforcement to stop public smoking.

4.3.3 Prohibition of smoking advertisement

Table 4.5: Prohibition of smoking advertisement

	Agree		Disagree		Either agree or disagree	
	Male	Female	Male	Female	Male	Female
NO	108	32	25	0	35	0
Percentage (%)	64.29%	100%	14.88%	0%	20.83%	0%

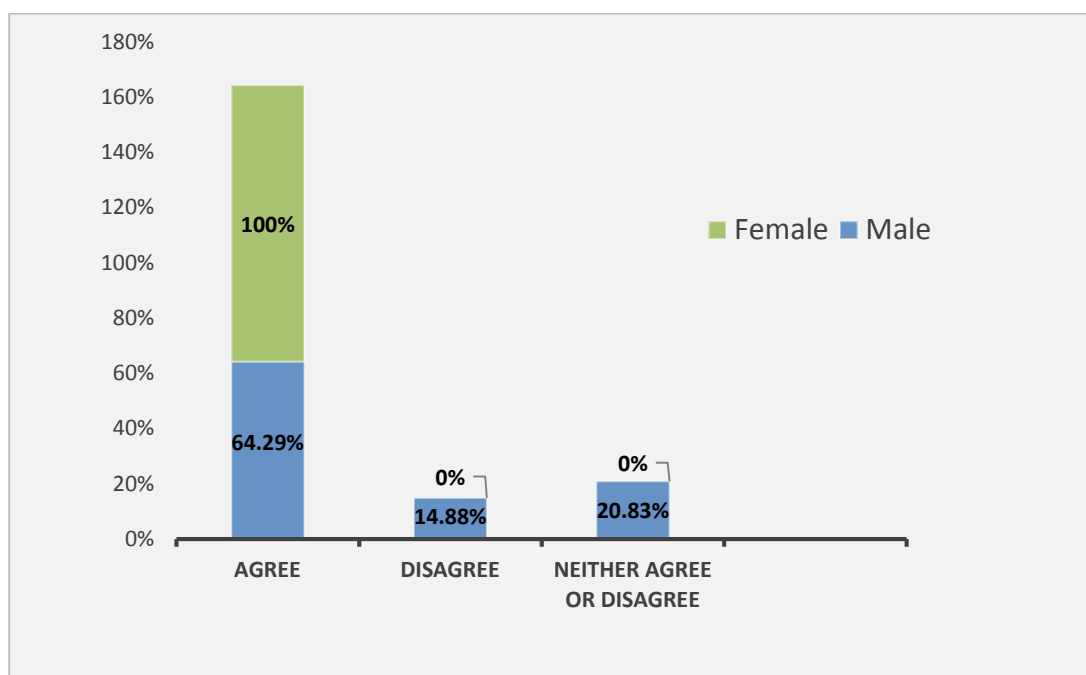


Figure 4.5: Prohibition of smoking advertisement

Majority of the doctors (100% female and 64.29% male doctors) think that smoking advertisement should not be presented in the media. Only 14.88% male doctors disagrees with it but none of the female doctors disagree with prohibition

4.4.4 Organizing smoking awareness program

Table 4.6: Organizing smoking awareness program

	Agree		Disagree		Either agree or disagree	
	Male	Female	Male	Female	Male	Female
NO	149	30	8	0	11	2
Percentage (%)	88.69%	93.75%	4.76%	0%	6.55%	6.25%

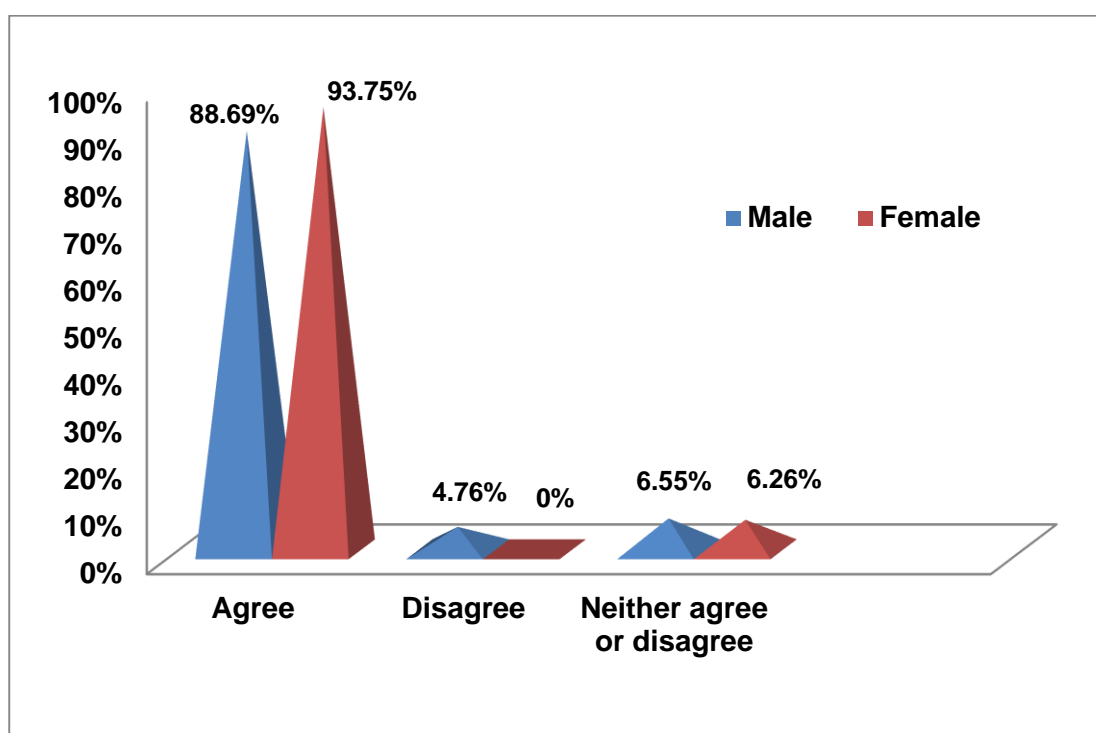


Figure 4.6: Organizing smoking awareness program

Most of the doctors feel that there is a necessity of smoking awareness program of them 88.69% is male doctors and 93.75% of the total female doctors sample and only 4% male doctors disagree and none of female doctors do.

4.3.5 Enrichment of academic curriculum regarding smoking

Table 4.7: Enrichment of academic curriculum regarding smoking

	Agree		Disagree		Either agree or disagree	
	Male	Female	Male	Female	Male	Female
NO	153	32	3	0	11	0
Percentage (%)	91.07%	100%	1.79%	0%	6.55%	0%

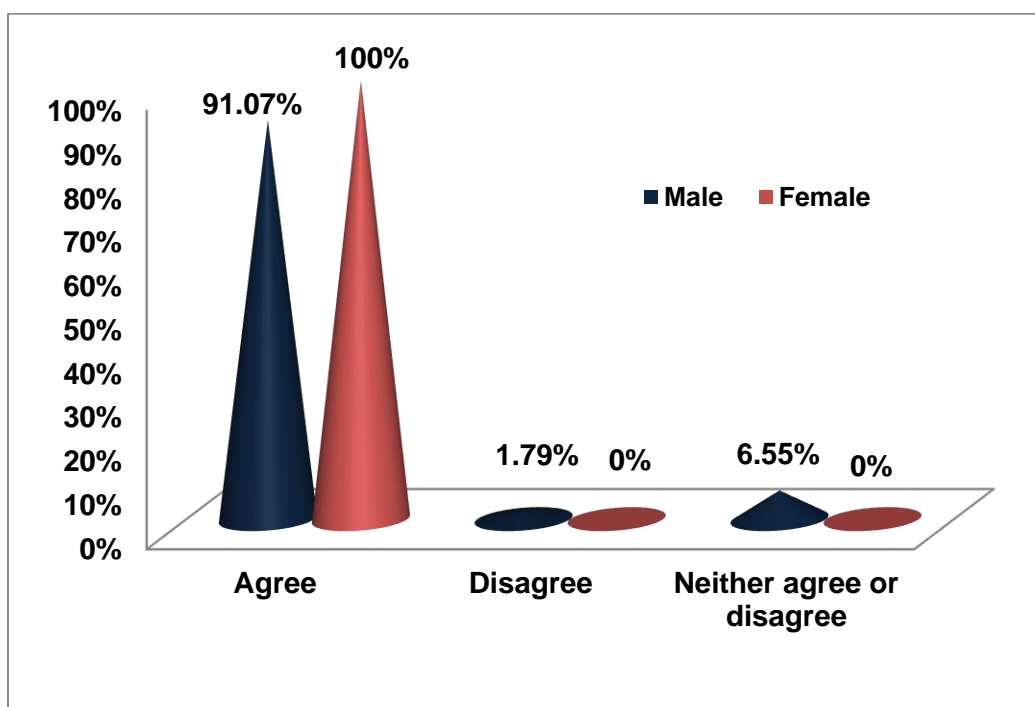


Figure 4.7: Enrichment of academic curriculum regarding smoking

Maximum doctors (100% female and 91.07% male) think that academic curriculum should contain information on harmful effects of smoking to increase the awareness of the impacts of active and passive smoking and only 1.79% males disagree to the fact.

4.4 Reasons for smoking

Table 4.8: Reasons for smoking

Reasons of smoking	No of respondents	Percentage (%)
Stress relief	41	20.5%
Image perception	11	5.5%
Companionship/peer pressure	23	11.5%
Leisurely independence	16	8%
Sign of masculinity	7	3.5%
Relief of anger and pressure	36	18%

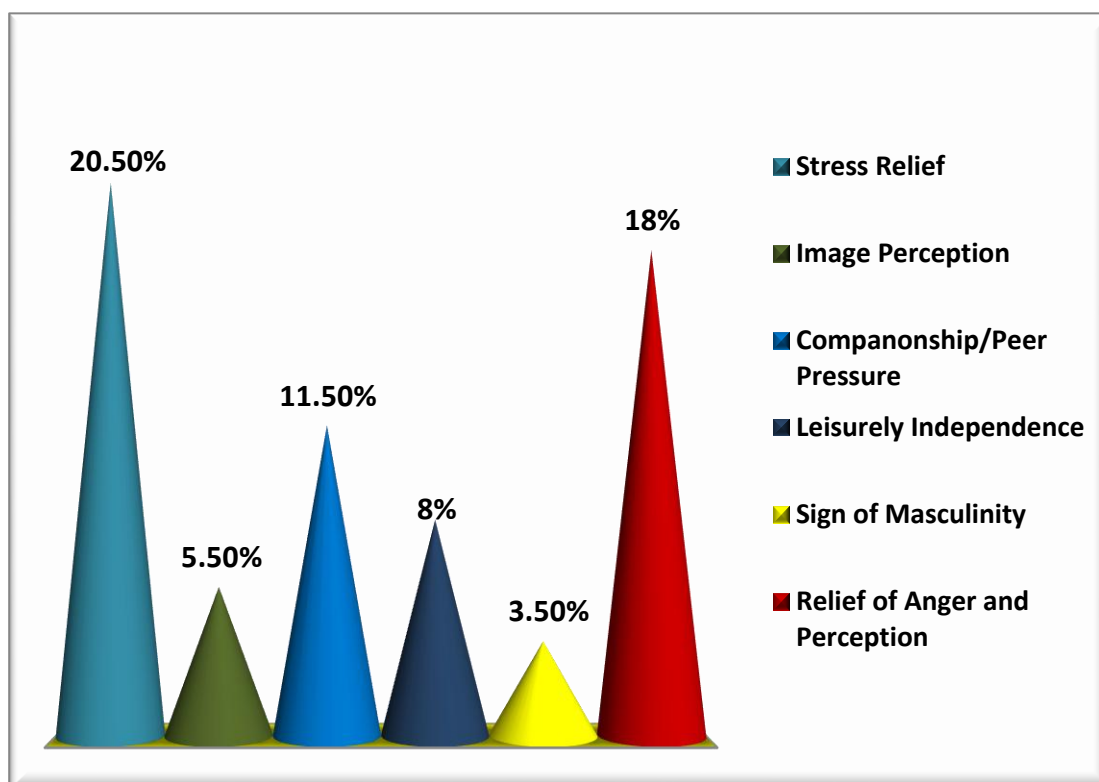


Figure 4.8: Reasons for smoking

The first main reason for smoking among the sample was to relief of the stress (20.50%) they were suffering and the second main reason was relief of anger and frustration. There were others reasons like companionship and sign of masculinity among the samples.

4.5 Comply on the restriction of smoking in their area

Table 4.9: Comply on the restriction of smoking in their area

Comply on the restriction of smoking in their area	No of respondents	Percentage (%)
Yes	145	72.5%
No	55	27.5%

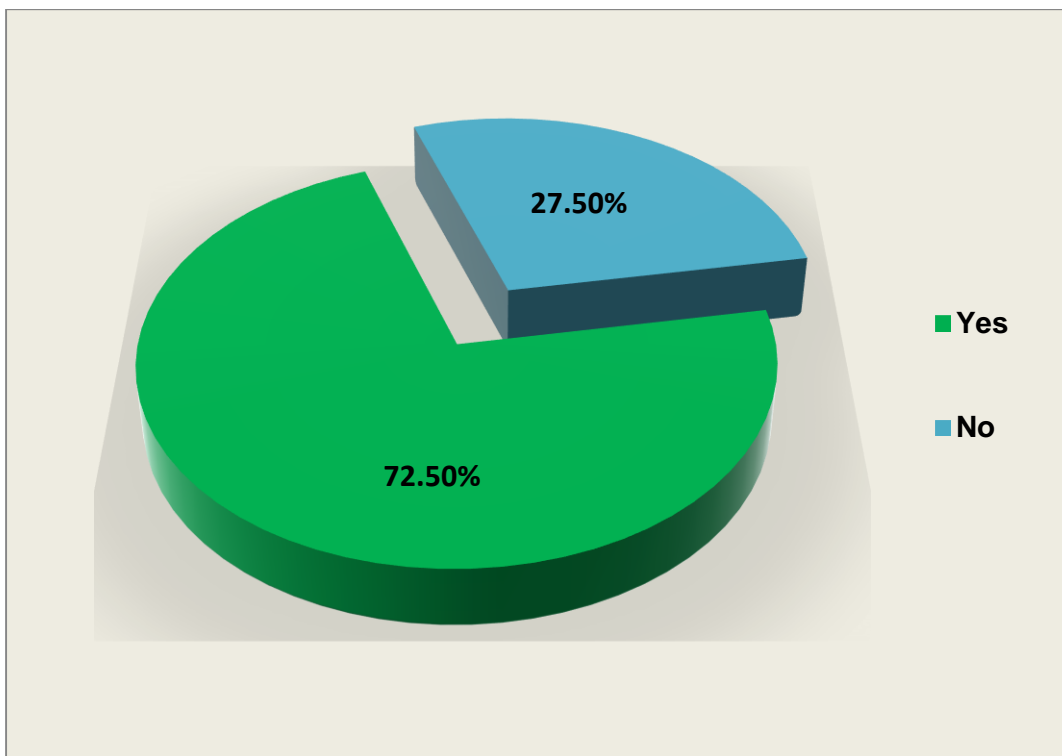


Figure 4.9: Comply on the restriction of smoking in their area

72.5% of the doctors feel that they will comply with the restriction of smoking and their self-area but 27.5% felt otherwise

4.6 Asking about patients smoking status

Table 4.10: Asking about patients smoking status

Asking about patients smoking status	No of respondents	Percentage (%)
Yes	134	67%
No	66	33%

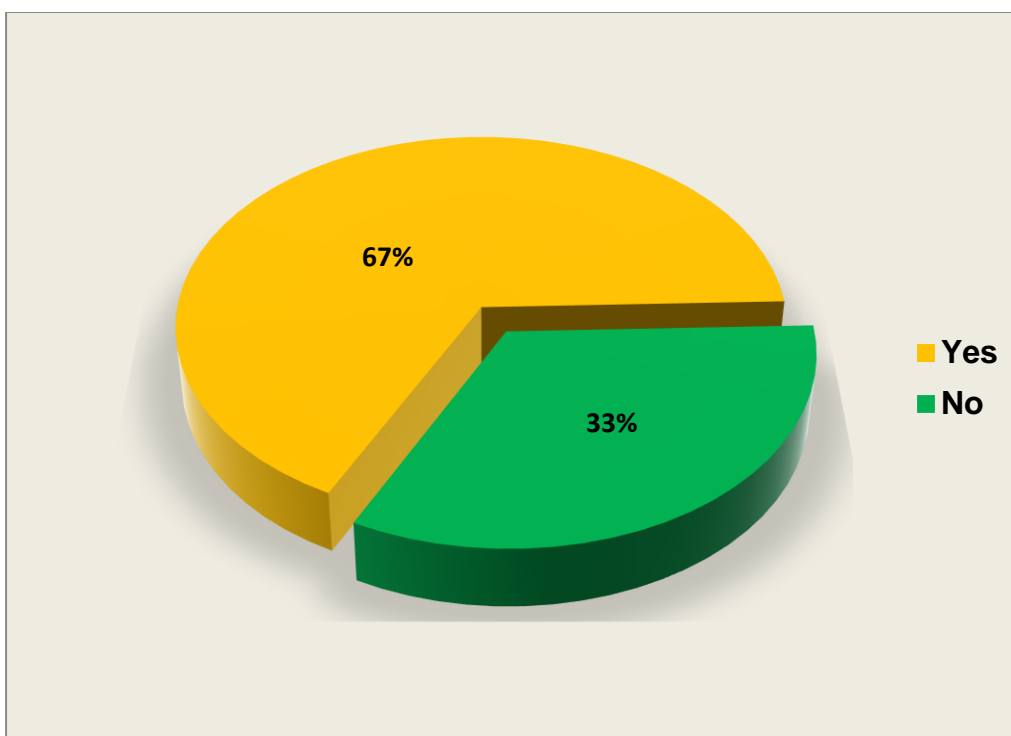


Figure 4.10: Asking about patients smoking status

The majority of the doctors (67%) responded that they ask their patients about their smoking status rest of them responded negatively.

4.7 Encouraging patient non-smoking

Table 4.11: Encouraging patient non-smoking

Encouraging patients non smoking	No of respondents	Percentage (%)
Yes	182	91%
No	18	9%

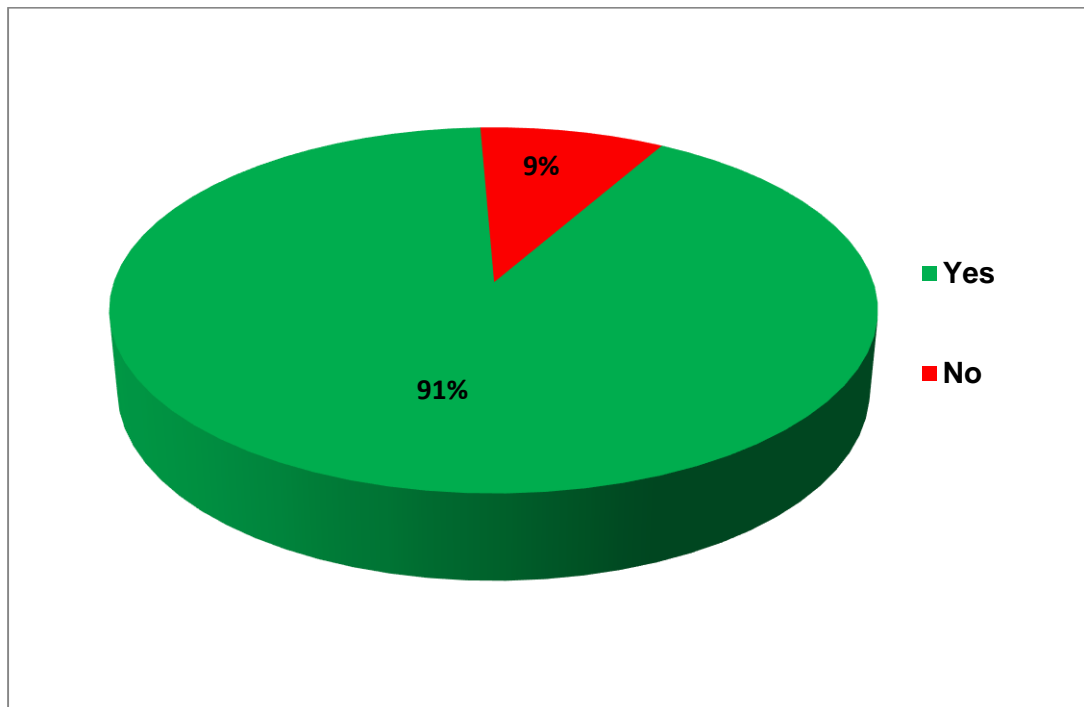


Figure 4.11: Encouraging patient non-smoking

Most of the doctors (91%) answered that they encourage their patients to quit smoking.

4.8 Discussion risk of smoking with patients

Table 4.12: Discussion risk of smoking with patients

Discussion risk of smoking with patients	No of respondents	Percentage (%)
Yes	140	70%
No	60	30%

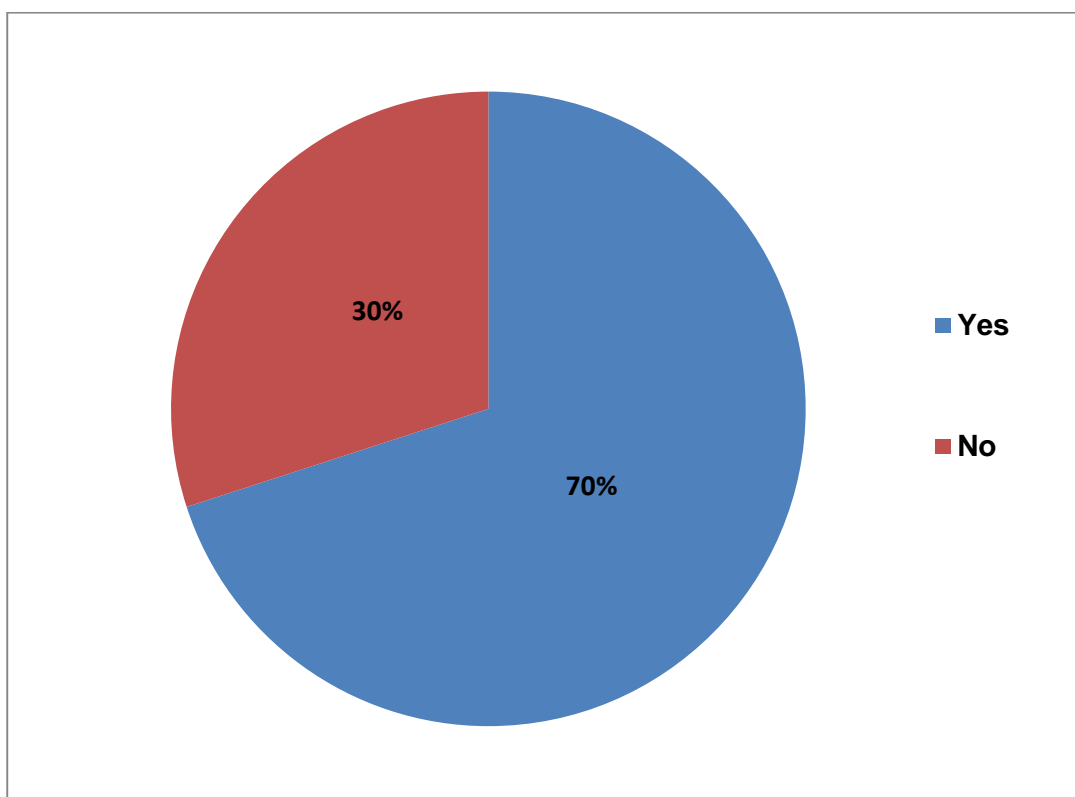


Figure 4.12: Discussion risk of smoking with patients

70% of the doctors said that they discuss the risk factors of smoking with their patients and rest of them said the opposite

4.9 Reason for not quitting smoking

Table 4.13: Reason for not quitting smoking

Reasons of not quitting smoking	No of respondents	Percentage (%)
Trying	4	2%
Relief of pressure & stress	11	5.5%
Addiction	4	2%
Habituated	11	5.5%
Dependency	7	3.5%
Relief of anger	6	3%
Feeling relax	9	4.5%
others	13	6.5%

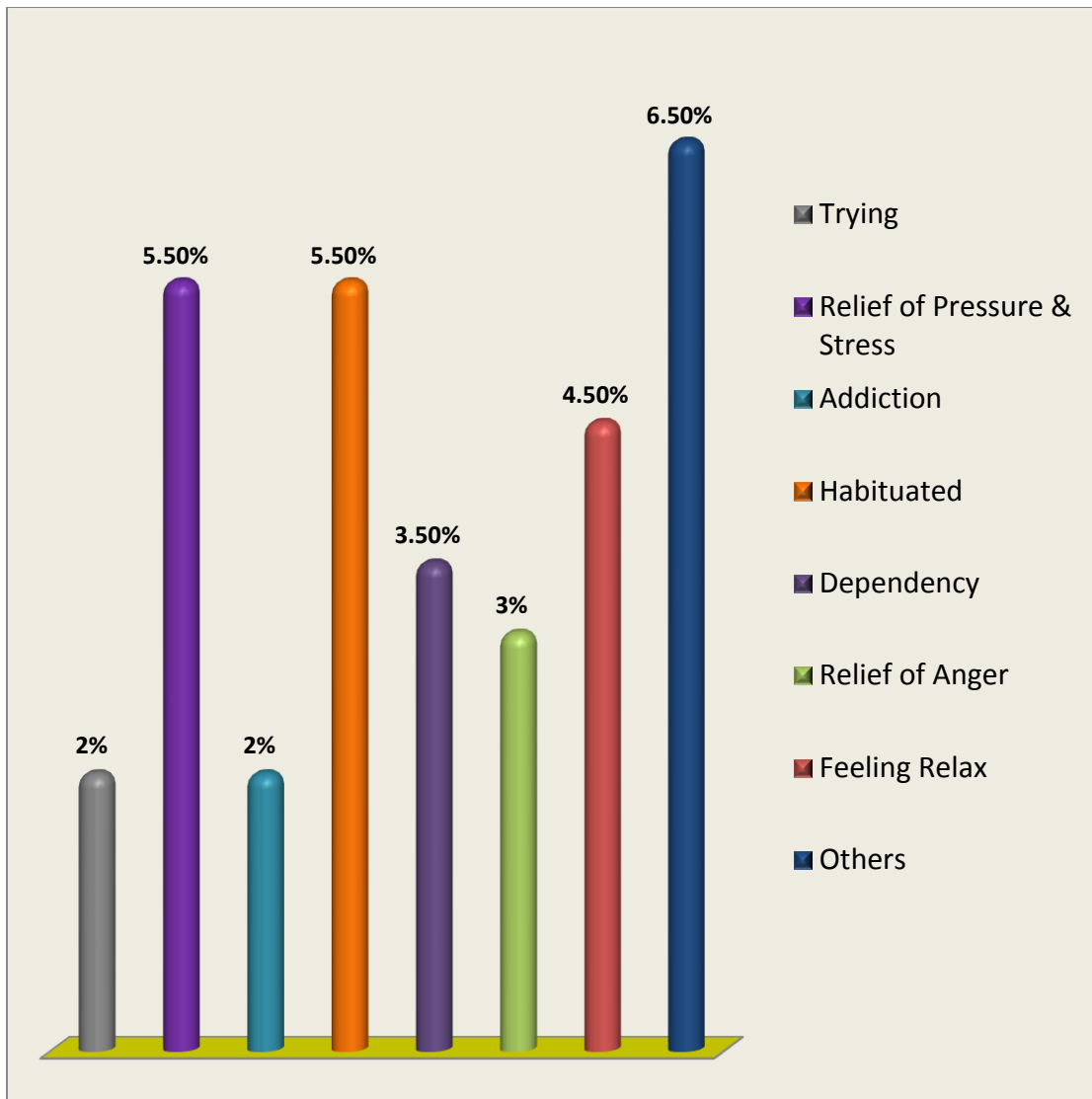


Figure 4.13: Reasons for not quitting smoking

The majority of doctors (5.5%) answered that they were habituated for smoking and smoking helps in relief of pressure and stress because of that reason they can't quit smoking. Other reasons were dependency (3.5%), addiction (2%) and other many reasons (6.5%). Only 2 % said that they were trying to quit

Chapter 5

Discussion

&

Conclusion

Discussion

Smoking has been called the chief, single, avoidable cause of death in our society and the most important public health issue of our time. Many people are doing lots of harm to themselves by doing active smoking and many people believe that people will only get affected by active smoking. But scariest part is many people are exposed to the smoking by an active smoker and they are harmed by this passive smoking. People can have an increased risk of lung cancer and heart disease if they are exposed to other people smoking for long periods of time. For example, the risk of developing lung cancer is increased by about 20-30% in people who are regularly exposed to other people's cigarette smoke. Cigarette smoke is also an irritant, and can make asthma and other conditions worse. So it can be said that passive smoking is as much as harmful as active smoking.

But while conducting this study, it was found that 36.31% of the male physicians in this country were involved in smoking which was quite high if the study of Bener, Gomes and Anderson, 1993 is compared where 43.9% of the Kuwaiti doctors were current smokers. Though the female current smoker of this country was quite low compared to the female doctors of Kuwait where 8.2% of the Kuwaiti female doctors were current smokers and ours was only 6.25%. (*Bener, Gomes and Anderson, 1993*)

Physicians can play a key role in creating awareness about passive smoking and its harmful effect. But in a study conducted in Indonesia in 2007 suggested that approximately 72% of physicians did not routinely ask about their patient's smoking status which is quite alarming and almost 80% believed that smoking up to 10 cigarettes a day was not harmful for health (Ng et al., 2007). But in this study, it was found that physician's city is quite concerned about the smoking habit of their patients. As a result, almost 67% doctors asked about patient smoking status and around 91% doctors encouraged their patients to quit smoking.

While asking about the reason behind their smoking, 20.50% said that they smoked to relief the stress and 18% of them said to relief the anger and perception. Peer pressure also a major reason for smoking. Due to these reasons physicians also found it quite hard to quit this habit.

Though huge numbers of physicians were involved in smoking, it was seen that they were quite supportive against banning smoking and creating awareness among the common people. Around 95.83% male and 93.75% doctors felt that children under

age of 16 should not have any privilege of buying cigarettes where 91.07% male and 100% female doctors believed that academic curriculum should contain information on harmful effects of smoking to increase the awareness of the impacts of active and passive smoking. To prevent against the detrimental effects of passive smoking, 76.79% male and 100% female doctors demanded for a strict law against public smoking, 64.29% male and 100% female doctors said there should be a ban on advertisement about smoking. Around 72.5% male and 27.5% female doctors agreed that they would comply with the restriction of smoking in their area.

Physicians and health care professionals have a prominent role to play in tobacco control. They have the trust of the population, the media and opinion leaders, and their voices are heard across a vast range of social, economic and political arenas. At the individual level, they can educate the population on the harms of tobacco use and exposure to second-hand smoke. They can also help tobacco users overcome their addiction.

Conclusion

Based on all the fact, it can be concluded that attitude and perception about smoking are not good state at all. Active smoking is a well-known fact to the general patients and doctors of Bangladesh and most of them well aware about the harm of active smoking. Most of the people are exposed to active smoking and most of them take steps to quit the smoke. Most of the doctors are not support smoking and also take some initiatives to quit smoking. However all the doctors also gives advice to their patients how they can stop smoking. It is however need to mention that this research was conducted on randomly chosen doctors and in a very small scale. So it doesn't reflect the whole idea. Therefore it is suggested that if a conclusive result about the attitude and perception about smoking towards doctors is desired, further large scale researches should be conducted.

Chapter 6

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