A Survey on Smoking Status and Knowledge regarding the Consequences of Smoking among the people of Dhaka City

A thesis paper submitted to the Department of Pharmacy in conformity with the requirements for the Degree of Master of Pharmacy

Maruf Kamal

2015-1-79-004

Department of Pharmacy

East West University

Declaration by the Candidate

I, Maruf Kamal hereby declare that this dissertation entitled “A Survey on Smoking Status and Knowledge regarding the Consequences of Smoking among the people of Dhaka City” submitted to the Department of Pharmacy, East West University, in the partial fulfillment of the requirement for award of the degree of Master of Pharmacy, is a record of original research work carried out by me during Spring 2016 to spring 2017 under the supervision and guidance of Ms. Nigar Sultana Tithi, Sr. Lecturer, Department of Pharmacy, East West University.

Maruf Kamal

ID # 2015-1-79-004

Department of Pharmacy

East West University

Certification by the Supervisor

This is to certify that the dissertation entitled "A Survey on Smoking Status and Knowledge regarding the Consequences of Smoking among the people of Dhaka City" is a research work done by Maruf Kamal (ID # 2015-1-79-004), in partial fulfillment of the requirement for the Degree of Master of Pharmacy, is a record of original research work carried out during Spring 2016 to Spring 2017 under the supervision and guidance of me.

Ms. Nigar Sultana Tithi

Sr. Lecturer & Supervisor

Department of Pharmacy

East West University

Certification by Chairperson

This is to endorse that the dissertation entitled "A Survey on Smoking Status and Knowledge regarding the Consequences of Smoking among the people of Dhaka City" is a research work done by Maruf Kamal (ID # 2015-1-79-004) under the supervision of Ms. Nigar Sultana Tithi, Sr. Lecturer, Department of Pharmacy, East West University.

Dr. Chowdhury Faiz Hossain

Chairperson and Professor

Department of Pharmacy

East West University

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&

Sheela Kamal

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Abstract

Tobacco smoking is a global epidemic. Tobacco and its products have dangerous harmful effects to human body. This study was aimed to get a view of smoking status and knowledge regarding the consequences of smoking among the general population of Dhaka city. Using a structured questionnaire total 315 respondents were interviewed, most of them (65.40%) were between the ages of 21-30 years and were male (67.62%). Majority of the respondents were students (50.47%) and completed Higher Secondary Certificate (40.95%). About 46.98% people smoked cigarette (37.14% current smoker and 9.84% former smoker) and 90.54% of the smokers were male. Both smokers and nonsmokers had good knowledge about the association of smoking with lung cancer (86.35%), oral cancer (73.33%) and stroke (69.52%), but they had poor knowledge about hearing loss, impotency and tuberculosis. Smoking in the public places were prevalent (52%) although majority (70.79%) knew that smoking can't be done in public places. Respondents were found to smoke mainly for relaxation (23.65%), relieving boredom (16.89%) or to enjoy the pleasant events (15.54%). The main reasons for quitting smoking among the former smokers were harmful effects on health (51.61%) and influence of family members (19.35%). Majority (38.71%) of them quit smoking suddenly while 35.48% gradually decreased the number of cigarettes. Most of the respondents showed positive attitude towards the measures for reducing smoking. Thus, it can be said that, necessary steps should be taken immediately to increase awareness about health impacts and to prevent the availability of tobacco products in Bangladesh.

Keywords: *Smoking, knowledge, health consequences, reasons for smoking, quitting smoking, Bangladesh.*

Chapter 1: Introduction

1.1 Smoking

Smoking is a practice in which a substance is burned and the resulting smoke breathed in to be tasted and absorbed into the bloodstream. Most commonly the substance is the dried leaves of the tobacco plant which have been rolled into a small square of rice paper to create a small, round cylinder called a "cigarette".

Smoking is primarily practiced as a route of administration for recreational drug use because the combustion of the dried plant leaves vaporizes and delivers active substances into the lungs where they are rapidly absorbed into the bloodstream and reach bodily tissue. In the case of cigarette smoking these substances are contained in a mixture of aerosol particles and gasses and include the pharmacologically active alkaloid nicotine; the vaporization creates heated aerosol and gas to form that allows inhalation and deep penetration into the lungs where absorption into the bloodstream of the active substances occurs. In some cultures, smoking is also carried out as a part of various rituals, where participants use it to help induce trance-like states that, they believe, can lead them to "spiritual enlightenment".

Cigarettes are primarily industrially manufactured but also can be hand-rolled from loose tobacco and rolling paper. Other smoking implements include pipes, cigars, bidis, hookahs, vaporizers, and bongs. Smoking generally has adverse health effects, because smoke inhalation inherently poses challenges to various physiologic processes such as respiration. Diseases related to tobacco smoking have been shown to kill approximately half of long term smokers when compared to average mortality rates faced by non-smokers. A 2007 report states that, each year, about 4.9 million people worldwide die as a result of smoking.

Smoking is one of the most common forms of recreational drug use. Tobacco smoking is the most popular form, being practiced by over one billion people globally, of whom the majority are in the developing world. Less common drugs for smoking include cannabis and opium. Some of the substances are classified as hard narcotics, like heroin, but the use of these is very limited as they are usually not commercially available (World Health Organization, 2014)

1.2 Prevalence of Health Impact of Smoking

Cigarette smoking is the leading cause of preventable death in the United States. Nearly a quarter of the population smokes, and approximately 438,000 deaths per year are related to smoking-related illnesses. Despite public health efforts to reduce tobacco use, prevalence rates have not changed significantly and, in some cases, have increased. In addition to health problems, smoking also has a significant fiscal impact, with tobacco-related medical expenses estimated at $75.5 billion annually.

Primary care clinicians are on the front lines of smoking prevention and cessation efforts, given the large number of cigarette smokers who visit primary care clinics each year. It is therefore essential that primary care providers be prepared to offer some type of intervention to their patients who report smoking behavior. In comparison to the respective general population, smoking rates are lower among health care professionals in the United States, Great Britain, and Brazil but higher in Hungary, Italy, Japan, Saudi Arabia and Spain. As observed in a study examining health care professionals and smoking behavior, research among health care students is limited and varies by region. Specifically, among medical students, 35–56% of Turkish, 26.8% of Chinese, 22.4% of Italian, 12.2% of Puerto Rican and 10.3% of Japanese medical students reported that they were current smokers. However, to date no research could be identified examining the rate of smoking among United States medical or health care students. While it is certain that differences among health care students will be seen across different regions of the United States, as a first step, the current study was conducted to determine smoking rates in the state of Texas (Morrell, Cohen and Dempsey, 2009).

Tobacco use is a leading public health problem all over the world with 82% of the world's 1.1 billion smokers residing in low and middle income countries and where, in contrast to the declining consumption in high-income countries, tobacco consumption is on the rise. Indian studies have recognized tobacco use as a major health hazard. Tobacco consumption has overall been a major contributor to deaths due to circulatory diseases, pulmonary and malignant diseases in India. Smoking also increases the incidence of clinical tuberculosis, is a cause of half the male tuberculosis deaths in India, and of a quarter of all male deaths in middle

age. Information on prevalence of tobacco use in India is available from surveys carried out in general community. According to the national cross-sectional household study, India has more than 200 million tobacco consumers; however, prevalence of smoking and tobacco chewing varies widely between different states, and has a strong association with individual's socio-cultural characteristics. A recent nationwide study on smoking and mortality in India estimated that smoking in persons between the ages of 30 and 69 years is responsible for about 1 in 20 deaths of women and 1 in 5 deaths of men, totaling to 1 million deaths per year. Study of smoking pattern among middle age and elderly has received poor attention despite its proven implications on health. Prevalence of current smoking was found to be 24.6% (95% CI 21.90 - 27.49). Majority 198 (88.4%) of current smokers smoked bidi exclusively, and on an average 13.5 bidi/cigarette were smoked per day. Multivariate analysis showed the factors associated with current smoking as male sex, advancing age, illiteracy, skilled occupation, low socio-economic status, and low BMI ($P < 0.001$). 64.2% were aware of the hazards of smoking. 63 (21.9%) had quit smoking in the past, majority due to the health problems. Low educational status was associated with poor hazard awareness and quitting behavior (Garg *et al*., 2012).

1.3 History of Smoking

The history of smoking can be dated to as early as 5000 BC, and has been recorded in many different cultures across the world. Early smoking evolved in association with religious ceremonies; as offerings to deities, in cleansing rituals or to allow shamans and priests to alter their minds for purposes of divination or spiritual enlightenment. After the European exploration and conquest of the Americas, the practice of smoking tobacco quickly spread to the rest of the world. In regions like India and Sub-Saharan Africa, it merged with existing practices of smoking mostly of cannabis. In Europe, it introduced a new type of social activity and a form of drug intake which previously had been unknown.

In the 20th century smoking came to be viewed in a decidedly negative light, especially in Western countries. The health hazards of smoking have caused many countries to institute high taxes on tobacco products, run ads to discourage use, limit ads that promote use, and provide help with quitting for those who do smoke (Gilman and Xun, 2004).

The history of smoking dates back to as early as 5000 BC in shamanistic rituals. Many ancient civilizations, such as the Babylonians, Indians and Chinese, burnt incense as a part of religious rituals, as did the Israelites and the later Catholic and Orthodox Christian churches. Smoking in the Americas probably had its origins in the incense burning ceremonies of shamans but was later adopted for pleasure, or as a social tool. The smoking of tobacco, as well as various hallucinogenic drugs was used to achieve trances and to come into contact with the spirit world. Substances such as Cannabis, clarified butter (ghee), fish offal, dried snake skins and various pastes molded around incense sticks dates back at least 2000 years. Fumigation (dhupa) and fire offerings (homa) are prescribed in the Ayurveda for medical purposes, and have been practiced for at least 3,000 years while smoking, dhumrapana (literally "drinking smoke"), has been practiced for at least 2,000 years. Before modern times these substances have been consumed through pipes, with stems of various lengths or chillums.

Cannabis smoking was common in the Middle East before the arrival of tobacco, and was early on a common social activity that centered on the type of water pipe called a hookah. Smoking, especially after the introduction of tobacco, was an essential component of Muslim society and culture and became integrated with important traditions such as weddings, funerals and was expressed in architecture, clothing, literature and poetry. Cannabis smoking was introduced to Sub-Saharan Africa through Ethiopia and the east African coast by either Indian or Arab traders in the 13th century or earlier or spread on the same trade routes as those that carried coffee, which originated in the highlands of Ethiopia. It was smoked in calabash water pipes with terra cotta smoking bowls, apparently an Ethiopian invention which was later conveyed to eastern, southern and central Africa. Reports from the first European explorers and conquistadors to reach the Americas tell of rituals where native priests smoked themselves into such high degrees of intoxication that it is unlikely that the rituals were limited to just tobacco (Gilman and Xun, 2004).

1.4 Types of Tobacco Products

There is no safe form of tobacco use. All forms contain nicotine and can cause addiction and health problems.

1.4.1 Bidis

Bidis are small, thin hand-rolled cigarettes imported to the United States primarily from India and other Southeast Asian countries. They consist of tobacco wrapped in a tendu or temburni leaf (plants native to Asia), and may be secured with a colorful string at one or both ends. Bidis can be flavored e.g., chocolate, cherry, mango or unflavored. Bidi smoking is associated with an increased risk for oral, lung, stomach, and esophageal cancer and an increased risk for coronary heart disease and heart attacks, and risk for chronic bronchitis. Bidis are carcinogenic. There is no evidence to indicate that bidis are safer than conventional cigarettes. They have higher concentrations of nicotine, tar, and carbon monoxide than conventional cigarettes sold in the United States, so are even more addictive than cigarettes (Tobacco products, 2009).

1.4.2 Cigars, Cigarillos and Little Cigars

Most cigars are made up of a single type of air-cured or dried tobacco. Cigar tobacco leaves are first aged for about a year and then fermented in a multi-step process that can take from 3 to 5 months. Fermentation causes chemical and bacterial reactions that change the tobacco. This is what gives cigars a different taste and smell from cigarettes. Regular cigars are larger than cigarettes and do not have a filter. Little cigars or cigarillos are very similar in size have filters and are filled with pipe tobacco. Little cigars are flavored e.g., chocolate, cherry, apple, and mango. They are sold in packs of 20 just like cigarettes or singly. Cigars contain higher level of nicotine than cigarettes. For those cigar smokers who inhale, the nicotine is absorbed through the lungs as quickly as it is with cigarettes. For those who do not inhale, the nicotine is absorbed more slowly through the lining of the mouth (Tobacco products, 2009).

1.4.3 Dissolvable Tobacco

This type of tobacco is finely processed to dissolve on the tongue or in the mouth. Varieties include strips, sticks, orbs and compressed tobacco lozenges. They are smoke and spit free, are held together by food-grade binders and look similar to a breath mint or candy. Since this product is very new to the market, research has not been conducted on the health effects. This

product does contain nicotine. Smokeless tobacco products are known to cause significant health risks and are not a safe substitute for smoking tobacco.

1.4.4 Hookah

Hookah is a pipe used to smoke Shisha, a combination of tobacco and fruit or vegetable that is heated and the smoke is filtrated through water. The Hookah consists of a head, body water bowl and hose. The tobacco or Shisha is heated in the hookah usually using charcoal. According to a World Health Organization advisory, a typical one hour session of hookah smoking exposes the user to 100 to 200 times the volume of smoke inhaled from a single cigarette. Even after passing through water, tobacco smoke still contains high levels of toxic compounds, including carbon monoxide, heavy metals and cancer-causing chemicals. Hookah smoking also delivers significant levels of nicotine the addictive substance in tobacco. Hookah smoking has been associated with lung, mouth and other cancers, heart disease and respiratory infections. The substances used to heat the tobacco also produce carbon monoxide, heavy metals and cancer causing chemicals, creating its own health hazards. Sharing the mouthpiece of the Hookah has been associated with mouth and other infections including herpes, tuberculosis and hepatitis (Tobacco products, 2009).

1.4.5 Kreteks

Kreteks are sometimes referred to as clove cigarettes. Kreteks are imported from Indonesia, and typically contain a mixture consisting of tobacco, cloves, and other additives. As with bidis, standardized machine-smoking analyses indicate that kreteks deliver more nicotine, carbon monoxide, and tar than conventional cigarettes. Kretek smoking is associated with an increased risk for acute lung injury, especially among susceptible individuals with asthma or respiratory infections. Research shows that regular kretek smokers have 13−20 times the risk for abnormal lung function compared with nonsmokers. There is no evidence to indicate that kreteks are safe alternatives to conventional cigarettes (Tobacco products, 2009).

1.4.6 Pipe

Pipes are often reusable and consist of a chamber or bowl, stem and mouthpiece. Tobacco is placed into the bowl and lit. The smoke is than drawn through the stem and mouthpiece and inhaled. Pipe smoking has been shown to cause gum disease and tooth loss, cancer of the mouth, lip, tongue, throat, larynx, lung, pancreas, kidney, bladder, colon, and cervix as well as leukemia and diseases such as chronic obstructive lung disease, stroke, and coronary heart disease. Pipe smoking can also cause "hairy tongue," furry-looking bumps on the tongue that can become stained by tobacco, making the tongue look discolored or black.

1.4.7 Smokeless Tobacco

The two main types of smokeless tobacco in the United States are chewing tobacco and snuff. Chewing tobacco comes in the form of loose leaf, plug, or twist. Snuff is finely ground tobacco that can be dry, moist, or in sachets. Although some forms of snuff can be used by sniffing or inhaling into the nose, most smokeless tobacco users place the product in their cheek or between their gum and cheek. Users then suck on the tobacco and spit out the tobacco juices, which is why smokeless tobacco is often referred to as spit or spitting tobacco. The nicotine in this tobacco is absorbed primarily through the skin in the mouth. Smokeless tobacco is a significant health risk and is not a safe substitute for smoking cigarettes. Smokeless tobacco contains 28 cancer-causing agents. It increases the risk of developing cancer of the oral cavity, is strongly associated with leukoplakia (a lesion of the soft tissue in the mouth that consists of a white patch or plaque that cannot be scraped off) and recession of the gums. Using smokeless tobacco can lead to nicotine addiction and dependence and is not a safe alternative to smoking (Tobacco products, 2009).

1.4.8 Menthol Cigarettes

Menthol is a substance naturally found in mint plants such as peppermint and spearmint that gives a cooling sensation. It is an additive in cigarettes, cigars, little cigars, smokeless tobacco products, and tobacco rolling paper. Brands marketed as menthol cigarettes have enough

menthol added to describe them as having a menthol flavor. However, brands not labeled as menthol may contain low levels of it as well. The tobacco industry has marketed menthol cigarettes as being a "healthier" and "safer" cigarette, emphasizing its cool and refreshing taste. In reality, menthol reduces the harshness of cigarette smoke, which makes it easier to smoke especially for children and teens. Many people choose menthol cigarettes because they believe menthol cigarettes are safer than non-menthol cigarettes. However, no evidence exists indicating that menthol cigarettes are safer. All cigarette smoking is linked to many cancers and other diseases. No tobacco product is safe (U.S. Department of Health & Human Services, 2016).

1.4.9 Non-tobacco nicotine delivery

Of course, use of tobacco products is not the only way humans can self-administer nicotine. Around the world, nicotine-containing medications have been approved in several forms: transdermal patches, gum, lozenges, sublingual tablets, inhalers and nasal sprays. The nicotine in such medications is ultimately derived from tobacco, rather than synthesized in the laboratory. All of these products have undergone numerous randomized controlled trials and have demonstrated safety and efficacy in increasing the likelihood of cessation. In most countries, nicotine replacement therapies (NRTs) are approved for brief use (12 weeks) for cessation of smoking, though the UK has recently expanded its indications to assist smokers in reducing their cigarette consumption.

The WHO in 2009 added NRT (patches and gum) to its Essential Medicines list, a testament to its safety and efficacy track record and in recognition of the public health need for efficacious smoking cessation treatments in the context of the Framework Convention on Tobacco Control (FCTC). A number of authors have made the case for NRTs as harm reduction products for smokers unable or unwilling to quit. There is emerging evidence that a substantial minority of NRT use is for reasons other than cessation with little evidence of abuse by non-tobacco users a broad class of products has also emerged over the last two decades that claim to provide nicotine apart from traditional tobacco or pharmaceutical sources. In the 2000s, for example, several websites began offering nicotine lollipops and lip balms, which were rejected

by US regulators as unapproved drugs and abuses of the compounding privilege afforded to pharmacists. A related product concept marketed several times in different forms is bottled water containing nicotine. Other products have included 'tobacco gel' substitutes for cigarettes, made from tobacco extracts and delivering nicotine transdermally. However, these 'underground' products have tended not to attract much market share (O'Connor, 2011).

1.4.10 Electronic nicotine delivery systems (ENDS)

Electronic nicotine delivery systems (ENDS) upset this trend. Emerging in 2006 in China, they became more widely available throughout the world in 2008–2009. These devices often constructed to resemble cigarettes, work by vaporizing a solution containing nicotine dissolved with flavorings in a carrier medium usually propylene glycol. The products have typically been promoted as having reduced health risk compared to tobacco use and able to be used in situations where smoking is prohibited. The product occupies an interesting place with respect to harm reduction; unlike the case of medicinal nicotine products or even Swedish suns, where data on relative harms are plentiful, data on ENDS are lacking. On one hand, nicotine delivered by vapor with few known toxicants should theoretically carry relatively low risks, particularly when compared to cigarettes. The limited data available suggest that the products are not likely to approach the health hazards of cigarettes. On the other hand, significant concerns exist with the purity of ingredients employed, device functionality and quality control, the ease with which devices can be modified by users. (O'Connor, 2011).

1.4.11 Passive smoking

Passive smoking is usually involuntary consumption of smoked tobacco. Second-hand smoke (SHS) is the consumption where the burning end is present, environmental tobacco smoke or third-hand smoke is the consumption of the smoke that remains after the burning end has been extinguished. Because of its perceived negative implications, this form of consumption has played a central role in the regulation of tobacco products (Gilman and Xun, 2004).

1.4.12 Roll-Your-Own

Roll-Your-Own or hand-rolled cigarettes, often called "rollies", "cigi" or "Roll-ups", are very popular particularly in European countries and the UK. These are prepared from loose tobacco, cigarette papers, and filters all bought separately. They are usually much cheaper than ready-made cigarettes and small contraptions can be bought making the process easier.

1.4.13 Vaporizer

A vaporizer is a device used to sublimate the active ingredients of plant material. Rather than burning the herb, which produces potentially irritating, toxic, or carcinogenic by-products; a vaporizer heats the material in a partial vacuum so that the active compounds contained in the plant boil off into a vapor. This method is often preferable when medically administrating the smoke substance, as opposed to directly pyrolyzing the plant material (Gilman and Xun, 2004).

1.5 Elements of Cigarette Smoking

1.5.1 Nicotine

Nicotine is a substance that stimulates the brain. If people are a regular smoker, when the blood level of nicotine falls, they usually develop withdrawal symptoms, such as:

- Craving.
- Anxiety.
- Restlessness.
- Headaches.
- Irritability.
- Hunger.
- Difficulty with concentration.
- Just feeling awful.

These symptoms are relieved by the next cigarette. So, most smokers need to smoke regularly to feel normal and to prevent nicotine withdrawal symptoms.

1.5.2 Tar which contains many chemicals

These deposit in the lungs and can get into the blood vessels and be carried to other parts of the body. Cigarette smoke contains over 4,000 chemicals, including over 50 known causes of cancer and other poisons.

1.5.3 Carbon monoxide

This chemical affects the oxygen-carrying capacity of the blood. In particular, in pregnant women who smoke, this causes a reduced amount of oxygen to get to the growing baby. This is thought to be the most important cause for the bad effects of smoking on the growing baby (Patient, 2015).

1.6 Physiological changes associated with smoking impacts

Inhaling the vaporized gas form of substances into the lungs is a quick and very effective way of delivering drugs into the bloodstream and affects the user within less than a second of the first inhalation. The lungs consist of several million tiny bulbs called alveoli that altogether have an area of over 70 m^2. This can be used to administer useful medical as well as recreational drugs such as aerosols, consisting of tiny droplets of a medication, or as gas produced by burning plant material with a psychoactive substance or pure forms of the substance itself. Not all drugs can be smoked, for example the sulphate derivative that is most commonly inhaled through the nose, though purer free base forms of substances can, but often require considerable skill in administering the drug properly. The method is also somewhat inefficient since not all of the smoke will be inhaled. The inhaled substances trigger chemical reactions in nerve endings in the brain due to being similar to naturally occurring substances such as endorphins and dopamine, which are associated with sensations of pleasure. The result is what is usually referred to as a "high" that ranges between the mild stimulus caused by nicotine to

the intense euphoria caused by heroin, cocaine and methamphetamines. Inhaling smoke into the lungs, no matter the substance, has adverse effects on one's health. The incomplete combustion produced by burning plant material, like tobacco or cannabis, produces carbon monoxide, which impairs the ability of blood to carry oxygen when inhaled into the lungs. There are several other toxic compounds in tobacco that constitute serious health hazards to long-term smokers from a whole range of causes; vascular abnormalities such as stenosis, lung cancer, heart attacks, strokes, impotence, low birth weight of infants born by smoking mothers. 8% of long-term smokers develop the characteristic set of facial changes known to doctors as smoker's face. Tobacco smoke is a complex mixture of over 5,000 identified chemicals, of which 98 are known to have specific toxicological properties.

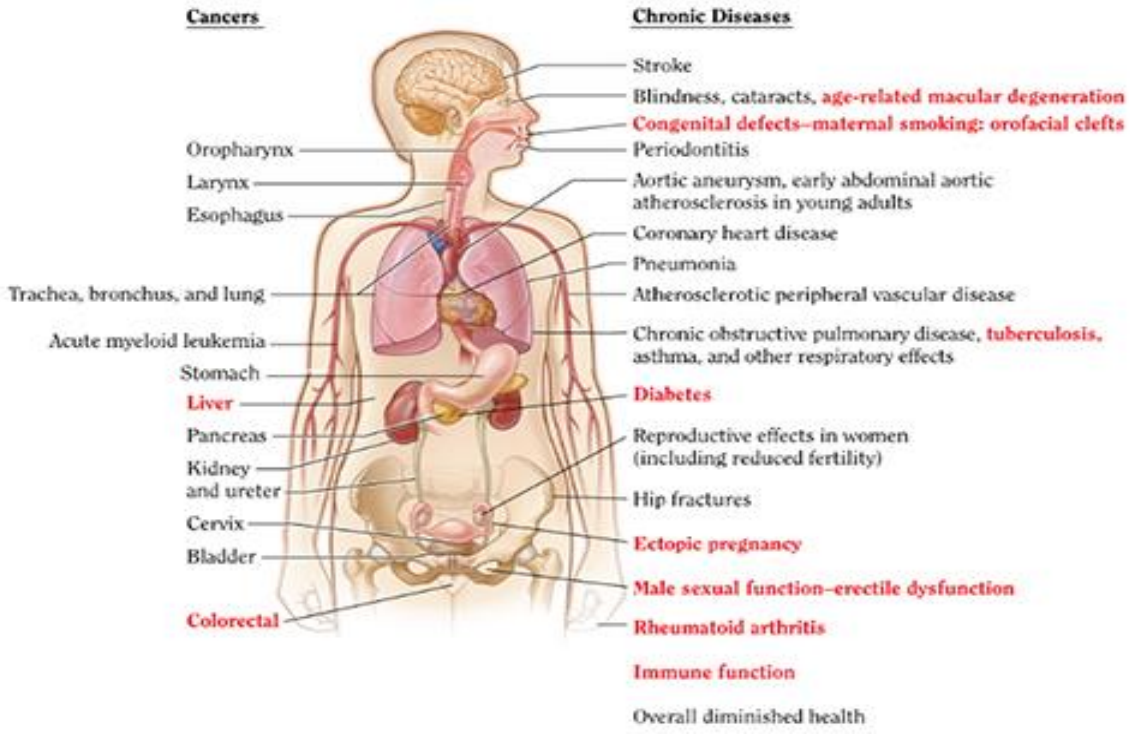

Figure: Physiology of smoking (Centers for Disease Control and Prevention, 2015)

The most important chemicals causing cancer are those that produce DNA damage since such damage appears to be the primary underlying cause of cancer. Combined the microgram weight of the compound in the smoke of one cigarette with the known genotoxic effect per microgram to identify the most carcinogenic compounds in cigarette smoke. Cigarette smoking harms

nearly every organ of the body, causes many diseases, and reduces the health of smokers in general. Quitting smoking lowers the risk for smoking-related diseases and can add years to our life (Gilman and Xun, 2004).

1.7 Factors affecting smoking

1.7.1 Environmental factors

Factors in the environment that potentially influence initiation and maintenance of smoking by adolescents have been the focus of many investigations since early studies demonstrated the importance of peer and parental smoking as risk factors. The broad categories that have been studied are: smoking among parents, siblings and peers; attitudes and norms about smoking including parental reactions to smoking by their children; family environment; and attachment to family and friends. Availability and ease of acquiring cigarettes are also environmental factors that can have an impact on smoking among adolescents. Interpretation of these studies was complicated by inconsistencies in the outcome variable (smoking status, intentions, initiation, and attitudes); the different combinations of predictor variables; the range of methods and populations; and the variety of analytical approaches that have been used (O'Connor, 2011).

1.7.1.1 Smoking among parents

The impact of parental smoking has been studied in a wide range of contexts in a large number of studies with a variety of outcomes. Approximately twice as many of the reviewed studies have found a significantly increased risk of adolescent smoking with parental smoking. Some of the inconsistencies may reflect gender-specific differences: parental smoking may be more important for girls than boys because several studies reported a significant effect only for girls whereas none found the reverse. It is unclear whether parental smoking has a stronger influence when it occurs in the same-gender parent: reports have both supported and opposed this hypothesis. A dose-response effect may also be present, with a stronger influence if both parents smoke. Finally, some reports noted that the significance of parental smoking depended

on the outcome studied. It was significant only for intention to smoke and not for current smoking in one study. Another study found paternal smoking significant for current smoking but not for experimental smoking, whereas maternal smoking was significant for both. Parental attitudes toward smoking and, in particular, toward their own children's smoking have been shown to be related to adolescent smoking. Parental indifference to their child's smoking increased the likelihood of smoking in American 13–14 year olds.

1.7.1.2 Siblings and peers

The weight of the summarized studies supports the influence of sibling smoking on adolescent smoking. Some of the studies reporting non-significant results did find a significant effect of sibling smoking before controlling for other variables in multivariate analyses. In some studies, the influence of smoking by siblings was stronger than that of smoking by parents. Sibling but not parental smoking was also associated with less negative attitudes towards smoking. Given the influence of parental and sibling smoking, it is not surprising that some adolescents attributed their own initiation to smoking to the fact that one or more of their family members smoked. Aspects of the family environment which have been examined with regard to adolescent smoking include parental supervision, attachment, support, and parenting style. The amount of time in self-care, lack of knowledge about their children's friends and inadequate monitoring were associated with increased smoking, although other studies on parental supervision did not observe a significant relationship. A permissive, distracted family environment was also related to illicit drug use in girls. Findings with regard to peer smoking were more consistent than those for parental smoking. "Peers" have been variously defined as classmates, friends, and best friends, opposite or same sex friends, and boyfriends or girlfriends. The influence of best friends has been noted to be greater than that of other good friends which, in turn, was greater than that of peers of the same age. Regardless of the definition used, however, peer smoking was consistently found to be related to adolescent smoking initiation, maintenance and intentions. Some of the inconsistency in the reported influence of parental smoking on adolescent smoking may reflect whether peer smoking was also examined, because the effect of parental smoking may become non-significant after controlling for peer smoking. It is less the existence of a causal relationship between peer and

individual smoking than the direction of that association that has been a matter of debate. It is unclear whether peer influence leads to smoking or whether individuals who smoke tend to seek out other smokers. Peer influence may be modified by group membership: smoking by best friends was found to be related to adolescent smoking for group outsiders but not for group members. This result support that social isolates were more likely to become smokers. Normative values appear to play a role; different measures of smoking were related to "pressure to smoke" and "pressure not to smoke" but not to actual prevalence of smoking. In addition, adolescent smokers tended to overestimate the prevalence of smoking among peers. The perceived prevalence of adult smoking is less clear. Perceived smoking by friends, however, was reported to be a stronger predictor of cigarette use than friends' actual use. Some factors may be differentially important at different ages (O'Connor, 2011).

1.7.1.3 Family environment

The most important component of parental attachment may be attachment to the mother: it has been related to smoking in studies where attachment to the father was not significant. A poor relationship between mother and child was associated with a higher prevalence of smoking for boys and girls; a poor father/child relationship significantly influenced smoking only for girls. Parental attachment and support may interact with parental smoking to influence smoking among adolescents. Parental and other adult support was protective against adolescent smoking mainly at low levels of parental smoking. Adolescents modelled their parents' smoking status more closely as attachment to their parents increased. An authoritative, positive parenting style has been associated with lower levels of adolescent smoking. Some aspects of child rearing, however, may have differential effects for males and females. Low parental concern increased the risk of boys taking up regular smoking whereas poor communication with parents and restrictions on going out raised the prevalence of smoking in girls (O'Connor, 2011).

1.7.1.4 Attachment of friends

Another study found that "best friend tried smoking" was related to smoking initiation during elementary school and "most of five closest friends tried smoking" was related to smoking initiation during high school. The extent to which the individual is bonded or attached to peers

is perhaps the underlying mechanism for the influence that peers exert on adolescent behavior. Various constructs used to describe this phenomenon include social support, need for affiliation, social bonding, and attachment. Peer attachment has been reported to raise the risk of adolescent smoking. Peer support had no influence when friends were non-smokers, but increased smoking when peers smoked and there was little parental or other adult support. Peer indifference or approval of smoking and drug use has been associated with increased adolescent smoking: smokers do not believe that peers encourage smoking, but that they do not discourage it. The observation that peer variables appear important across ages and countries probably indicates something about the way adolescents learn to function in society. The consistency and magnitude of the relationships lead to conclusions about the power of social connections for maturation and for the adoption of behaviors as well as attitudes and beliefs. The final variable to be discussed in this section is the accessibility of tobacco. Tobacco is generally available to adolescents. Despite legislation that prohibits sales to minors, they are able to acquire cigarettes and other tobacco products through direct purchase themselves, through older friends and family members, or by stealing from parents and other adults who smoke. Although accessibility is important, it has been shown to be less so than other reasons cited for smoking (O'Connor, 2011).

1.7.2 Behavioral factors

There were three major categories of behavioral variables. First one was those factors related to school, primarily academic performance and aspirations. A second category contained risk taking or deviant factors such as violence and gang membership. A final related grouping included lifestyle factors such as diet, exercise, sleep, and dental care.

1.7.2.1 Factors related to school

Behaviors related to sexual activity, seatbelt use, and alcohol and other drug use are indicators of lifestyle, but also can be described as risk taking. Smoking status has been found to be consistently related to school performance and has also been associated with educational aspirations and commitment to school. Those students who do well in school, have high

academic aspirations and are committed to school are less likely to smoke than those who do not possess these characteristics. The protective effect of academic performance, aspirations, and commitment on adolescent smoking may reflect beliefs necessary for academic success (O'Connor, 2011).

1.7.2.2 Risk taking or deviant factors

A longitudinal study of American 12–14 year olds found that belief in conventional rules was associated with lower levels of smoking. Risk taking and deviance encompass a pattern of problem prone behaviors that frequently tend to coincide. For example, measures of deviance and risk taking were related to trying to smoke, current smoking, and associating with smoking friends. As well, certain risky behaviors such as having a history of trouble with the police and, for some ethnic groups, carrying a weapon were also associated with smoking. Although not all studies have shown this relationship, overall results tended to support this pattern.

1.7.2.3 Lifestyle factors

Lifestyle behaviors tend to occur together in adults, so that individuals who adopt a healthy lifestyle with regard to one aspect of their lives tend to do so in others as well. This pattern also appears to occur in adolescents. For example, problem behaviors such as smoking and other drug use, sexual activity, riding with a drinking driver, carrying a weapon, and physical fighting have been associated with lower levels of health enhancing behaviors such as seatbelt use, positive eating behavior, and adequate sleep. Alcohol and other drug use increased the risk of smoking among adolescents whereas participation in sports or other physical exercise consistently protected against smoking. Not following a healthy lifestyle can be considered a form of risk taking if the individual has knowledge of its health implications. Although this knowledge was not assessed in some of the studies reviewed, it is unlikely that young people are unaware of the health risks of unprotected sexual activity or the use of tobacco, alcohol, and other drugs. Hence, adoption of behaviors such as these can be considered to be risk taking in most adolescents. Research results supported the conclusion that these unhealthy practices were related to smoking initiation and maintenance in a wide range of settings (O'Connor, 2011).

1.7.3 Personal factors

Research on psychosocial correlates of smoking and other drug use, specifically investigations of personality characteristics, motivational factors such as stress, and personal resources such as coping, has arisen from attempts to delineate the mechanisms explaining initiation to smoking among some population subgroups defined by their socio demographic characteristics. Stress and associated distress or depression are important factors in the initiation to smoking. It has long been recognized that life change or life stress may have a substantial negative impact on emotional wellbeing. It is the unsuccessful adjustment to this life change that is postulated to lead to psychological distress. Indeed, in adult and adolescent samples, stress has been shown to be positively correlated with levels of psychological distress. It has been repeatedly demonstrated that stress, measured in a variety of ways, is associated with initiation to smoking and with maintenance of the behavior. For those studies that do not include a direct measure of stress, the impact can be implied through associations with its outcome. The use of smoking for dealing with stress is not unexpected as nicotine may have direct pharmacological effects that moderate stress. In fact, smoking has been cited as a means of dealing with stress among young smokers as well as among adults. Although there is some evidence that drugs in general are used for coping. A study shows that smoking was consistently reported to be a coping mechanism. The relationship of smoking status and the availability of other coping strategies for dealing with stress has been investigated with significant and non-significant results. It has been reported that, although a total coping score was not associated with ever/never-smoking, problem solving was higher in never-smokers, and drug use and ventilation of feelings were more likely to be used as coping strategies in ever smokers (O'Connor, 2011).

1.7.4 Socio-demographic factors

The factors included age; gender; ethnicity and acculturation; living arrangements, family size and structure; parental socioeconomic status (SES); spending money and employment status; and rural/urban residence. In some studies, it was difficult to separate these factors because there are collinear relationships between such variables as SES, family size, and educational

level of parents. There was also considerable overlap between the studies in this section and others, because almost all of the studies in this review examined some socio-demographic variables.

1.7.4.1 Age

Initiation and prevalence of smoking among adolescents typically rise with increasing age and grad. Adolescents who began smoking at a younger age were more likely to become regular smokers and less likely to quit smoking.

1.7.4.2 Gender

Although historically the prevalence of smoking was higher among men than women, the rates of current smoking and initiation to smoking were approximately equal for the two groups, at least in North America. For adolescents, however, reported smoking rates among girls were higher than for boys in some studies from the 1980s, with conflicting accounts in other reports of no gender differences or higher rates among boys. Reports of equal or higher levels of smoking by females were primarily found in studies with subjects from countries with a Western cultural orientation: England, New Zealand and the United States, rather than an "Eastern" one with higher smoking levels among males: China, Japan, and Sri Lanka. Also consistent with this pattern of East/West differences was a report from the United States of a significantly higher risk of current smoking among Vietnamese boys, whereas the risk was lower among white and Hispanic boys than among girls of these same ethnic/racial groups. These patterns reflect the gender differences found among adults in these countries. There were a few exceptions to this pattern. In Canada, a significantly higher prevalence of smoking in males (20.5%) than females (18.4%) was reported whereas the opposite might be expected. Possible explanations for this inconsistent result are the study's inclusion of older subjects, who would be more likely to show the pattern of slightly higher rates of smoking seen in adult Canadian men, or the small gender difference that only reached statistical significance because of the large sample size (n = 8018). One other article reported discrepant results. A study of Icelandic adolescents found higher levels of smoking for adolescent girls, as might be expected, but a study in another Nordic country, Finland, found higher smoking rates for boys.

The reasons for the recent increase in smoking rates for girls in the west are diverse and probably include such factors as focused advertising and concerns about weight control. Despite the potential differences in mechanisms, however, smoking rates among boys and girls were often similar, with many studies reporting non-significant gender differences (Tyas and Pederson, 1998).

1.7.4.3 Ethnicity and acculturation

The rates of smoking for North American aboriginal peoples are consistently the highest of any ethnic group studied. It is well documented, however, that blacks show significantly lower levels of initiation and current smoking than whites or Hispanics. The reasons for this difference are not clear, particularly given that many of the variables associated with smoking, such as low SES, poverty, dysfunctional families, and low educational aspirations, tend to cluster in some "black" geographical areas. Among blacks who do smoke, the mechanisms may be different from those for whites; smoking may serve more of a social function for white adolescents because they are more strongly influenced by peer smoking. Smoking levels appear to be relatively high among Hispanic youth; they have variously been reported as higher than for white adolescents, lower, and higher and lower, depending on the level of acculturation. It might be expected that the degree to which individuals from various ethnic backgrounds identify with, or have been assimilated into, mainstream society would be related to the adoption of certain behaviors, including smoking. In the United States, acculturated Latinos showed smoking rates similar to those of whites; less acculturated Latinos showed significantly lower smoking rates similar to those of blacks and Asians. The influence of acculturation is thus not clear; some possible explanations for the discrepancies may be differences in the smoking rates across subjects' countries of origin, analytic differences (Tyas and Pederson, 1998).

1.7.4.4 Living arrangements

Variables related to family structure have been examined in many studies. Overwhelmingly, the evidence leads to the conclusion that intact, two-parent families are protective against smoking. This association has persisted over the past decade and across countries.

1.7.4.5 Family size and structure

The effect of household size on risk of smoking is unclear: studies have noted larger families to be associated with lower or higher levels of smoking, or have reported no significant relationship. The inconsistent results might reflect differences in whether analyses controlled for associated variables such as parental income, parental education, and smoking by siblings and other household members. In large households, there is a greater chance that at least one member will smoke and that there will be a higher number of smokers; if no household member smokes, then there is no increase in risk associated with household size or, in fact, the additional non-smoking models may decrease the risk of adolescent smoking (Tyas and Pederson, 1998).

1.7.4.6 Parental socioeconomic status (SES)

Higher levels of parental socioeconomic variables, such as education and social class, have often been found to be inversely related to smoking status in adolescents. The effect of SES may explain some of the inconsistent results for maternal and paternal education. Several studies that have reported non-significant effects of parental education on adolescent smoking have examined maternal education only or have found paternal but not maternal education to be significant. Traditionally, however, paternal education has been a stronger determinant of household SES than maternal education, whereas maternal educational level has been associated with the health behaviors in a household.

1.7.4.7 Spending money and employment status

The personal income of adolescents has been associated with adolescent smoking: young people with more spending money showed higher levels of smoking presumably because money is needed for the purchase of cigarettes. Adequate income may supersede other protective factors. It has been found that, subjects who were working and had their own personal income showed higher cigarette use even though they came from two-parent families. Relatively few studies included measures of rural/urban status and the results of these studies were inconsistent.

1.7.4.8 Rural/urban residence

A higher prevalence of smoking was associated with residence in a rural, tobacco-producing area in the United States and urban residence in Sri Lanka. From another study, it is noted that increased smoking by young people living in urban areas, but decreased smoking by those living in an industrialized province. Two other reports found no significant relationship (Tyas and Pederson, 1998).

Other factors that have been consistently associated with smoking are self-esteem, whether overall or with regard to specific contexts such as home or school, adult and scholastic competence, locus of control, socialization, susceptibility to peer influence and risk-taking. The first four factors appear to be protective against smoking whereas the last two are risk factors. The ability of several other constructs, including state and trait variables, to distinguish smokers from non-smokers. Trait anger and anxiety variables discriminated smokers from non-smokers, implying that more stable characteristics may be important in adolescent smoking.

From a study, it has been found that trait anxiety and anger to be significantly associated with smoking status. Sex role predictive of smoking frequency. Religiosity was a protective factor for females and a risk factor for males in predicting smoking frequency. Not surprisingly, more positive attitudes toward smoking and smokers tended to be related to an increased likelihood of smoking. However, found that beliefs and opinions about smoking did not predict smoking uptake in the presence of socio demographic, environmental, and behavioral factors, and the relationship between positive attitudes to smoking and initiation of smoking to be significant only for females. Attitudes may not be as important as other factors. Although some studies have found knowledge about the detrimental health effects of smoking to be protective, the bulk of the literature does not support this position. Finally, personal health concerns appear to motivate young smokers as well as adults. The importance of health items was related to smoking status; belief that personal health is damaged by smoking was protective for initiation to smoking and for daily smoking (O'Connor, 2011).

1.8 Effects of Smoking

1.8.1 Health effect

Smoking and the use of other tobacco products, including cigars and smokeless tobacco, causes or worsens numerous diseases and conditions. Some products also expose nearby people to toxic secondhand smoke. Find out more on the health effects of smoking, secondhand smoke, other tobacco products and marijuana.

- Smoking is the leading cause of preventable death in the U.S., causing over 438,000 deaths per year.
- Secondhand smoke is a serious health hazard for people of all ages, causing more than 41,000 deaths each year.
- Marijuana smoke contains many of the same toxins, irritants and carcinogens as tobacco smoke.
- Electronic cigarettes are a new tobacco product, and the potential health consequences and safety of these products are unknown.
- Smokeless Tobacco products are a known cause of cancer, and are not a safe alternative to cigarettes.
- Cigars have many of the same health risks as cigarettes, including causing certain cancers.

1.8.2 Smoking and Death

Cigarette smoking is the leading preventable cause of death in the United States. Cigarette smoking causes more than 480,000 deaths each year in the United States. This is nearly one in five deaths.

- Smoking causes more deaths each year than the following causes combined:
    - Human immunodeficiency virus (HIV)
    - Illegal drug use

- Alcohol use
- Motor vehicle injuries
- Firearm-related incidents

- More than 10 times as many U.S. citizens have died prematurely from cigarette smoking than have died in all the wars fought by the United States during its history.
- Smoking causes about 90% (or 9 out of 10) of all lung cancer deaths in men and women. More women die from lung cancer each year than from breast cancer.
- About 80% (or 8 out of 10) of all deaths from chronic obstructive pulmonary disease (COPD) are caused by smoking.
- Cigarette smoking increases risk for death from all causes in men and women.

The risk of dying from cigarette smoking has increased over the last 50 years in men and women in the United States (Centers for Disease Control and Prevention, 2015).

1.8.3 Smoking and Increased Health Risks

Smokers are more likely than nonsmokers to develop heart disease, stroke, and lung cancer. Smoking is estimated to increase the risk-

- For coronary heart disease by 2 to 4 times
- For stroke by 2 to 4 times
- Of men developing lung cancer by 25 times
- Of women developing lung cancer by 25.7 times

Smoking causes diminished overall health, increased absenteeism from work, and increased health care utilization and cost.

1.8.3.1 Smoking and Cardiovascular Disease

Smokers are at greater risk for diseases that affect the heart and blood vessels.

- Smoking causes stroke and coronary heart disease, which are among the leading causes of death in the United States.
- Even people who smoke fewer than five cigarettes a day can have early signs of cardiovascular disease.
- Smoking damages blood vessels and can make them thicken and grow narrower. This makes heart beat faster and the blood pressure go up. Clots can also form.
- A stroke occurs when a clot blocks the blood flow to part of the brain or when a blood vessel in or around the brain bursts.
- Blockages caused by smoking can also reduce blood flow to the legs and skin (Centers for Disease Control and Prevention, 2015).

1.8.3.2 Smoking and Respiratory Disease

Smoking can cause lung disease by damaging the airways and the small air sacs (alveoli) found in the lungs.

- Lung diseases caused by smoking include COPD, which includes emphysema and chronic bronchitis.
- Cigarette smoking causes most cases of lung cancer.
- If people have asthma, tobacco smoke can trigger an attack or make an attack worse.
- Smokers are 12 to 13 times more likely to die from COPD than nonsmokers.

1.8.3.3 Smoking and Cancer

Smoking can cause cancer almost anywhere in our body:

- Bladder
- Blood (acute myeloid leukemia)
- Cervix
- Colon and rectum (colorectal)
- Esophagus
- Kidney and ureter

- Larynx
- Liver
- Oropharynx (includes parts of the throat, tongue, soft palate, and the tonsils)
- Pancreas
- Stomach
- Trachea, bronchus, and lung

Smoking increases the risk of dying from cancer and other diseases in cancer patients. If nobody smoked, one of every three cancer deaths in the United States would not happen.

1.8.3.4 Smoking and Other Health Risks

Smoking harms nearly every organ of the body and affects a person's overall health.

- Smoking can make it harder for a woman to become pregnant and can affect her baby's health before and after birth. Smoking increases risks for:
    - Preterm (early) delivery
    - Stillbirth (death of the baby before birth)
    - Low birth weight
    - Sudden infant death syndrome (known as SIDS or crib death)
    - Ectopic pregnancy
    - Orofacial clefts in infants
- Smoking can also affect men's sperm, which can reduce fertility and also increase risks for birth defects and miscarriage.
- Smoking can affect bone health. Women past childbearing years who smoke have weaker bones than women who never smoked, and are at greater risk for broken bones.
- Smoking affects the health of the teeth and gums and can cause tooth loss.
- Smoking can increase the risk for cataracts and age-related macular degeneration.
- Smoking is a cause of type 2 diabetes mellitus and can make it harder to control. The risk of developing diabetes is 30–40% higher for active smokers than nonsmokers.

- Smoking causes inflammation and decreased immune function.
- Smoking is a cause of rheumatoid arthritis (Centers for Disease Control and Prevention, 2015).

1.9 Diseases caused by smoking

1.9.1 Lung cancer

About 30,000 people in the UK die from lung cancer each year. More than 8 in 10 cases are directly related to smoking.

1.9.2 COPD

About 25,000 people in the UK die each year from this serious lung disease. More than 8 in 10 of these deaths are directly linked to smoking. People who die of COPD are usually quite unwell for several years before they die.

1.9.3 Heart disease

This is the biggest killer illness in the UK. About 120,000 people in the UK die each year from heart disease. About 1 in 6 of these is due to smoking. Other cancers of the mouth, nose, throat, larynx, esophagus, pancreas, bladder, neck of the womb (cervix), blood (leukaemia) and kidney are all more common in smokers.

1.9.4 Atheroma-related diseases

The chemicals in tobacco can damage the lining of the blood vessels and affect the level of fats (lipids) in the bloodstream. This increases the risk of atheroma forming (sometimes called hardening of the arteries). Atheroma is the main cause of heart disease, strokes, poor circulation in the legs (peripheral vascular disease) and swollen arteries which can burst causing internal bleeding (aneurysms). All these atheroma-related diseases are more common in smokers.

1.9.5 Sexual problems

Smokers are more likely to have erection problems or have difficulty in maintaining an erection in middle life. This is due to smoking-related damage of the blood vessels to the penis.

1.9.6 Rheumatoid arthritis

Smoking is known to be a risk factor for developing rheumatoid arthritis. One research study estimated that smoking is responsible for about 1 in 5 cases of rheumatoid arthritis.

1.9.7 Ageing

Smokers tend to develop more lines on their face at an earlier age than non-smokers. This often makes smokers look older than they really are (Patient, 2015).

1.9.8 Fertility

Fertility is reduced in smokers (both male and female)

1.9.9 Menopause

On average, women who smoke have a menopause nearly two years earlier than non-smokers.

1.9.10 Other conditions smoking causes worse symptoms

Other conditions where smoking often causes worse symptoms**.** These include:

- Asthma
- Colds/Flu (influenza)
- Chest infections
- Tuberculosis infection of the lungs
- Long-term inflammation of the nose (chronic rhinitis)
- Eye damage due to diabetes (diabetic retinopathy)

- An overactive thyroid (hyperthyroidism)
- A disorder of the brain and spinal cord (multiple sclerosis)
- Inflammation of the optic nerve (optic neuritis)
- A condition causing inflammation of the gut (Crohn's disease) (Patient, 2015).

1.10 Economics

Estimates claim that smokers cost the U.S. economy $97.6 billion a year in lost productivity, and that an additional $96.7 billion is spent on public and private health care combined. This is over 1% of the gross domestic product. A male smoker in the United States smokes more than one pack a day can expect an average increase of $19,000 just in medical expenses over the course of his lifetime. A U.S. female smoker that also smokes more than a pack a day can expect an average of $25,800 additional healthcare costs over her lifetime (World Health Organization, 2014).

1.11 Quitting smoking and Reducing Health Risks

- Quitting smoking cuts cardiovascular risks. Just 1 year after quitting smoking, the risk for a heart attack drops sharply.
- Within 2 to 5 years after quitting smoking, the risk for stroke could fall to about the same as a nonsmoker’s.
- If people quit smoking, the risks for cancers of the mouth, throat, esophagus, and bladder drop by half within 5 years.
- Ten years after quitting smoking, the risk for lung cancer drops by half.

There's no way around it. Smoking is bad for our health. Smoking harms nearly every organ of the body. Cigarette smoking causes 87 percent of lung cancer deaths. It is also responsible for many other cancers and health problems. These include lung disease, heart and blood vessel disease, stroke and cataracts. Women who smoke have a greater chance of certain pregnancy problems or having a baby die from sudden infant death syndrome (SIDS). Smoke is also bad for other people, they breathe in smoke secondhand and can get many of the same problems as smokers do. E-cigarettes often look like cigarettes, but they work differently.

They are battery-operated smoking devices. Not much is known about the health risks of using them. Quitting smoking can reduce the risk of health problems. The earlier we quit, the greater will be the benefit (Centers for Disease Control and Prevention, 2015).

1.12Treatment to give up smoking

If we smoke, giving up is probably the biggest single step we can take to improve health. Smoking is responsible for one in every five deaths in adults aged over 35 in England, and half of all long-term smokers will die prematurely due to a smoking-related disease. Giving up smoking increases our chances of living a longer and healthier life, even if we've smoked for 40 years. We will start to notice the benefits soon after quitting. For example: after one month the skin will be clearer, brighter and more hydrated**, a**fter three to nine months our breathing will have improved and will no longer have a cough or wheeze**, a**fter one year the risk of heart attack and heart disease will have fallen to about half that of a smoker.

1.12.1 Nicotine replacement therapy (NRT)

After smoking for a while our body adapts to getting regular doses of nicotine from cigarettes. When people stop smoking, they quickly remove the nicotine in the body. This means they suffer withdrawal, leading to:

- bad moods
- feeling irritable
- difficulty concentrating
- a craving for cigarettes

Nicotine replacement therapy (NRT) works by releasing nicotine steadily into our bloodstream at much lower levels than in a cigarette, without the tar, carbon monoxide and other poisonous chemicals present in tobacco smoke. This helps control our cravings for a cigarette when our body starts to miss the nicotine from smoking and improves our mood. NRT comes in different forms, including:

- skin patches
- chewing gum
- inhalators**,** which look like plastic cigarettes through which nicotine is inhaled
- tablets, strips and lozenges, which we put under the tongue
- nasal spray
- mouth spray

There's no evidence that one particular type of NRT is more effective than another. The one we choose is down to personal preference. When deciding, it helps to think about the type of smoker we are. For example, are we heavy smoker who need cigarettes as soon as we wake up, or are we an occasional smoker who only smokes when they are out having a drink, or after a meal? Some heavy smokers find a 24-hour patch useful, as it helps to relieve the cigarette craving when waking up. Others prefer using an NRT nasal spray or mouth spray because they're the fastest-acting form of NRT.

Some smokers find it useful to combine NRT products. For example, they wear patches through the day, then use gum or an inhalator to help relieve a sudden craving for a cigarette. There's good evidence this is more effective than using only one type of NRT and can be particularly helpful for heavy smokers. Most courses of NRT last eight to 12 weeks before gradually reduce the dose and eventually stop. Most people stop using NRT altogether within three months, although heavy smokers may need to use it for longer. Side effects include:

- skin irritation when using patches
- irritation of nose, throat or eyes when using a nasal spray
- disturbed sleep, sometimes with vivid dreams
- upset stomach
- dizziness
- headaches

Side effects are usually mild to moderate, but if they become particularly troublesome, contact with GP as the dose or type of NRT may need to be adjusted (Patient, 2015).

1.12.2 Nicotine replacement therapy in pregnancy

If women are pregnant or breastfeeding and they want to quit smoking, it's best to stop completely and immediately without any treatment. But if they feel they can't quit without help, their doctor may recommend NRT to control their cravings. There's no evidence that nicotine harms their baby although they can't be sure it's safe. However cigarettes give more nicotine than NRT and also give other poisons such as carbon monoxide, which can reduce the oxygen in their baby's blood. So, although using NRT is not ideal for the baby, the risks are far outweighed by the risks of continuing to smoke (Patient, 2015).

1.12.3 Stop smoking medication

Two medications are available on the NHS to help of stop smoking.

1.12.3.1 Zyban (Bupropion)

Bupropion was originally designed to treat depression, but it was discovered that it also helped people quit smoking. It's not entirely clear why, but most experts believe it affects parts of the brain involved in addictive behavior. Bupropion is prescribed as one to two tablets a day. We need to take bupropion for 7-14 days before we try to quit as the medication takes this long to reach its maximum effect. A course of treatment usually lasts seven to nine weeks. Bupropion is not suitable for:

- children and young people under 18
- women who are pregnant or breastfeeding
- people with anorexia or bulimia
- people with a central nervous system tumor
- people with severe cirrhosis of the liver

Bupropion can also increase the risk of having a seizure, so it's not suitable for people who already have a higher-than-average risk of having seizures, such as people:

- with epilepsy

- with bipolar disorder
- with serious alcohol misuse problems
- who are treating diabetes with hypoglycemic medication or insulin

Bupropion can cause several side effects, including:

- dry mouth
- upset stomach
- insomnia (trouble sleeping)
- headaches
- difficulty concentrating
- dizziness
- drowsiness

1.12.3.2 Champix (Varenicline)

Varenicline works by preventing nicotine from binding to receptors which reduces the rewarding and reinforcing effects of smoking. At the same time it gently stimulates the nicotine receptors, like nicotine does. This means it reduces the bad moods and irritability people can feel when they stop smoking. It's really important with all medications that people set themselves a quit day. This is a day where once they reach it their promise themselves that they do everything they can to make sure they don't smoke again. Set this quit day 7-14 days after starting varenicline. It's recommended to take varenicline for 12 weeks. If it successfully stops smoking in this time, it may be prescribed another 12 weeks of treatment to ensure not start smoking again. Varenicline is not suitable for:

- children and young people under 18
- women who are pregnant or breastfeeding
- people with epilepsy
- people with advanced kidney disease

Side effects of varenicline include:

- nausea and vomiting
- headaches
- insomnia (trouble sleeping)
- unusual dreams
- increased appetite
- constipation or diarrhea
- swollen stomach
- slow digestion
- flatulence
- dry mouth
- tiredness
- dizziness/drowsiness

There have been reports of people experiencing feelings of depression and suicidal thoughts after beginning treatment with varenicline. While there's no evidence these symptoms are caused by the medicine, if people feel depressed or have thoughts of suicide, stop taking varenicline immediately as a precaution, and contact with GP (Patient, 2015).

1.12.4 Cutting down before quit

If people don't feel ready to stop smoking completely, GP may suggest a method of quitting known as nicotine-assisted reduction to stop. This involves using NRT to cut down before they eventually stop smoking. If GP suggests this approach, they will be prescribed NRT gum or an inhalator to use between cigarettes. These forms of NRT are best for use between cigarettes because they release a short burst of nicotine, rather than patches for example, so the NRT offers a safe substitute for cigarettes. When cutting down, they should try and prolong the gaps between cigarettes for as long as they can, and steadily reduce the number of cigarettes they smoke. By six weeks of NRT treatment, they should aim to have cut their usual cigarette consumption by half and have stopped smoking completely by six months. If they feel ready, it's best to have a quit day. Stopping smoking during pregnancy is also one of the best things that can do to give child a healthy start in life. One of the essential components of a

comprehensive global tobacco control effort is an efficient and systematic surveillance mechanism to monitor the epidemic. In order to maintain consistency and comparability in monitoring tobacco use, a standard set of tobacco use survey questions should be implemented across various surveillance activities (Patient, 2015).

1.13 Health Impacts of mother who smokes cigarettes

First of all, a mom who can't stop smoking should breastfeed. Breastfeeding provides many immunities that help baby fight illness and can even help counteract some of the effects of cigarette smoke on the baby: for example, breastfeeding has been shown to decrease the negative effects of cigarette smoke on a baby's lungs. It's definitely better if breastfeeding moms not smoke, but if it can't stop or cut down, then it is better to smoke and breastfeed than to smoke and formula feed. The more cigarettes that mother smokes, the greater the health risks for her and her baby. If she can't stop smoking, or don't want to stop smoking, it's safer for the baby if she cut down on the number of cigarettes that she smoke (Bonyata, 2011).

1.13.1 Impact to the babies when they are exposed to cigarette smoke

- Babies and children who are exposed to cigarette smoke have a much higher incidence of pneumonia, asthma, ear infections, bronchitis, sinus infections, eye irritation, and croup.
- Colic occurs more often in babies whose mothers or fathers smoke or if a breastfeeding mother smokes. Researchers believe that not only does the nicotine transferred into mother's milk upset baby but the passive smoke in the home acts as an irritant. Babies of smoking parents fuss more, and mothers who smoke may be less able to cope with a colicky baby (due to lower levels of prolactin).
- Heavy smoking by breastfeeding moms occasionally causes symptoms in the breastfeeding baby such as nausea, vomiting, abdominal cramps and diarrhea.
- Babies of smoking mothers and fathers have a seven times greater chance of dying from sudden infant death syndrome (SIDS).

- Children of smoking parents have two to three times more visits to the doctor, usually from respiratory infections or allergy-related illnesses.
- Children who are exposed to passive smoke in the home have lower blood levels of HDL, the good cholesterol that helps protect against coronary artery disease.
- Children of smoking parents are more likely to become smokers themselves.
- A recent study found that growing up in a home in which two parents smoked double the child's risk of lung cancer later in life could (Bonyata, 2011).

1.13.2 Impact of smoking to breastfeeding

- Earlier weaning. One study showed that the heaviest smokers tend to wean the earliest.
- Lower milk production
- Interference with milk let-down
- Lower levels of prolactin. Prolactin must be present for milk synthesis to occur.
- One study indicated that smoking mothers who live in areas of mild to moderate iodine deficiency have less iodine in their breast milk (needed for baby's thyroid function) compared to nonsmoking mothers. The study authors suggested that breastfeeding mothers who smoke consider taking an iodine supplement.

Although smoking has been linked to milk production and let-down problems, this may be related to poor lactation management rather than physiological causes. According to a review published in 2001, concluded that "Although there is consistent evidence that women who smoke breastfeed their infants for a shorter duration than non-smokers, the evidence for a physiological mechanism is not strong" (Bonyata, 2011).

1.13.3 Minimize the risk to the baby if anyone smoke

- The ideal: Stop smoking altogether.
- Cut down. The less mother smoke, the smaller the chance that difficulties will arise. The risks increase if she smoke more than 20 cigarettes per day.

- Don’t smoke immediately before or during breastfeeding. It will inhibit let-down and is dangerous to the baby.
- Smoke immediately after breastfeeding to cut down on the amount of nicotine in the milk during nursing. Wait as long as possible between smoking and nursing. It takes 95 minutes for half of the nicotine to be eliminated from the body.
- Avoid smoking with baby. Even better, smoke outside, away from the baby and other children. Don’t allow anyone else to smoke near any baby (Bonyata, 2011).

1.14 Prevention of smoking

Education and counselling by physicians of children and adolescents has been found to be effective in decreasing the risk of tobacco use. Strategies that comprise successful complete tobacco control programs include mass media campaigns, higher tobacco prices, smoke-free laws and policies, evidence-based school programs, and sustained community-wide efforts may help in the prevention of smoking (Patient, 2015).

1.15 Tobacco Control Law Amendment

On May 2013, The National Assembly of Bangladesh passed the Tobacco Control Law Amendment Bill on 29 April, 2013 closing many loopholes in the country’s previous tobacco control law. The amendment is a major step forward in tobacco control in Bangladesh, where 43% of adults use some form of tobacco. The scope of existing tobacco control measures have been extended to include smokeless tobacco products, which are used by 28% of women and 26% of men in Bangladesh. In contrast, 45% of men and just 1.5% of women smoke cigarettes. This change will protect and inform more than 13 million women. The most important measure in the amendment are as follows:

- Smokeless tobacco has been brought under the definition of “Tobacco”.
- Restaurants and indoor workplaces have now been included among the public places that are to be completely smoke-free. Fines for non-compliance with smoke-free

regulations have increased from 50 Taka (approximately US$ 0.6) to 300 Taka (US$ 3.9), in addition to the penalties for violations of other measures covered by the law.

- Advertisements of sale are now banned and "corporate social responsibility" activities restricted. Anti-tobacco messages will be shown if tobacco use is included in a movie.
- Sales of tobacco to and by minors have been banned.
- Graphic health warnings are to be printed on tobacco packs that cover at least 50% of each principal surface area. Misleading descriptors such as "light", "mild" and "low tar", can no longer be used.
- The Ministry of Health is now mandated by law to establish and operate the "National Tobacco Control Cell" (the Cell has functioned under an administrative order).
- The Government is mandated to formulate policies to discourage tobacco cultivation.

The Ministry of Health will now formulate the rules for implementation of the new law, with support from World Health Organization (WHO Framework Convention on Tobacco Control, 2013).

Chapter 2: Literature review

Smoking is the most preventable cause of death worldwide and is responsible for the deaths of half of its long-term users. Statistics indicate that in the 20th century, there have been 100 million deaths caused by diseases related to tobacco use. In addition, there are 5.4 million deaths, equivalent to one death every six seconds attributed to tobacco related illness. Globally, the use of tobacco has gradually shifted from the developed countries to the developing countries. This implies that, while people in developed countries increasingly cease to use tobacco, those living in developing countries are taking up the habit. The above change has been attributed to the unregulated marketing and advertising campaigns by tobacco companies as they expand into these new markets. Due to lack of regulation in developing countries, tobacco companies have been able to cultivate brand loyalty from customers at a young age through media campaigns, sponsorships as well as other marketing strategies. Therefore, unless urgent action is taken to stop young people from taking up the habit of tobacco use, by 2030 there will be more than 8 million deaths annually, of which more than 80% of these deaths will be in developing countries. The review focuses primarily on knowledge, attitude and practice of cigarette smoking among general population to their life style (World Health Organization, 2008).

A study was done on the knowledge, attitude & practice regarding smoking among medical students in Khawaja Muhammad Safdar Medical College (KMSMC) of Sialkot city of Pakistan in December. Knowledge and attitude of medical students regarding the health effects of smoking and associated risks and their own smoking status play an important role in interaction with smoking patients in the future. The response rate of the students was 61%. Although all the medical students had good knowledge about the harmful effects associated with smoking, smoking prevalence had ascending trend among medical students as the students were promoted from pre-clinical year (12.7%) to clinical year (23.3%) of medical course. As the students were promoted from lower to higher professional year, participation in anti-smoking campaigns were also declined. More than 90% of medical students thought that if medical students or physicians smoke it will convey a negative message to their patients as well as to the public. Overall smoking prevalence among 306 medical students was 13.4% which was low. Male medical students were more than 5 times likely to smoke (34.2%) as compared to

female medical students (6.2%). Out of total sample, very few students (1.6%) thought that smoking is beneficial during examination period for coping with anxiety and stress of examination. In nutshell, the contents of the medical school's curriculum were not sufficient to let medical students to abstain from tobacco usage (Babar, 2016).

Smoking is a global public health concern. It causes huge premature death, health issues and possess economic burden in the developing countries. A study was done on the prevalence of smoking and factors associated with smoking among a rural population of Bangladesh in February to April, 2011. The study's current smoking prevalence was 39.4%. Respondents mean age was 34.63 years and current smokers mean age was 35.7SD ± 9.23 years. The prevalence of current smoking amongst male (89.3%) was significantly higher in comparison with the female (10.7%). Current smoking habit had been gradually decreased with the level of education. The prevalence of current smoking was significantly (P = 0.000) highest among the day labor (30.5%) and two-third smokers was initiated to smoking within the age of 10 to 20 years. About 36.4% of the current smokers smoked 5 to 15 sticks per day. Both ever (42%) and current (45.2%) smoking prevalence was highest amongst the population those monthly family income below 5000 Taka (60 USD). Overall rural smoking prevalence was 39.4%. Ever and current smoking prevalence was significantly higher among males. Smoking prevalence was highest among the illiterate and reduced with the increase of level of education and socio-economic status (Akhtar *et al*., 2011).

Tobacco consumption is associated with considerable negative impact on health. A study of students from two medical colleges in Riyadh, Saudi Arabia was carried out to assess the prevalence of smoking among medical students as well as to assess students' attitude, practice and their knowledge on the risk factors of tobacco consumption. 19% students indicated that they smoke tobacco at the time of the study. All of them were males, which raise the prevalence among male students to 24%. Tobacco smoking was practiced by males more than females (P value <0.0001) and by senior more than junior students (<0.0001). About 94% of the study sample indicated that smoking could cause serious illnesses. About 90% of the students indicated that they would advise their patients to quit smoking in the future and 88% thought that smoking should be banned in public areas. Forty-four students (20%) thought that smoking

has some beneficial effects, mainly as a coping strategy for stress alleviation. Despite good knowledge about the hazards of tobacco consumption, about 25% of the medical students in this study continue to smoke (Al-Haqwi, Tamim, and Asery, 2010).

Students, clergymen and teachers as role models can be very important in encouragement or prevention of cigarette smoking in young people. A study was done on students, clergymen and teachers in 2009 in Tehran, Iran to compare prevalence of smoking in 3 male groups of teachers, clergymen and university students. Also, study their knowledge and attitude towards it and the prediction of their future consumption. Prevalence of cigarette smoking was 31.1%, 21.9% and 27.2% among students, clergymen and teachers, respectively. Smoking in students was not associated with poor knowledge but were in teachers and clergymen. The odds ratio of smoking in students, clergymen and teachers was higher among those with having inappropriate attitude towards it. Those with poor knowledge had an inappropriate attitude and predicted higher chance of cigarette consumption in the next 5 years. Inappropriate attitude in all 3 groups resulted in higher prediction of future smoking. This study revealed that the prevalence of smoking among male students and teachers was higher than general population and clergymen who equally smoked. Also, level of knowledge and attitude of students were lower than teachers and clergymen (Heydari *et al.*, 2013).

Smoking is a serious risk to health globally. Health care professionals play a key role in the prevention of smoking as they are considered a role model by patients. A study was conducted to evaluate smoking rate among physicians and dentists from Sulaymaniyah, Iraqi Kurdistan, Iraq, and to understand their knowledge and attitudes toward tobacco smoking. Incidence of smoking among physicians and dentists was 26.5%, with a significantly higher rate among male compared to female health care professionals. The mean age of starting smoking was 22.3 (±4.8) years. Only 7.3% of health care professionals received formal training on smoking cessation. All responders agreed that smoking is harmful to health. However, ever smokers compared to never smokers were less likely to agree that health care professionals should set a positive impact by not smoking. Smoking rate is high among physicians and dentists from Sulaymaniyah city/Iraq, and at the same time, there is a low rate of training on smoking cessation (Abdulateef *et al.*, 2016).

Tobacco is a serious threat to health and a proven killer and ranks second as a cause of death globally. The worldwide mortality from tobacco related diseases reached up to 4 million per year in 1998 and is expected to become 10 million per year in 2030. This is more than the total deaths from tuberculosis, malaria, maternal and major childhood conditions combined. A study was carried out in AL-Jabal AL-Gharbi University- Gharian - Libya. The average age of students was 22.1 years. The prevalence of smoking among students was found to be 28.3%. Cigarette smoking constituted 80.2% and Shisha constituted 19.8%. Smoking among students was significantly related to higher age of students, higher family income and smoking among other family members of students. There was no significant difference between prevalence of smoking in different faculties of the University of AL-Jabal AL-Gharbi. The main motives for smoking were curiosity, peer pressure and smoking among other family members. Educational lessons about smoking hazards, prevention of smoking at public places and increasing taxes on cigarettes were suggested by students to prevent smoking (Faddan and Ahmed, 2012).

Consumption of tobacco in any form is one of the leading causes of preventable mortality. A study was conducted to estimate the prevalence of tobacco use and factors associated with it among rural adult population in Sarawak, Malaysia among the adult population. The study was conducted for a period of one year from July 2012 to June 2013. Analysis showed that 30.9% of the respondents were current tobacco users and 11% were past tobacco users. The mean age (SD) of starting tobacco use was 18.1 (6.48) years. The mean frequency of tobacco use was 14 times per day. Hierarchical Logistic regression analysis revealed that age with male sex (OR=1.064, 95% CI: 1.052, 1.076), secondary education (OR=-2.712; 95% CI: 1.122, 6.555), higher secondary and above (OR=3. 571; 95% CI: 1.641,7.774), business as occupation (OR=3.152; 95% CI: 1.732, 5.735) environmental exposure such as smoking at working place (OR=2.754;95% CI: 1.895,4.002), coffee house (OR=2. 274;95% CI: 1.32,3.919) and at home (OR=1. 827;95% CI: 1.242,2.687) appeared to be important predictors of tobacco use ($p<0.05$). A large proportion of males used tobacco products. Though tobacco use was negligible among females, nonetheless they would be potential users. Environmental exposure to tobacco appeared to be important predictors. Tobacco control campaigns should target banning of tobacco use in more closed and open areas and also to intensify the monitoring of all forms of tobacco use by the population (Rahman *et al.,* 2015).

Healthcare professionals have an important role to play both as advisers influencing smoking cessation and as role models. However, many of them continue to smoke. A study was carried out to examine smoking prevalence, knowledge, attitudes, and behaviors among four cohorts physicians specializing in public health, according to the Global Health Profession between January and April 2012. In this study (85%), of which 81 (20.9%) declared to be smokers, 309 (79.6%) considered health professionals as behavioral models for patients, and 375 (96.6%) affirmed that health professionals have a role in giving advice or information about smoking cessation. Although 388 (89.7%) heard about smoking related issues during undergraduate courses, only 17% received specific smoking cessation training during specialization. The present study highlights the importance of focusing attention on smoking cessation training, given the high prevalence of smokers among physicians specializing in public health, their key role both as advisers and behavioral models, and the limited tobacco training offered in public health schools (Torre *et al.*, 2014).

Smoking during pregnancy increases the health risks of the unborn child as well as the mother. Although smoking rates for the population as a whole have declined drastically in the past generation, since 1992 there has been an increase in smoking among women, teenagers, and adults living in poverty. A study was done to assess reading level, tobacco knowledge, attitudes, and practices of tobacco use among pregnant adult and adolescent women in the public health system in north Louisiana. Knowledge about the effects of smoking and concern about the health effect of smoking on their baby varied significantly by reading level, with participants with higher reading levels having more knowledge and greater concern. Smoking practices did not vary by reading level even when race, age, and living with a smoker were controlled. Race was a significant determinant of smoking practices, with more white women reporting currently smoking during pregnancy than African Americans (34% vs 8%). Reading level was related to knowledge about health effects of smoking. Women with higher reading levels were also more concerned about the adverse health effects of smoking on themselves and their babies. However, reading level was not correlated with smoking prevalence. The most significant determinant of smoking was race (with whites smoking significantly more than African Americans) (Arnold *et al.*, 2001).

As the world's largest producer and consumer of tobacco products, China bears a large proportion of the global burden of smoking-related disease and may be experiencing a tobacco epidemic. A study was conducted on demographics, smoking history, smoking-related knowledge and attitudes, cessation, passive smoke exposure, and health status in the 30 provinces of China from March through July 1996. About two thirds of those sampled were from rural areas and one third were from urban areas. Current smoking patterns and attitudes; changes in smoking patterns and attitudes compared with results of a previous national survey conducted in 1984. A total of 41,187 respondents smoked at least 1 cigarette per day, accounting for 34.1% of the total number of respondents, an increase of 3.4 percentage points since 1984. Current smoking continues to be prevalent among more men (63%) than women (3.8%). Age at smoking initiation declined by about 3 years for both men and women (from 28 to 25 years). Only a minority of smokers recognized that lung cancer (36%) and heart disease (4%) can be caused by smoking. Of the nonsmokers, 53.5% were exposed to environmental tobacco smoke at least 15 minutes per day on more than 1 day per week. Respondents were generally supportive of tobacco control measures. The high rates of smoking in men found in this study signal an urgent need for smoking prevention and cessation efforts; tobacco control initiatives are needed to maintain or decrease the currently low smoking prevalence in women (Yang *et al.,* 1999).

Smoking rates among the general population in Bosnia and Herzegovina are extremely high, and national campaigns to lower smoking rates have not yet begun. A study was done to determine the smoking rates and behavior of family medicine physicians and nurses in Bosnia and Herzegovina and to determine how well prepared they feel with respect to counselling their patients on smoking cessation strategies in Bosnia and Herzegovina in June 2002. Approximately 45% of those surveyed currently smoke, where 51% of nurses smoked, compared to 40% of physicians. With respect to knowledge and attitudes, all respondents agreed that smoking is harmful to one's health. However, "ever" smokers, compared to "never" smokers, were less likely to agree that health professionals who smoke were less likely to advise patients to quit smoking than non-smoking health professionals. Less than half of physicians and nurses had received formal training in smoking cessations strategies, but about two thirds of health professionals felt very or somewhat prepared to counsel their patients on

how to quit smoking. The study indicates that almost half of Family Medicine health professionals in Bosnia and Herzegovina are smokers. This indicates a severe public health problem throughout the country (Hodgetts, Broers, and Godwin, 2004).

China has the most smokers among the world's nations. Physicians play a key role in smoking cessation, but little is known about Chinese physicians and smoking. In a study in China, a study was conducted to measure smoking attitudes, knowledge, personal behavior, and cessation practices for patients in 2005 and 2006. Smoking prevalence was 23% among all Chinese physicians, 41% for men and 1% for women. Only 30% report good implementation of smoke-free workplace policies and 37% of current smokers have smoked in front of their patients. Although 64% usually advise smokers to quit, only 48% usually ask about smoking status, and 29% believe most smokers will follow their cessation advice. Less than 7% set quit dates or use pharmacotherapy when helping smokers quit. Although 95% and 89%, respectively, know that active or passive smoking causes lung cancer, only 66% and 53%, respectively, know that active or passive smoking causes heart disease. Physicians were significantly more likely to ask about or advise against smoking if they believed that counseling about health harms helps smokers quit and that most smokers would follow smoking-cessation advice. Physician smoking cessation, smoke-free workplaces, and education on smoking-cessation techniques need to be increased among Chinese physicians. Strengthening counseling skills may result in more Chinese physicians helping smoking patients to quit. These improvements can help reduce the Chinese and worldwide health burden from smoking (Jiang *et al.,* 2007).

Very few studies have been conducted to determine general smoking pattern and smoking habits among medical students. This study was done to assess knowledge, attitude and practices of hookah smoking among medical students of AMC MET Medical College, Ahmedabad, Gujarat, India during April 2012 to August 2012. Out of 200 students, 21 (10.5%) the medical students smoke hookah. Average age of starting hookah smoking was 17.4 years. 38.1% of smokers preferred cigarette over hookah. 93.3% of the non-Smokers considered hookah smoking as injurious to health. Friends of the hookah smokers (peer pressure) were responsible for starting of hookah smoking in majority of the hookah smokers (85.7%). Out of

21 medical students who smoke hookah, only 5 students had tried to quit hookah. This study reveals the alarming situation of high practice of hookah smoking among medical students (Rami, Makvana and Thakor, 2015).

A study was conducted to assess the prevalence of tobacco smoking among health colleges' students at Najran University, and to investigate the students' attitude, practice and knowledge towards smoking and its risks. The prevalence of current cigarettes smokers was 30.1% for males and 0.5% for females ($P < 0.001$). For males, the prevalence of shisha smoking, snuff and smokeless tobacco usage was 28.3%, 16.8% and 14.6%, respectively. Applied medical sciences college's students had the highest prevalence (72%) of smoking, compared to 4% only at the college of medicine. Females had a better knowledge than males regarding the hazardous effects of smoking on health (87.1% vs. 99.5%; $P = 0.007$) and as a risk factor of brain thrombosis (67.2% vs. 94.2%; $P = 0.001$), heart attack (78.3% vs. 95.7%; $P = 0.005$) and lung cancer (82.3% vs. 99.5%; $P = 0.001$). Male and female students believed smokeless tobacco and shisha smoking are less harmful (59.7% vs. 30%; $P = 0.001$ and 38.5% vs. 7.7%; $P = 0.001$, respectively). The results highlight the importance of initiating on-campus managed tobacco dependence treatment clinics to provide professional help for students to quit smoking (AlQahtani, 2017).

A sizeable amount of the population continues to smoke despite global efforts in smoking cessation; unfortunately smoking prevalence is especially high in the productive age group, i.e., 22-65 years old. Even health care professionals who are aware of the ill effects of smoking have difficulty quitting. This study is to investigate the smoking behavior and reasons for failure of smoking cessation in the general population and among health care professionals in Metro Manila. A total of 4,000 survey forms were distributed and 1,388 (34.7%) were returned; 1,249 (90%) from the general population and 139 (10%) from health care professionals. Principal reasons for smoking and difficulty quitting in the general population are social and environmental goads, particularly in the workplace, and associative processes. Moreover, health care professionals are high in the motives that predict relapse, namely cognitive enhancement, social and environmental goads and negative reinforcement, in that order (Tan and Dy-Agra, 2009).

Significance of the study

Tobacco use is one of the major preventable causes of death in the world. The World Health Organization attributes over four million deaths a year to tobacco and this figure is expected to rise to 10 million by 2030. In the developed countries, tobacco use is dramatically increasing among youth. Nearly 25% of students aged 13–15 years smoke and have smoked their first cigarette before the age of 10. If this pattern continues, tobacco use will result in the deaths of 250 million children and young people alive today. Moreover, cigarette smoking has a high morbidity in young people causing upper respiratory tract infections, reduced lung growth, and retardation in the level of maximum lung function. Of particular concern is also the association with health risk behaviors, including high-risk sexual behavior and substances use. Finally, individuals who begin smoking at a young age are more likely to develop high nicotine dependence than those who start later; this would indicate a greater chance of smoking through adulthood (Cosci *et al.*, 2013).

Previous study was done on the patients of different disease or in rural areas in Bangladesh. Our analysis stresses the importance of smoking research in order to understand the smoking status and consequences. It might help us to know the prevalence of smoking in different parts of Dhaka City, their knowledge, awareness and adverse health effects of smoking, to identify the knowledge of people where they can smoke according to law/act, to know their opinion about banning of smoking, to find out the reasons behind smoking, who influenced them to smoke, do they smoke in the presence of their family members, public places or their work places and also to know how much money they spend per day in smoking. To know the reasons of quitting smoking, the age when they started quitting smoking and the method of quitting smoking. This will provide a starting point in the development of effective smoking prevention interventions specifically addressed to adolescents. There was no study on the general people about knowledge and awareness regarding the impact of smoking in Bangladesh.

Aims and objectives of the study

The aims and objectives of this study is to evaluate the smoking status and knowledge regarding the consequences of smoking among the people of Dhaka City.

To evaluate the prevalence of smoking among general population of Dhaka City. To identify the knowledge, awareness, attitude about adverse health effects of smoking. To find out the reasons behind smoking, age of starting smoking and cost they spend per day in smoking. To know the reasons of quitting smoking and the method of quitting smoking are our principal aims and objectives of the study.

Chapter 3: Methodology

3.1 Types of study

The study was a cross-sectional study.

3.2 Study population

In this study, a total number of 315 people from different parts of Dhaka City participated by answering a questionnaire.

3.3 Inclusion criteria

The following criteria were included.

- Any male or female subject
- Participants having age more than 16 years

3.4 Exclusion criteria

The following criteria was excluded.

- Participants those were not interested to give information.

3.5 Questionnaire Development

Questionnaire was developed on the basis of socio-demographic status, smoking status, reasons for smoking, reasons for quitting smoking, method used to quit smoking, knowledge and awareness on health disadvantages, law/act, banning of smoking etc.

3.6 Sampling technique

In this study random & convenient sampling technique was followed.

3.7 Study period

The extent of the study was about 17 months that started from January, 2016 to May, 2017.

3.8 Data analysis

After collecting all data were checked and analyzed by Microsoft Excel 2013. The result was shown in bar diagram, pie chart and column chart and were calculated the percentage.

Chapter 4: Results

4.1 General Information

4.1.1 Age group

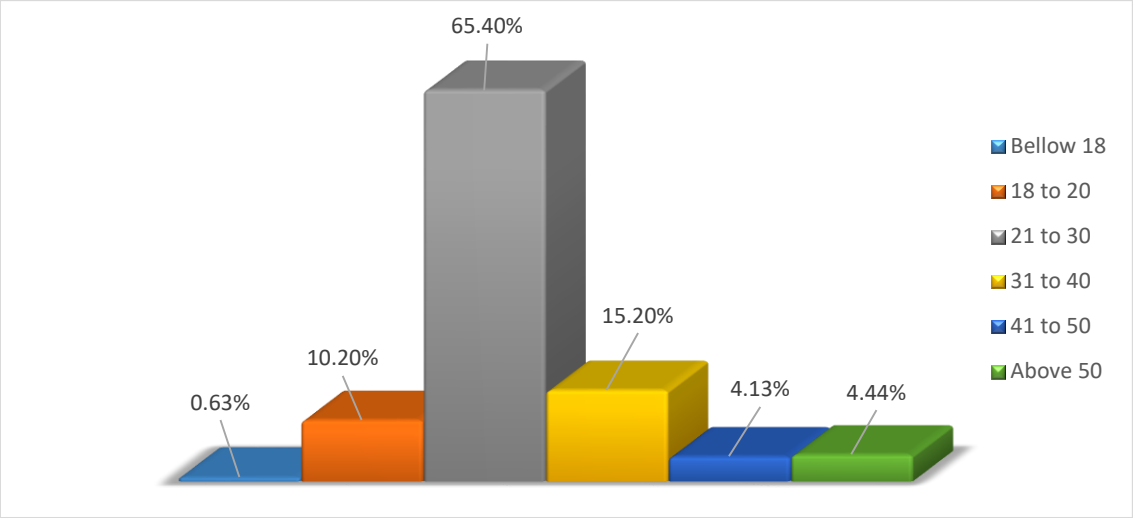

Figure 4.1.1: Graphical representation of Age Group

Total no. of participants were 315. Most of them were between the ages of 21-30 years (65.4%). 10.2% & 15.2% were between the age group 18-20 years and 31-40 years, respectively.

4.1.2 Gender distribution

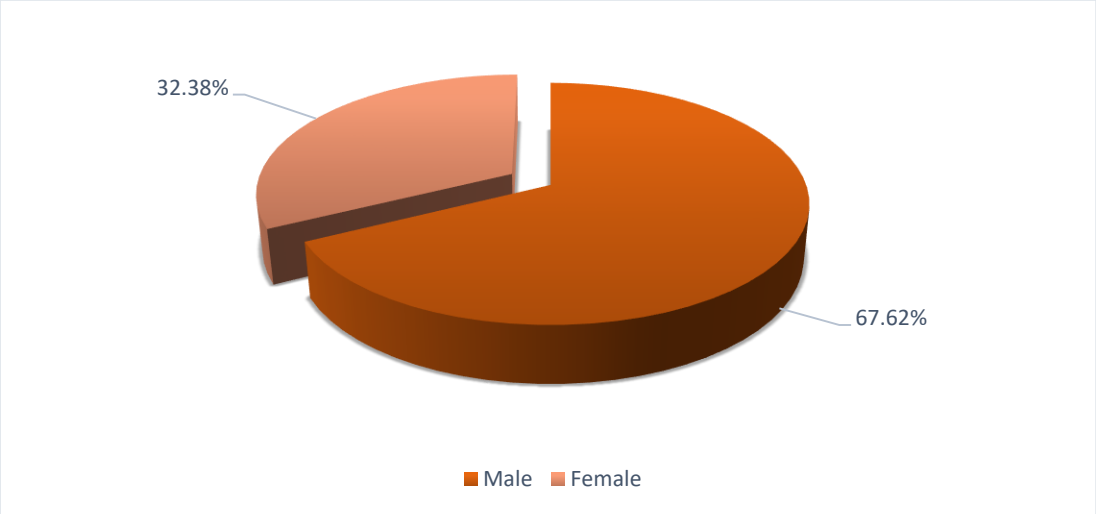

Figure 4.1.2: Graphical representation of Gender Distribution

Among the participants, 67.62% were male and 32.38% were female.

4.1.3 Education

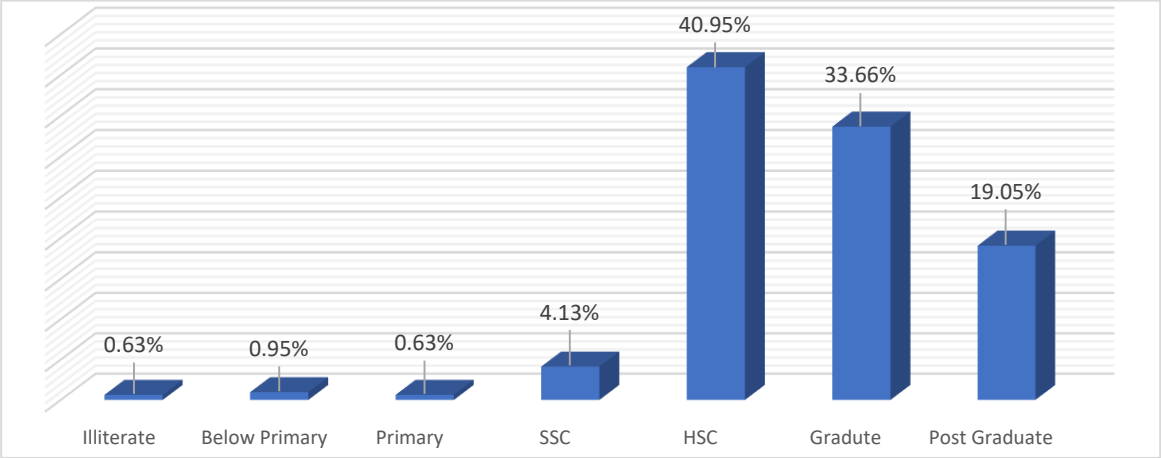

Figure 4.1.3: Graphical representation of Education

Most of the participants have completed HSC (40.95%) and then the Graduate takes place (33.66%). Among the participants 19.05% were Post-graduates. Moreover, SSC completed participants have the percentage 4.13%. There were very few primary, below primary and illiterate participants in our study.

4.1.4 Occupation

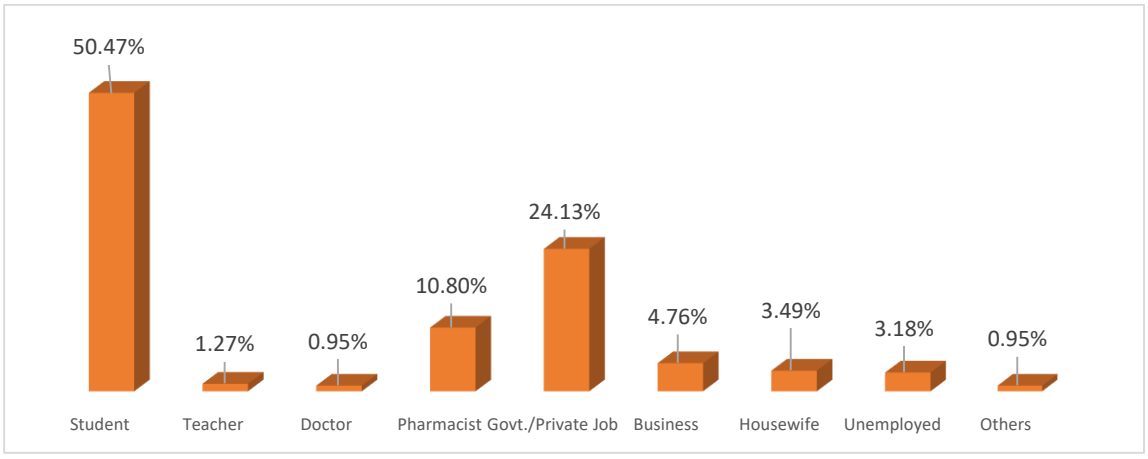

Figure 4.1.4: Graphical representation of Occupation

In this study, most of the participants were student (50.47%), (24.13%) were govt. /private job holder & 10.80% were pharmacist. Beside this, there were businessman (4.76%), housewife (3.49%), teacher (1.27%) & doctor (0.95%). 3.18% were unemployed.

4.1.5 Marital Status

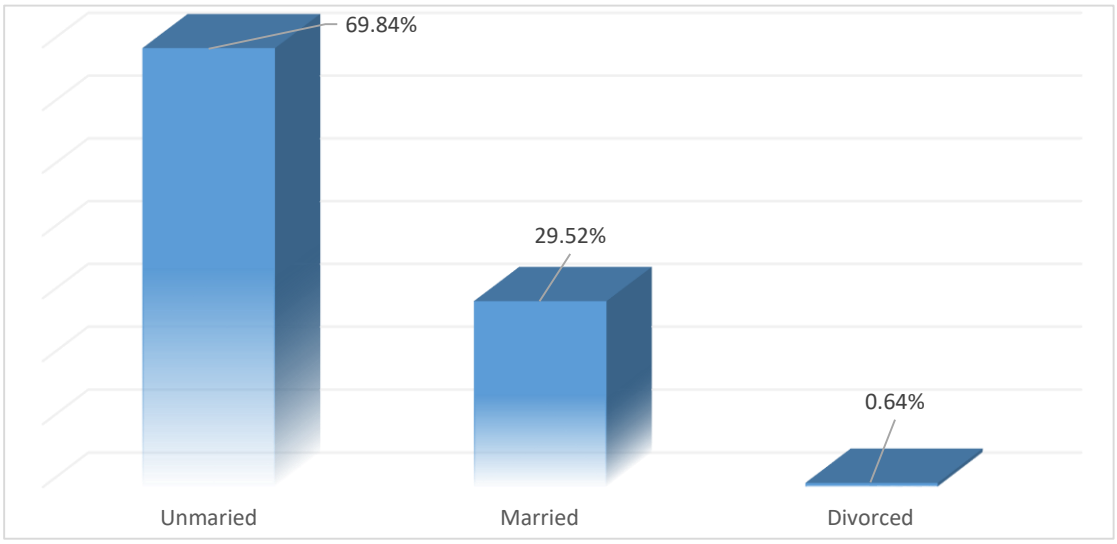

Figure 4.1.5: Graphical representation of Marital Status

Among the participants 69.84% were unmarried, 29.52% were married. Only a few were divorced (0.64%).

4.1.6 Children

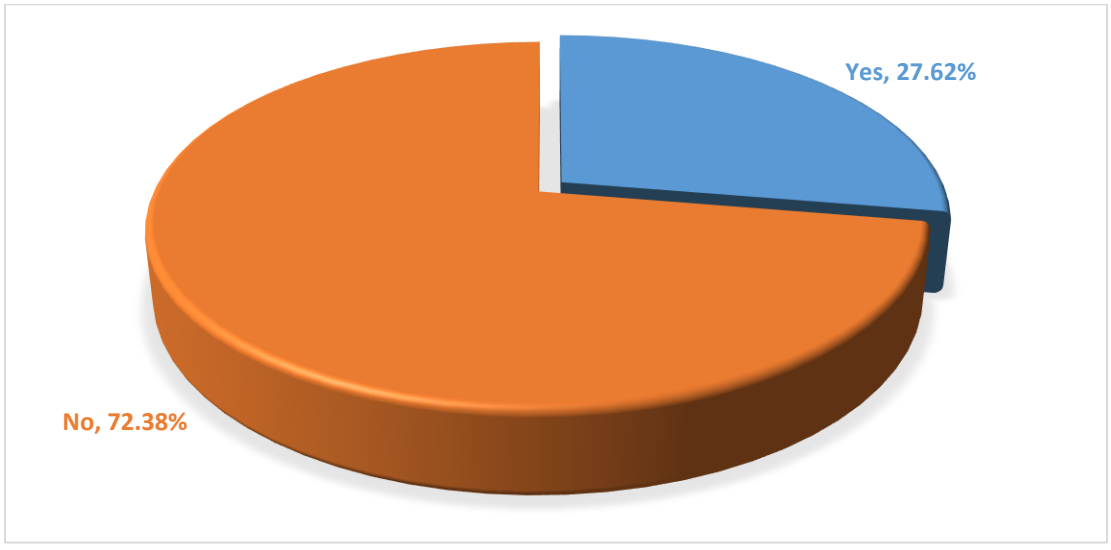

Figure 4.1.6: Graphical representation of Percentages of Children

In our study population, we can see that 27.62% had children where 72.38% didn't have any children.

4.1.7 Living Area

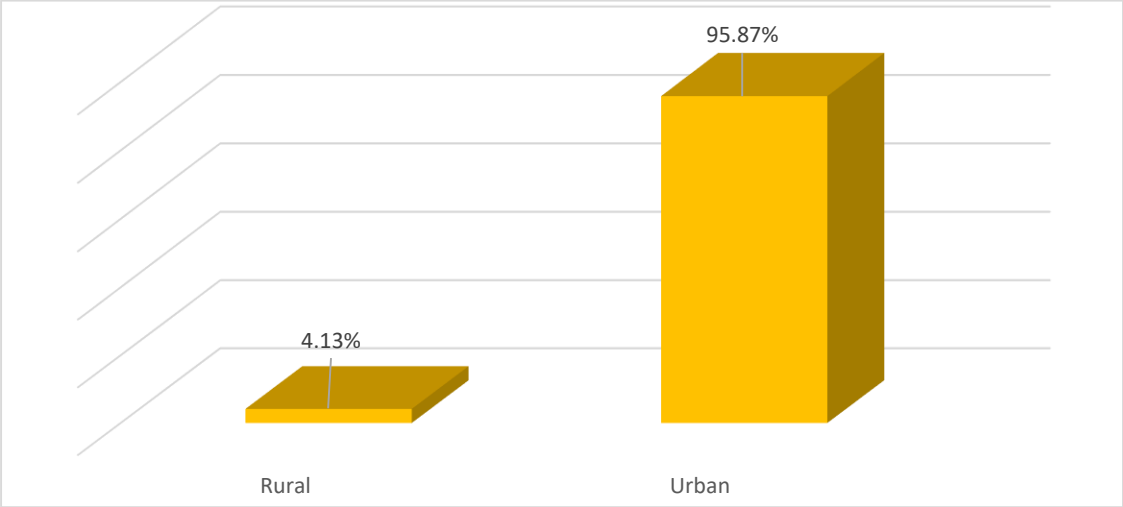

Figure 4.1.7: Graphical representation of Living Area

Among the study population, 95.87% are living in urban area where only 4.13% are from rural area.

4.1.8 Monthly Income

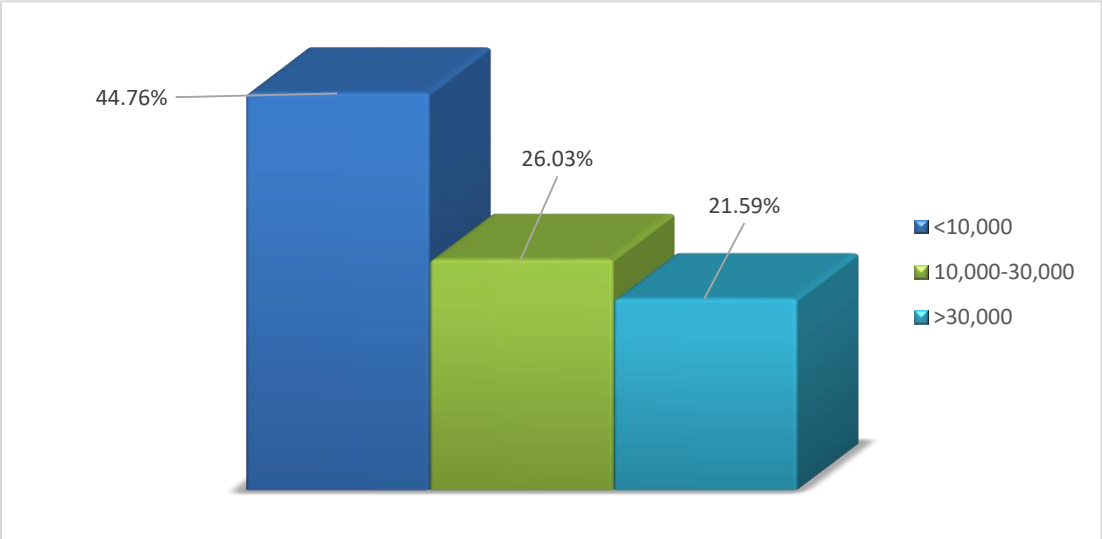

Figure 4.1.8: Graphical representation of Monthly Income

About 44.76% of the study population have monthly income BDT <10,000 where 26.03% & 21.59% have BDT 10,000-30,000 & BDT >30,000 respectively.

4.1.9 Smoking Status

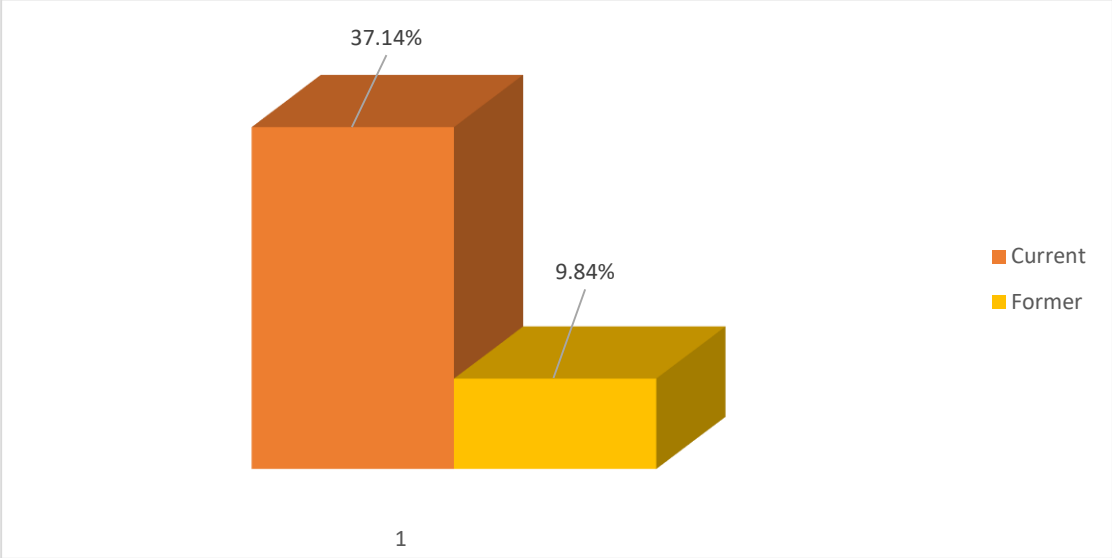

Figure 4.1.9: Graphical representation of Smoking Status

From our study population, 46.98% people smoked cigarette where 37.14% were current & 9.84% were former smoker.

4.1.9.1 Gender wise smoker percentage

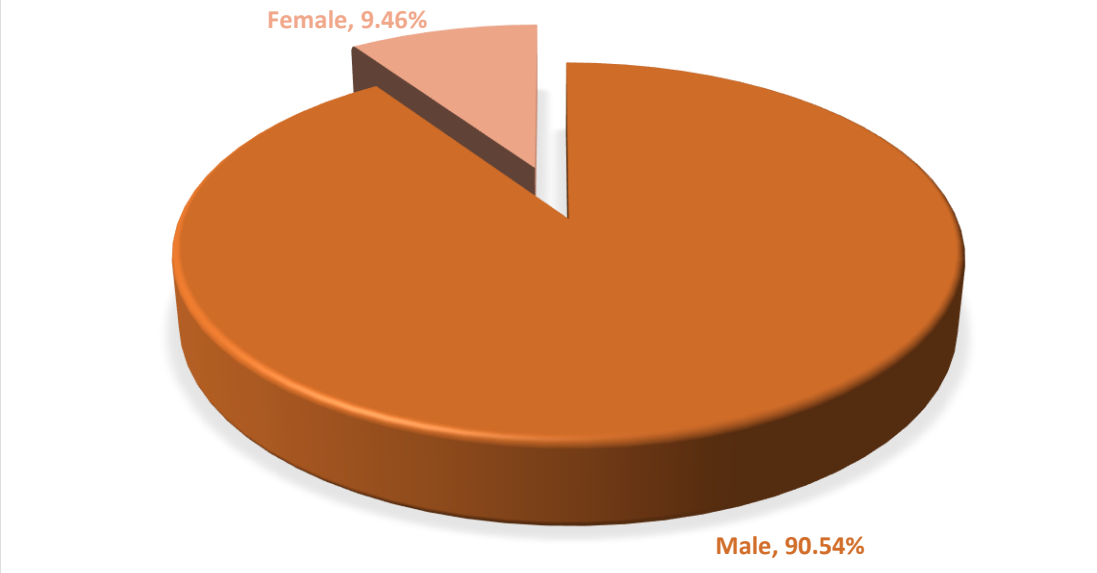

Figure 4.1.9.1: Graphical representation of Gender wise smoker percentage

Among the total number of smoker, 90.54% were male and 9.46% were female.

4.1.10 Respondents (with age) sent by family members to buy cigarette

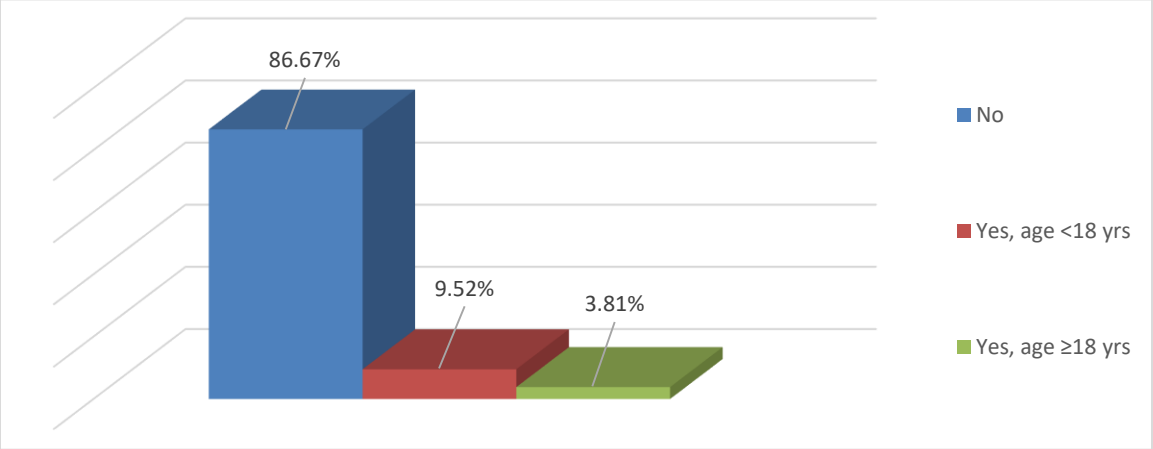

Figure 4.1.10: Graphical representation of Respondents (with age) sent by family members to buy cigarette

From the study of respondents (with age) sent by family members to buy cigarette, we can see that majority (86.67%) answered 'no' where 9.52% answered yes & their age was <18 years where 3.81% also answered yes & their age was ≥18 years.

4.1.10.1 Relationship who sent to buy cigarette

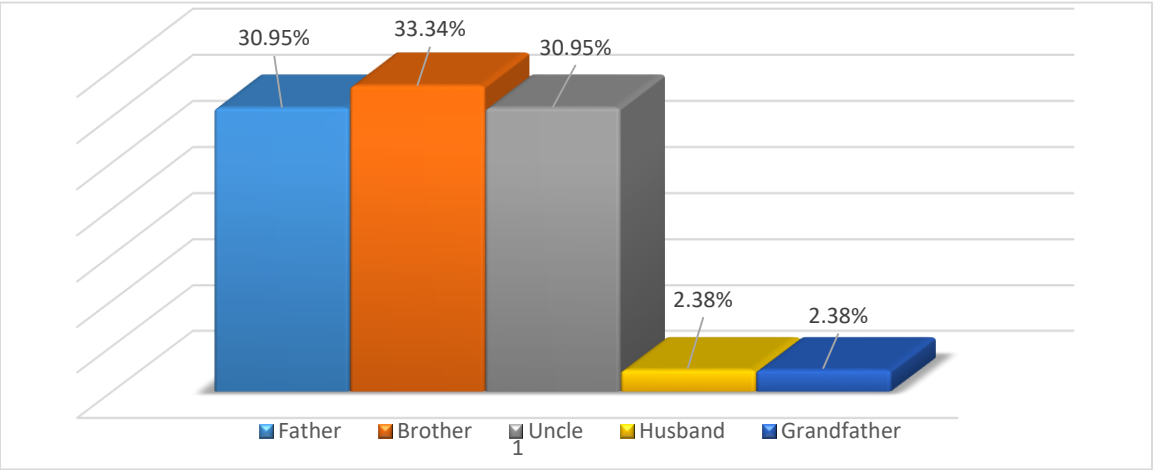

Figure 4.1.10.1: Graphical representation of Relationship who sent to buy cigarette

Among the participants, 42 people said about their relationship who sent to buy cigarette. In our study it is seen that 33.34% were brother, 30.95% were for both father & uncle and only 2.38% were for both husband & grandfather.

4.2 Knowledge and Attitude

4.2.1 Awareness of the impact of smoking

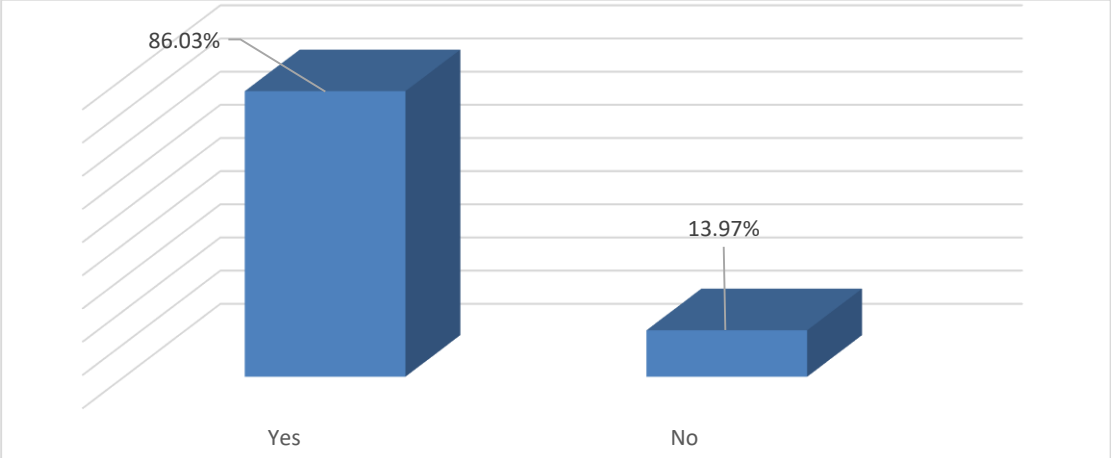

Figure 4.2.1: Graphical representation of Awareness of the impact of smoking

About 86.03% answered 'yes' that they were aware of the impact of smoking where 13.97% were unaware.

4.2.2 Knowledge of the health disadvantages of smoking

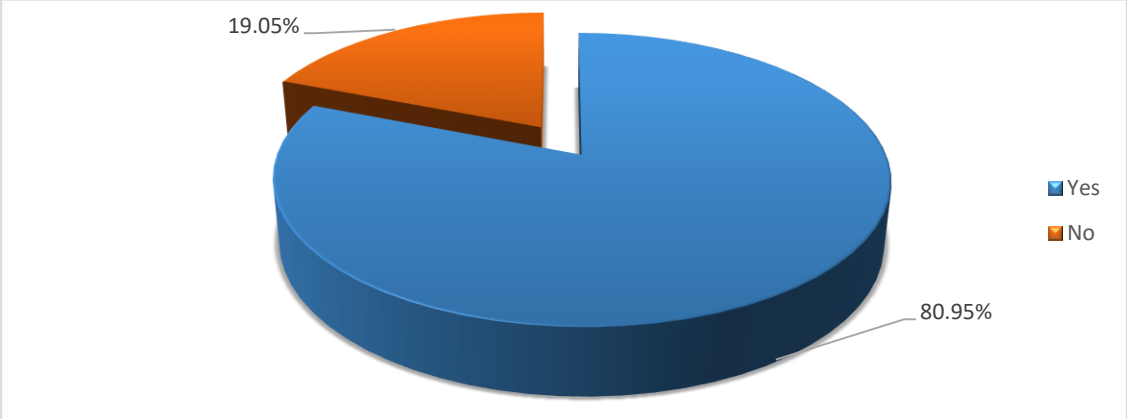

Figure 4.2.2: Graphical representation of Knowledge of the health disadvantages of smoking

Among study population 80.95% people said, they have knowledge of the health disadvantages of smoking where 19.05% answered 'no'.

4.2.3 Positive knowledge about health disadvantages of smoking

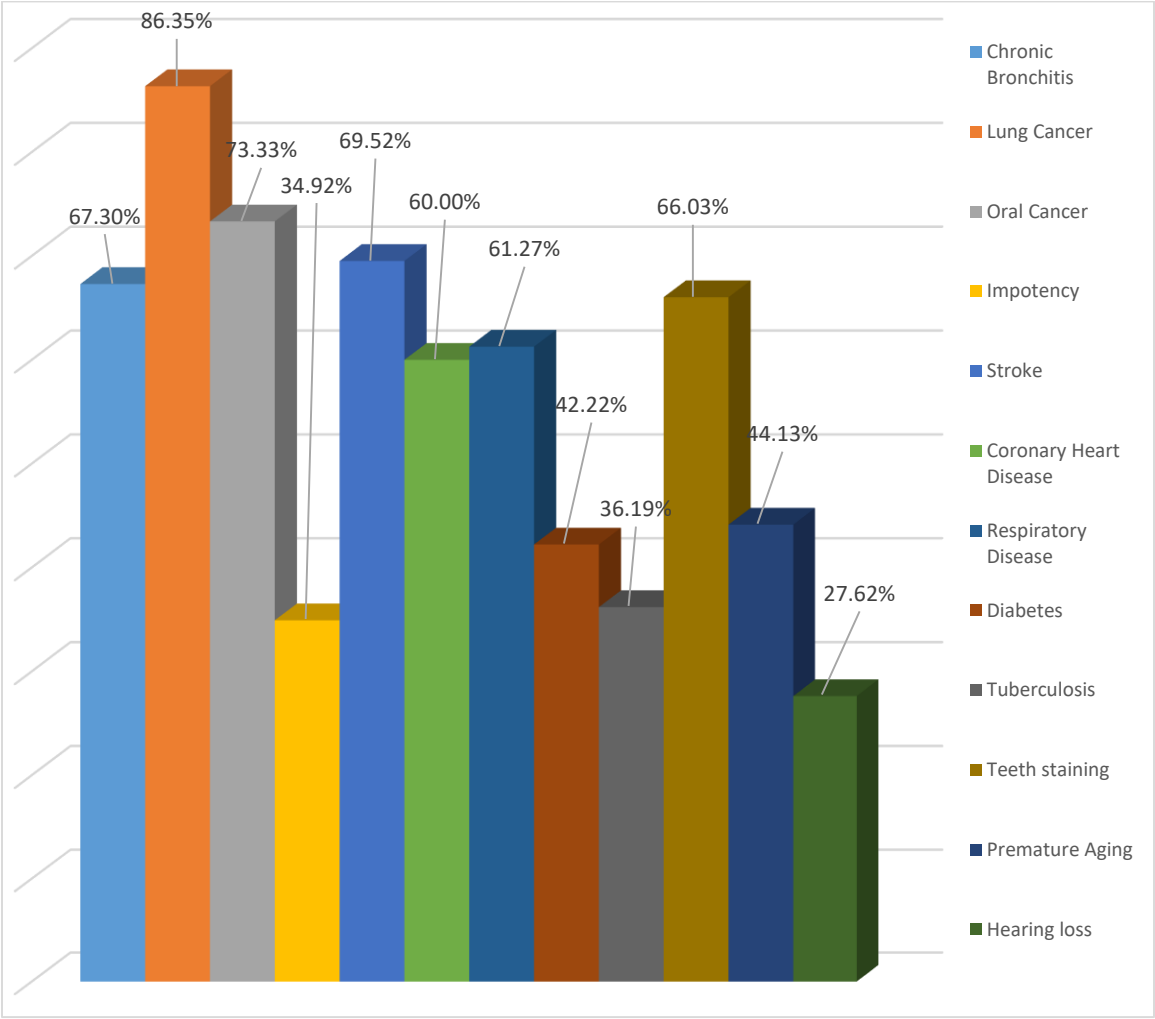

Figure 4.2.3: Graphical representation of Positive knowledge about health disadvantages of smoking

The positive knowledge of the people had for lung cancer (86.35%), oral cancer (73.33%), stroke (69.52%), chronic bronchitis (67.30%), teeth staining (66.03%), respiratory disease (61.27%) & coronary heart disease (60%) but poor knowledge about impotency (34.92%), diabetes (42.22%), tuberculosis (36.19%), premature aging (44.13%) & hearing loss (27.62%).

4.2.4 Knowing of Smoking can't be done in public places

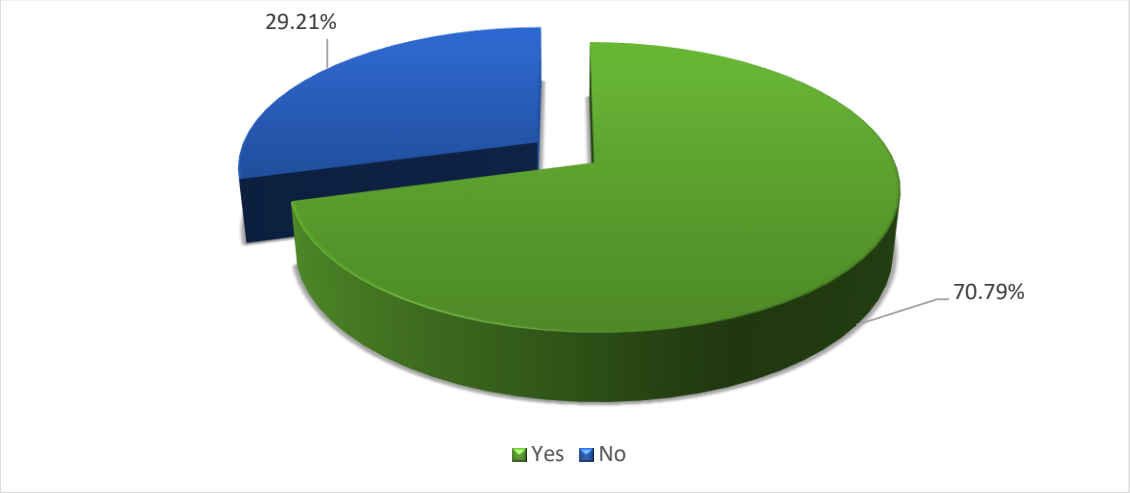

Figure 4.2.4: Graphical representation of Knowing of smoking can't be done in public places

In this study we can see, 70.79% participants knew smoking can't be done in public places.

4.2.5 Knowledge about the consequences of smoking in public places

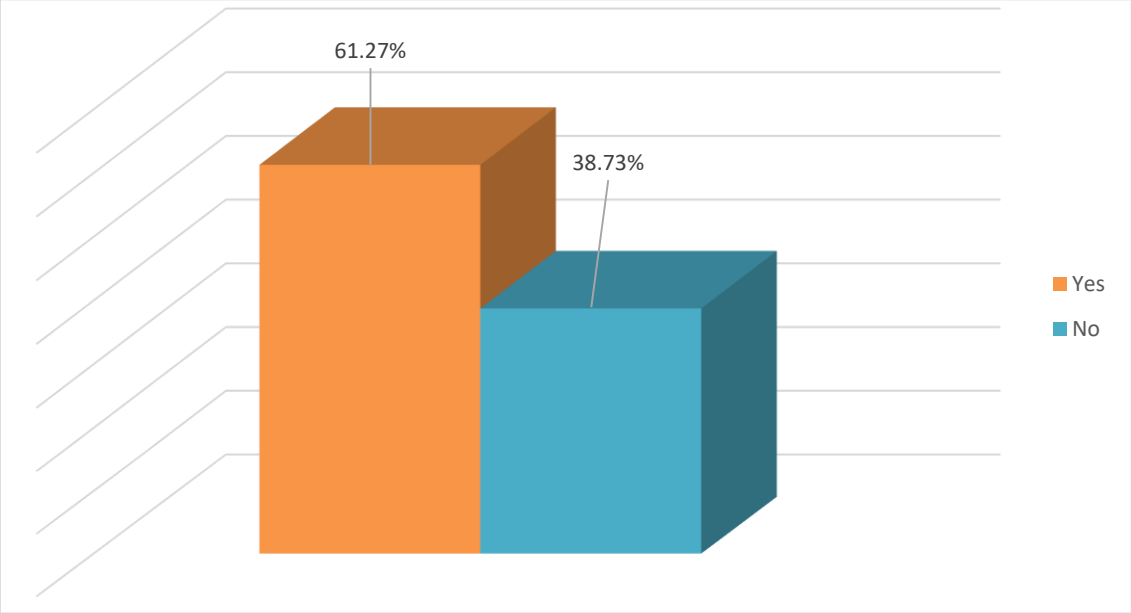

Figure* 4.2.5*: Graphical representation of Knowledge about the consequences of smoking in public places

About 61.27% study people knew the **c**onsequences of smoking in public places in our country.

4.2.6 Attitude towards banning of smoking (percentage)

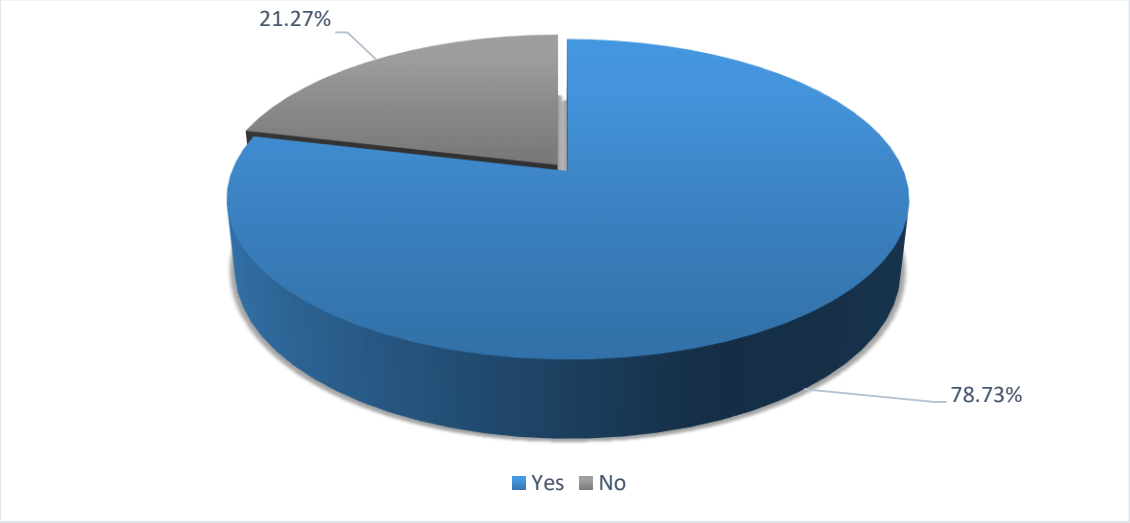

Figure 4.2.6: Graphical representation of Attitude towards banning of smoking

About 78.73% participants said 'yes' about the banning of smoking in our country where 21.27% gave the negative answer.

4.2.7 Attitude towards banning of advertisement of smoking

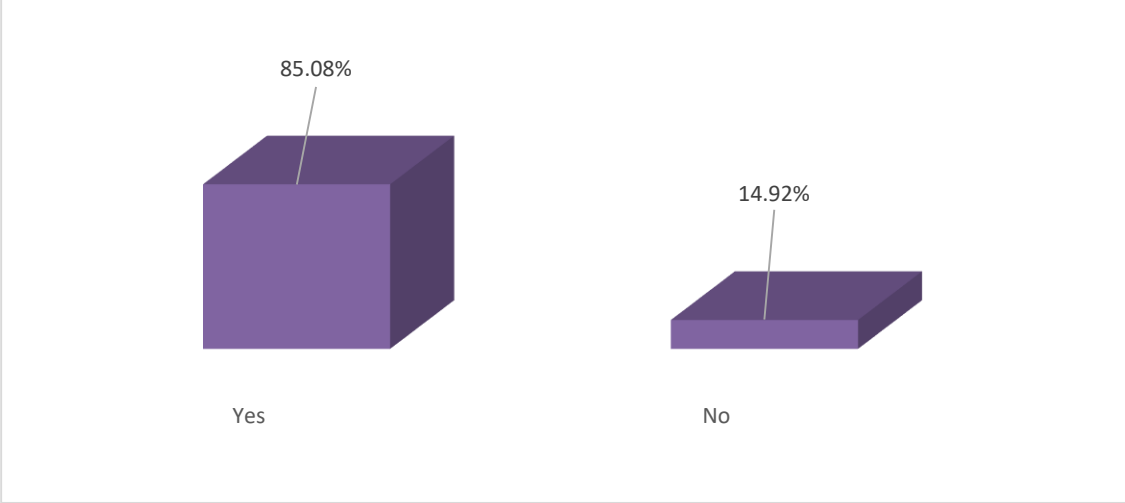

Figure 4.2.7: Graphical representation of Attitude towards banning of advertisement of smoking

Among them, 85.08% participants gave the positive opinion about the banning of advertisement of smoking in our country where 14.92% answered 'no'.

4.2.8 Attitude towards banning of selling tobacco/cigarettes to minors & within 100 yards of educational institutions

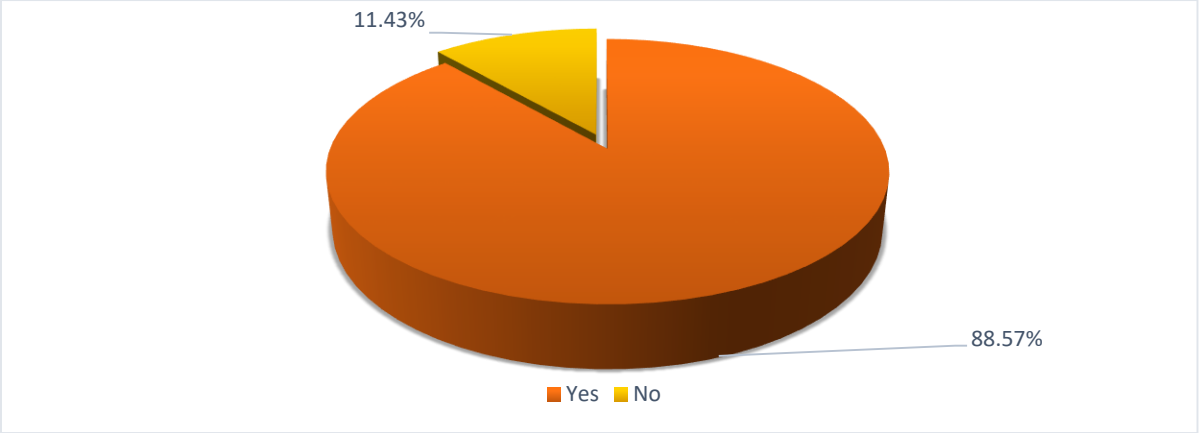

Figure 4.2.8: Graphical representation of Attitude towards banning of selling tobacco/cigarettes

About 88.57% participants said 'yes' about the banning of selling tobacco/cigarettes to minors & within 100 yards of educational institutions in our country.

4.2.9 Attitude towards giving health warning through media & educational institutes

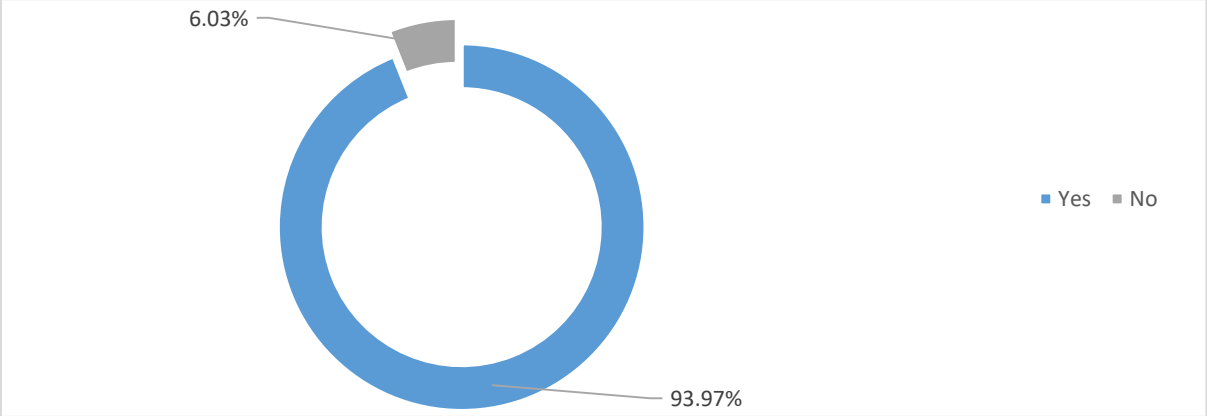

Figure 4.2.9: Graphical representation of Attitude towards giving health warning through media & educational institutes

From the study population, majority (93.97%) participants said 'yes' about the health warning should be given through media & educational institute.

4.3 Smoking habit & history among current & former smokers

4.3.1 Smoking status for current smoker

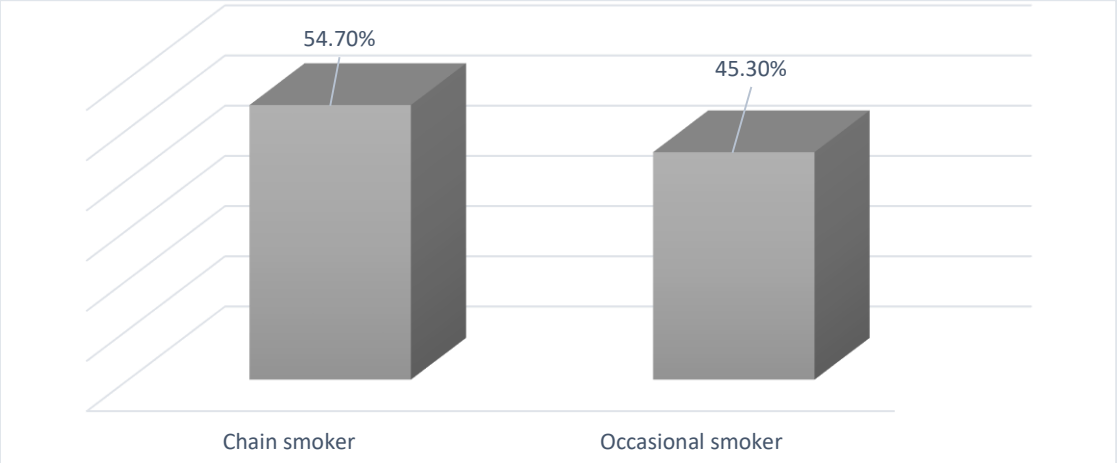

Figure 4.3.1: Graphical representation of Smoking status

Among the current smoker (117 people), 54.70% answered they were chain smoker where 45.30% smoked occasionally.

4.3.2 Age of Starting smoking for both current & former smoker

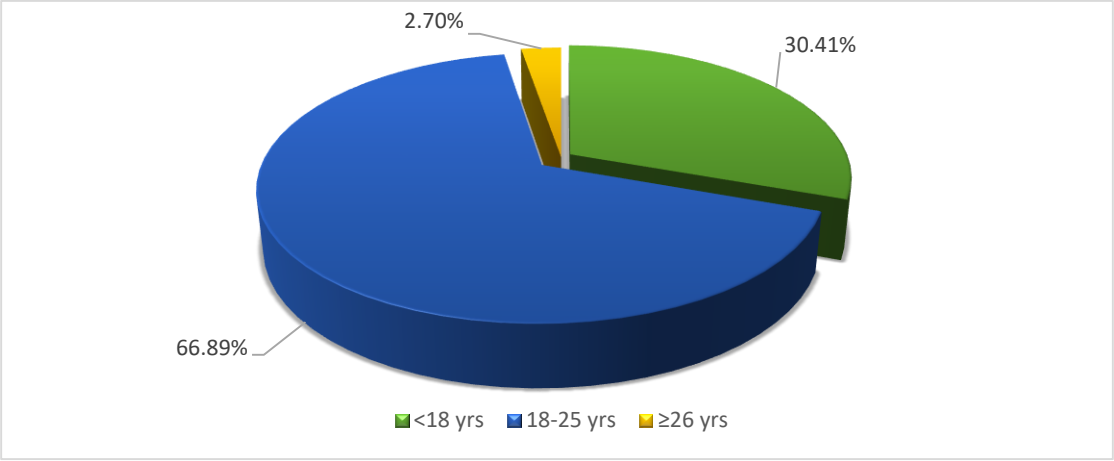

Figure 4.3.2: Graphical representation of Age of Starting smoking

About 30.41% of the smoker answered that they started smoking before the age of 18 years, where 66.89% answered that they started smoking at the age of 18-25 years. Only 2.70% said that they started smoking after reaching 26.

4.3.3 Person influenced to smoke cigarette

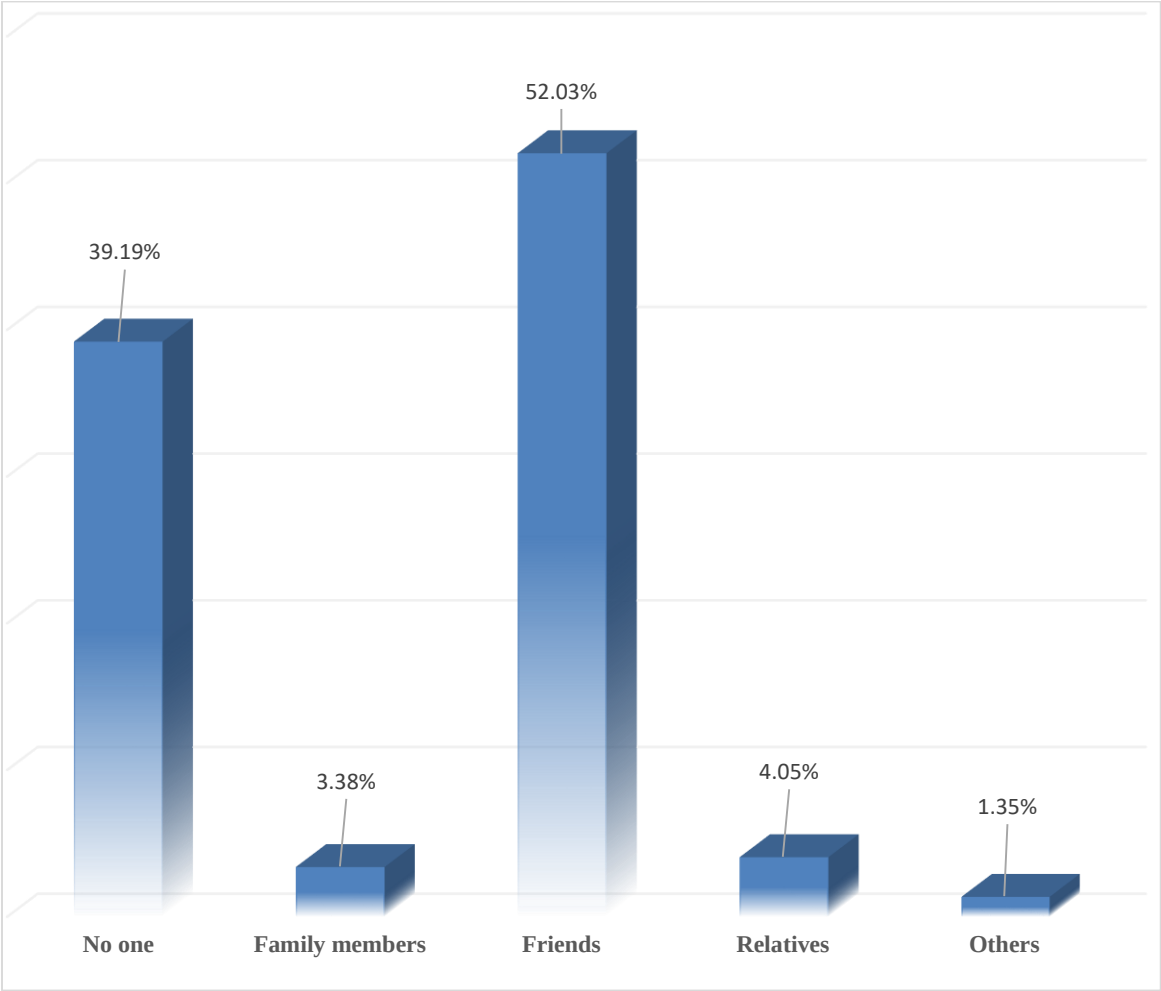

Figure 4.3.3: Graphical representation of Person influenced to smoke cigarette

In this study we can see that, 52.03% people said, their friends influenced them to smoke cigarette where 39.19% smoker said, they were not influenced by anybody to smoke cigarette. Very few percentage of family members, relatives or others influenced them to smoke cigarette.

4.3.4 Reasons for smoking

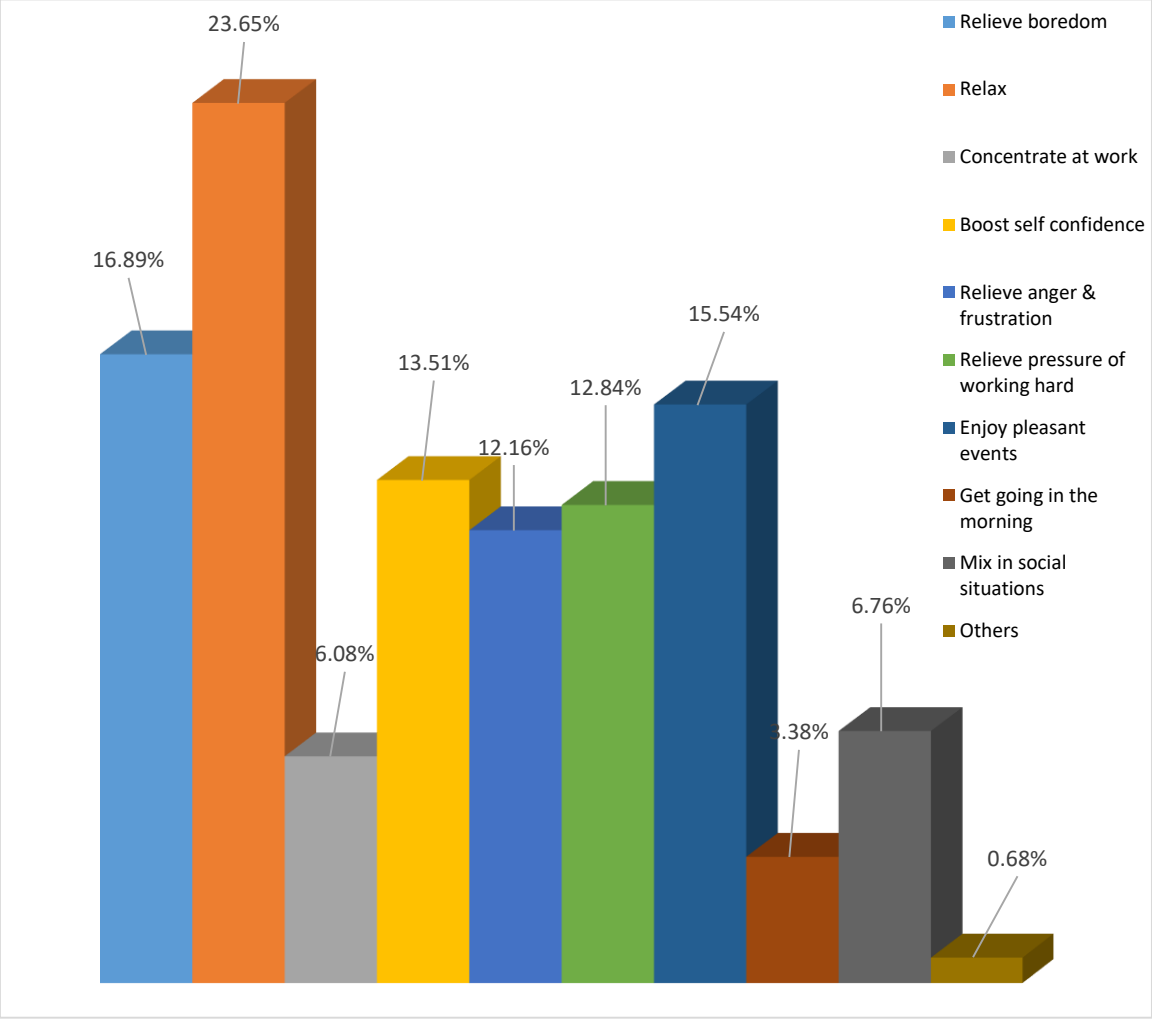

Figure 4.3.4: Graphical representation of the Reasons for smoking

From this study we have come to know the percentages of the reasons for smoking where we can see that 23.65% smoke for the relax, 16.89% for relieve boredom, 15.54% to enjoy the pleasant events, 13.51% smoke to boost self-confidence, 12.84% smoke cigarette to relieve pressure of working hard, 12.16% smoke for the relieve anger & frustration . 6.76% smoke cigarette to mix in social situations where 6.08% thought, smoking helps to concentrate at work, 3.38% smoke cigarette to get going in the morning.

4.3.5 Smoking in presence of family members

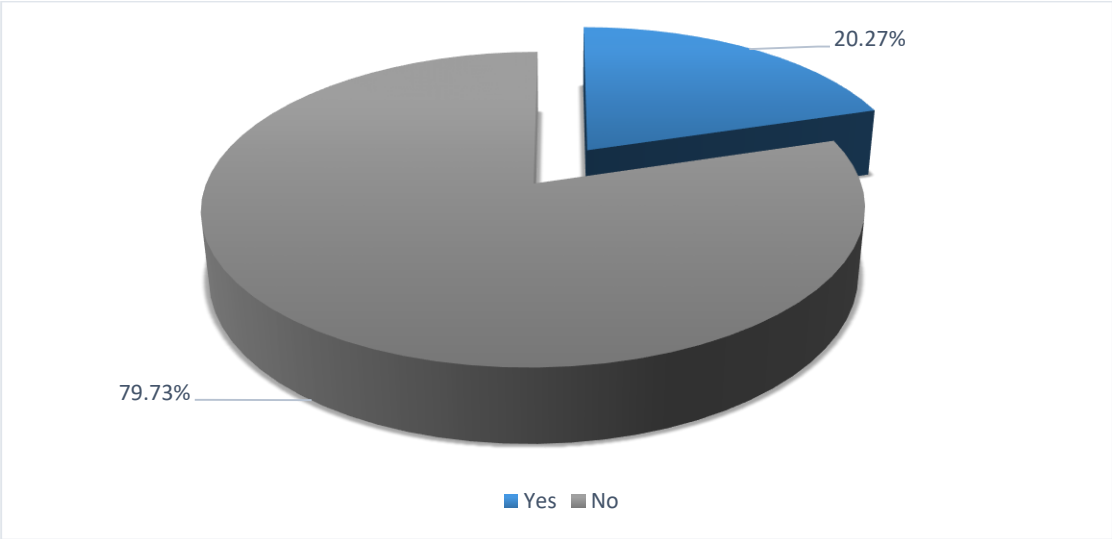

Figure 4.3.5: Graphical representation of Smoking in presence of family members

For both current and former smoker, 79.73% answered, they don't smoke in presence of family members but 20.27% answered 'yes'.

4.3.6 Smoking in public places

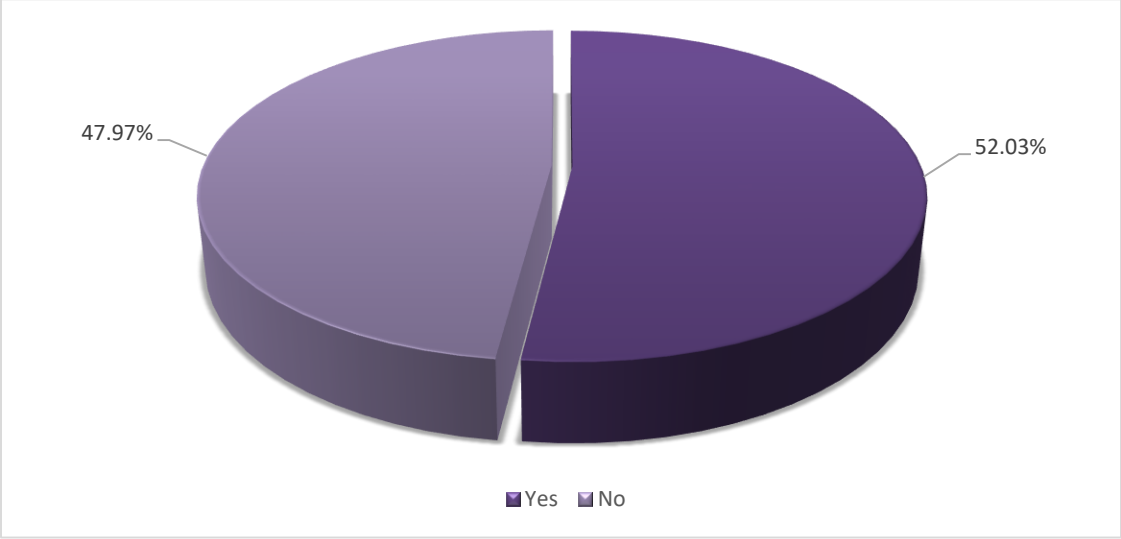

Figure 4.3.6: Graphical representation of Smoking in public places

About 52.03% smoker said, they smoke in the public places where 47.97% answered that they didn't smoke in public places.

4.3.7 Smoking in the work places

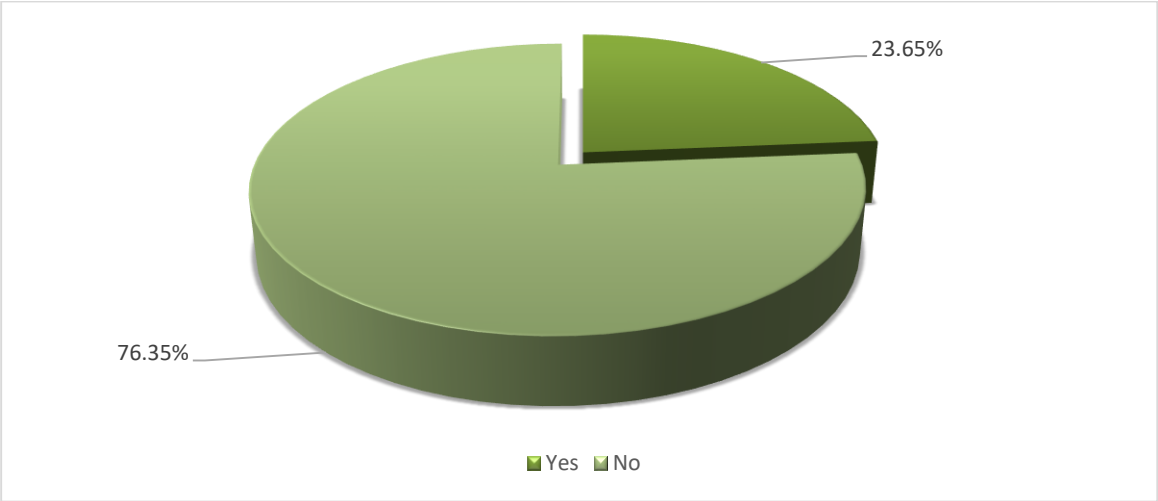

Figure 4.3.7: Graphical representation of Smoking in work places

Majority (76.35%) of smokers answered 'no' that they didn't smoke in work places. Only 23.65% said they did smoking in their work places.

4.3.8 Cigarette buying cost per day

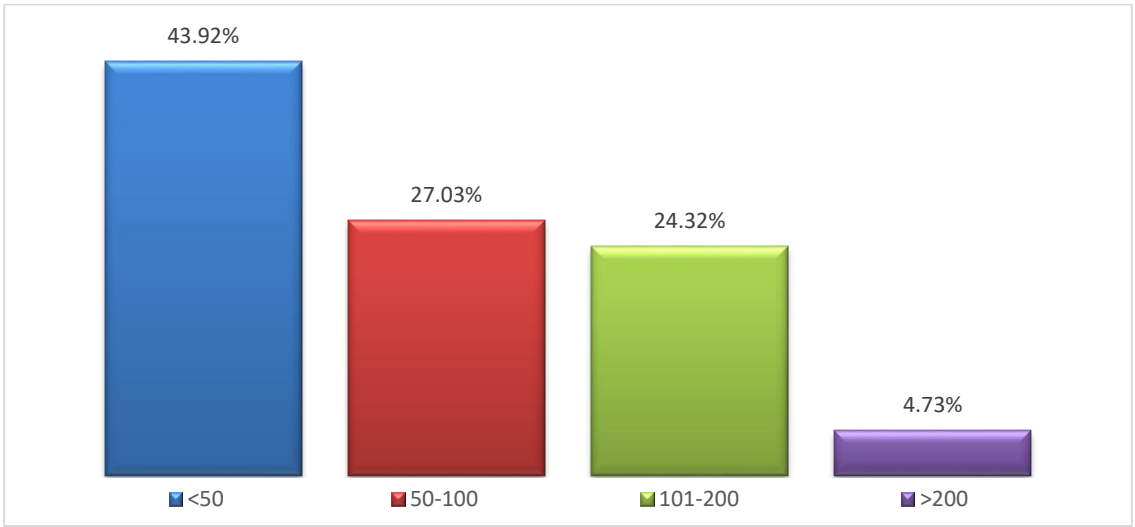

Figure 4.3.8: Graphical representation of Per day cigarette buying cost (Tk.)

About 43.92% of the smoker spent money less than 50 tk. per day. 27.03% spent 50-100 tk. and 24.32% smoker spent money 101-200 tk. per day. Only 4.73% smoker spent money more than 200 tk. per day.

4.3.9 Visiting a doctor due to health problem caused by smoking

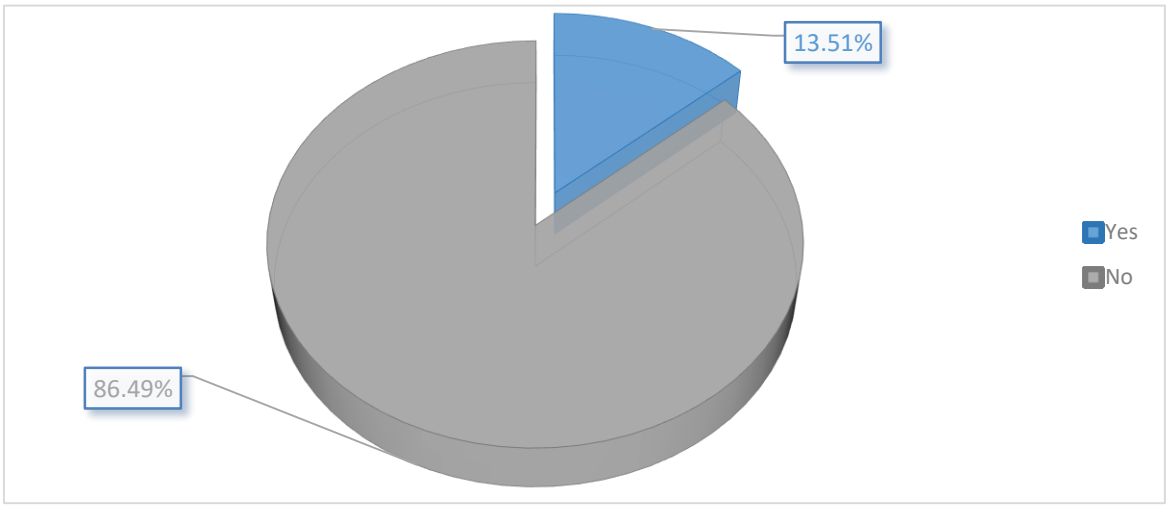

Figure 4.3.9: Graphical representation of Visiting a doctor due to health problem caused by smoking

Only 13.51% answered 'yes' that they visited a doctor due to health problem caused by smoking. Majority (86.49%) answered 'no'.

4.3.10 Eagerness of quitting smoking

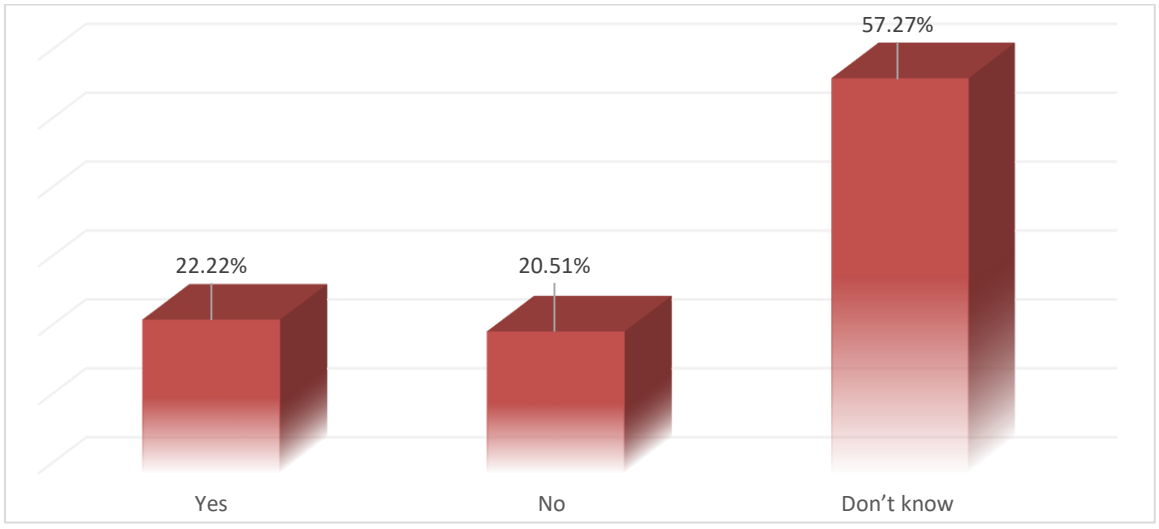

Figure 4.3.10: Graphical representation of Eagerness of quitting smoking

From the current smoker (117 people) only 22.22% answered yes, they want to quit smoking. 20.51% don't want to quit. Most of them (57.27%) answered 'Don't know'.

4.3.11 History of quitting smoking among current smoker

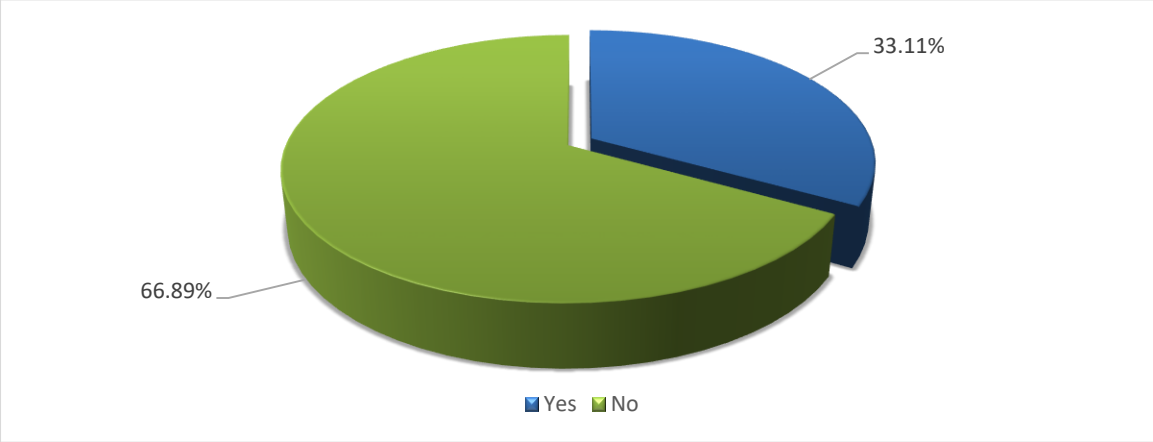

Figure 4.3.11: Graphical representation of History of quitting smoking

About 33.11% current smoker answered yes, they tried to quit smoke but 66.89% didn't try.

4.3.12 Reasons for not quitting smoking

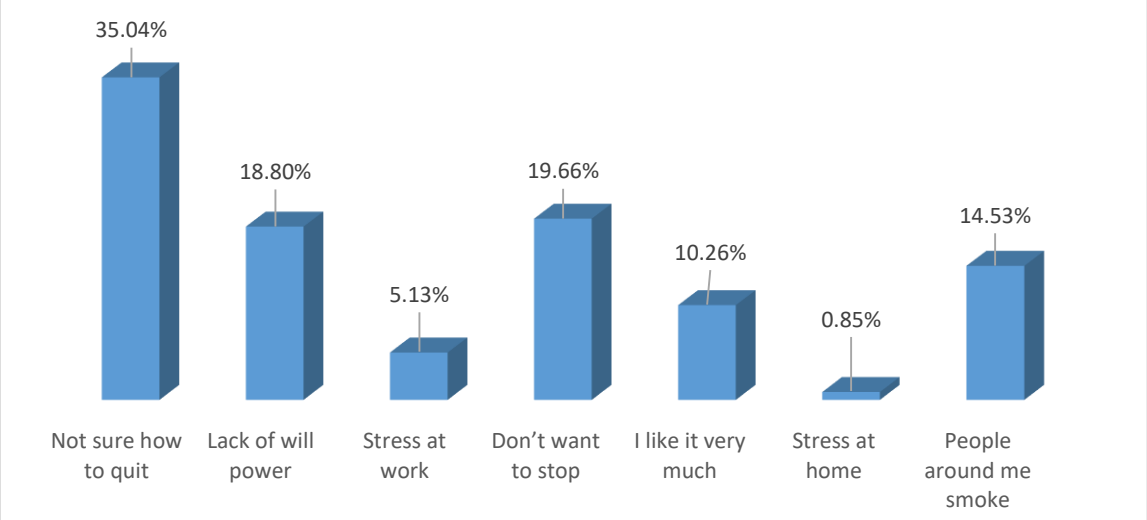

Figure 4.3.12: Graphical representation of Reasons for not quitting smoking

From our study we can see, (35.04%) answered that the smokers were not sure how to quit smoking, (19.66%) answered the didn't want to stop, (18.80%) answered they have lack of will power, (14.53%) said people around them smoke, 10.26% answered they like it very much, (5.13%) answered they smoke due to stress at work & 0.85% said they have stress at home that's why they were not agreed to quit smoking.

4.3.13 Current smokers expect to continue smoking one year from now

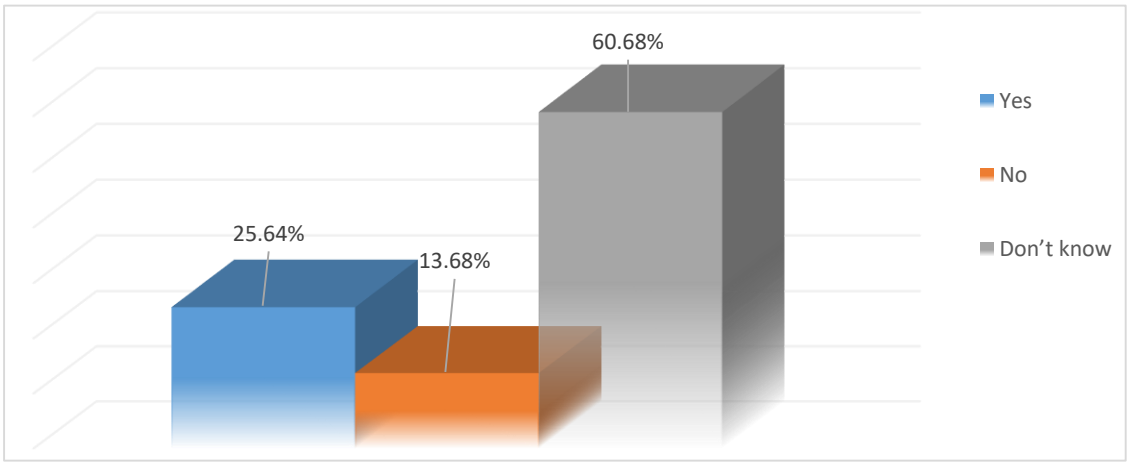

Figure 4.3.13: Graphical representation of Current smokers expect to continue smoking one year from now

From the current smoker, 25.64% answered yes, they want to continue smoking one year from now. Only 13.68% don't want to continue smoking. Most of them (60.68%) answered 'Don't know'.

4.3.14 Smokers taken free sample of Cigarette

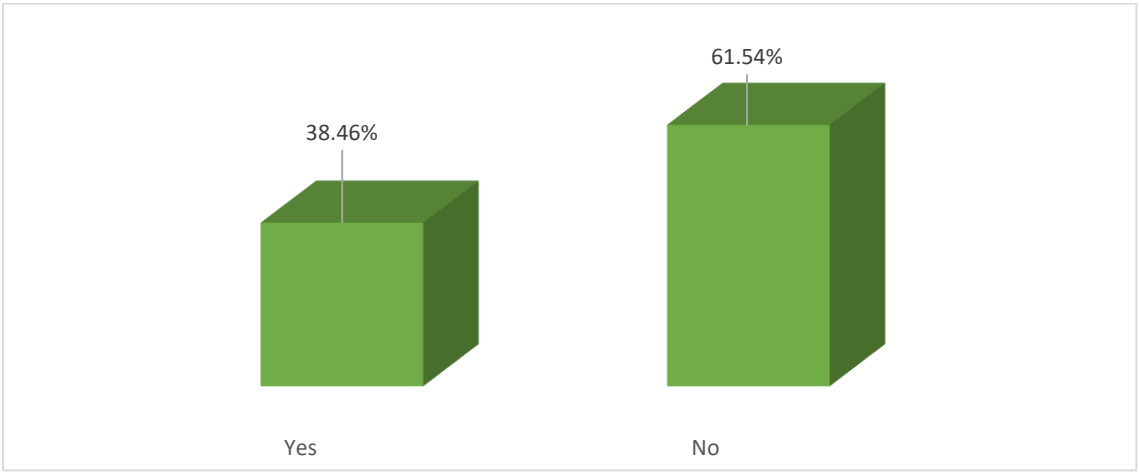

Figure 4.3.14: Graphical representation of Smokers taken free sample of Cigarette

Majority of smoker (61.54%) answered no, they didn't take free sample of cigarette, only 38.46% answered 'yes'.

4.3.15 Discount offer availed by the smokers

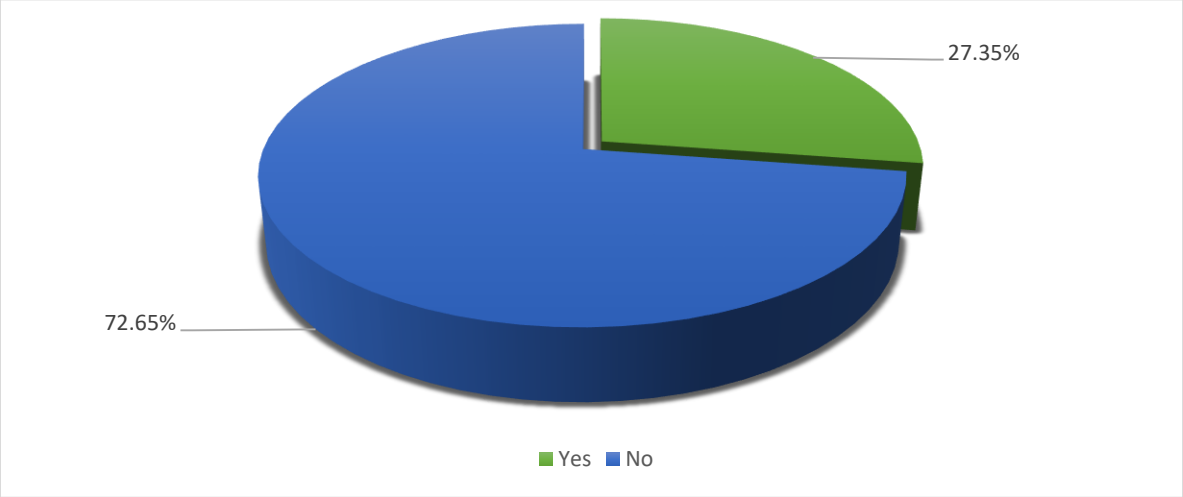

Figure 4.3.15: Graphical representation of Smoker got any discount offer

About 27.35% said, they have got discount offer but most of them (72.65%) answered they didn't get any discount offer.

4.3.16 Age of quitting smoking for former smoker

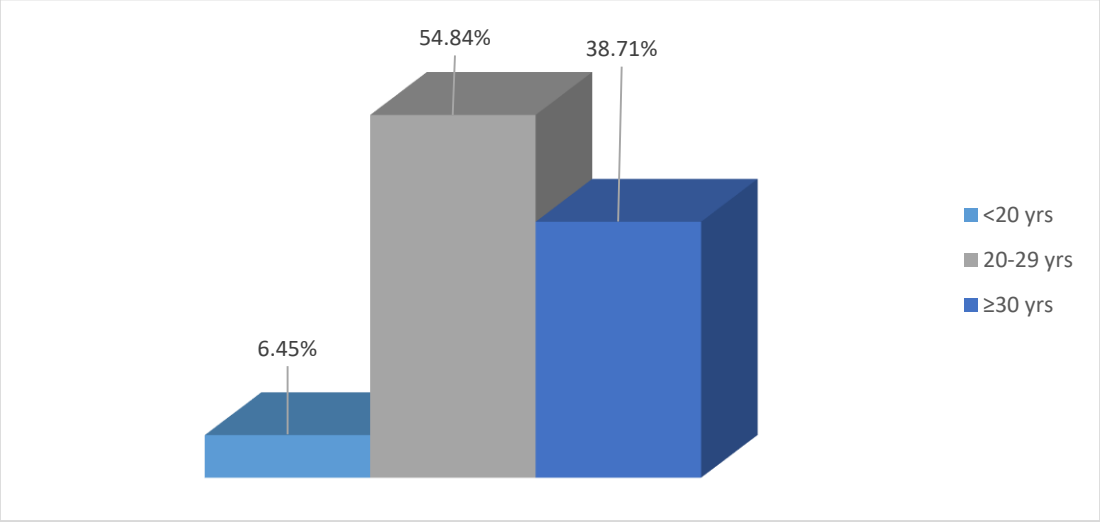

Figure 4.3.16: Graphical representation of Age of quitting smoking for former smoker

From former smoker (38 people) only 6.45% answered, they quit smoking before the age of 20 years, where 54.84% answered they quit smoking at the age of 20-29 years and 38.71% said, they quit smoking after reaching 30.

4.3.17 Reasons for quitting smoking for former smoker

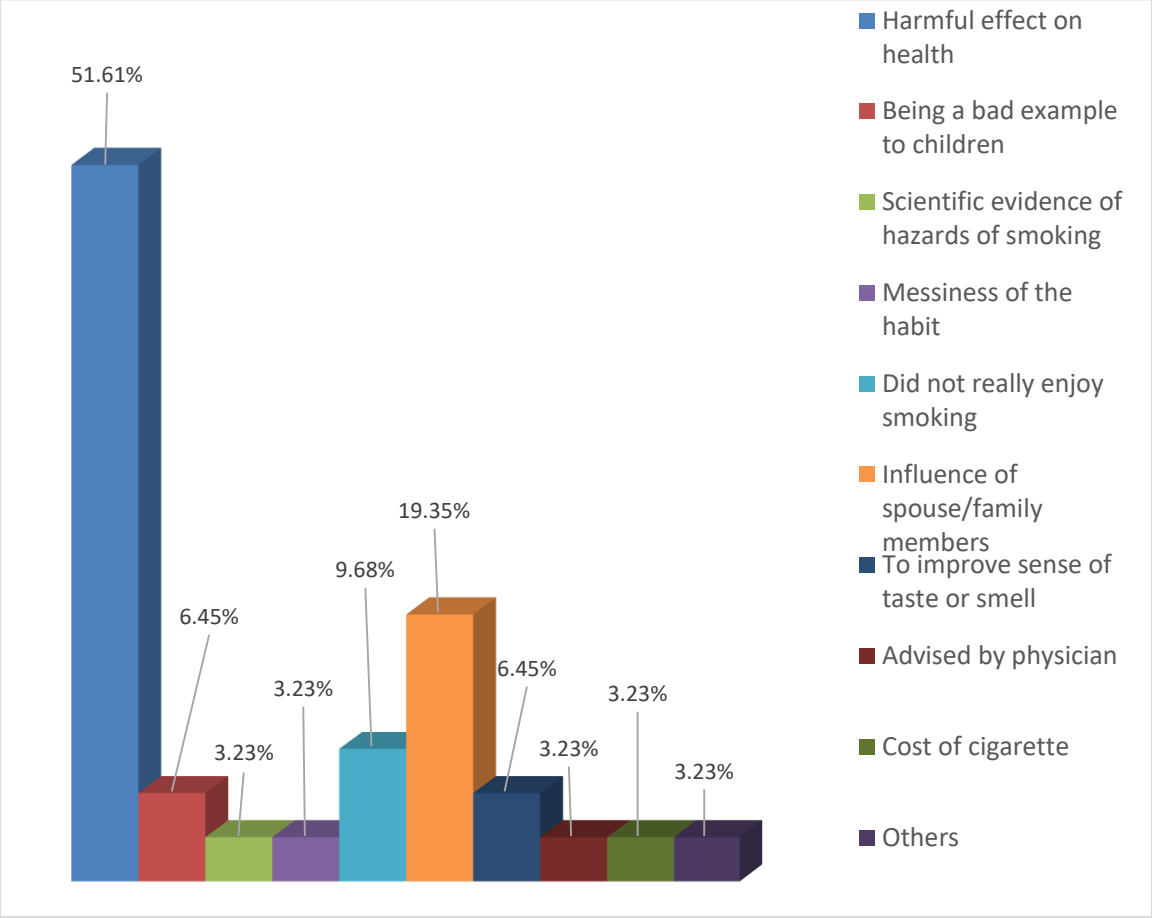

Figure 4.3.17: Graphical representation of Reasons for quitting smoking

Most of the smoker (51.61%) quit smoking due to the harmful effect on health, (19.35%) quit smoking due to the Influence of spouse/family members. 9.68% said, they don't really enjoy smoking that why they quitted smoking. 6.45% said, they will be a bad example to children, 6.45% also said to improve sense of taste or smell.

4.3.18 Method used to quit smoking

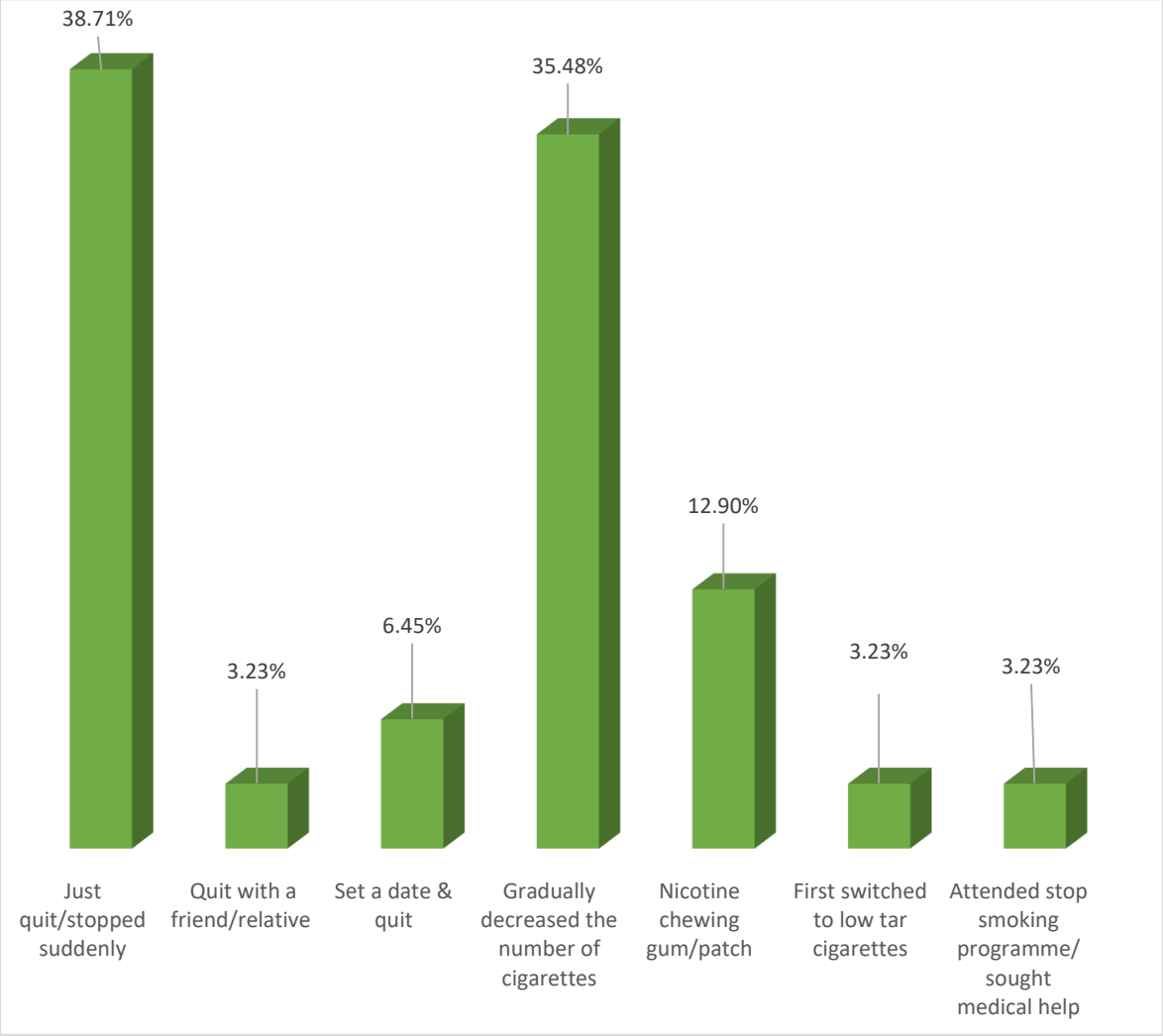

Figure 4.3.18: Graphical representation of the Method used to quit smoking

In the method used to quitting smoking 38.71% said, they just quit/stopped suddenly where 35.48% said they gradually decreased the number of cigarettes & 12.90% said, they quit by taking nicotine chewing gum/patch.

Chapter 5: Discussion

Cigarette smoking is the leading cause of preventable diseases and premature death and it is responsible for more than 5 million deaths every year. Smoking can increase the risk of cardiovascular disease, respiratory disease, and 10 different forms of cancer. In many low-and middle income countries, women smoke much less than men (Jha *et al.,* 2006).

In this study smoking status and knowledge regarding the consequences of smoking were evaluated among 315 respondents from Dhaka City. Most of the participants (65.40%) were between the ages of 21-30 years. Among them 67.62% were male and 32.38% were female. About 50.47% of them were students, 24.13% were govt. /private job holders & 10.80% were pharmacists. Majority of the participants have completed HSC (40.95%), among the remaining were graduates (33.66%) and post-graduates (19.05%). Most of them (95.87%) were living in urban area and had monthly income of <10,000 taka (44.76%).

The Global Adult Tobacco Survey was conducted in fourteen different countries from 2008-2010. There was relatively high awareness about the harmful effects of smoking tobacco with main awareness being about its relationship with lung cancer (>90% in most countries). In contrast, there was relatively low awareness about harmful effects of smokeless tobacco (< 90% in all countries except India and Bangladesh), and observed correlation of smoking tobacco with heart attack (40.6% in China, 65.1% in India) and stroke (28.2% in China, 50.5% in India) (Gupta and Kumar, 2014).

In our study it was found that, about 86.03% answered that they were aware of the impact of smoking and 80.95% had knowledge about health disadvantages of smoking. The people had positive knowledge about the impact of smoking on lung cancer (86.35%), oral cancer (73.33%), stroke (69.52%), chronic bronchitis (67.30%), teeth staining (66.03%), respiratory disease (61.27%) & coronary heart disease (60%) but poor knowledge about impotency (34.92%), diabetes (42.22%), tuberculosis (36.19%), premature aging (44.13%) & hearing loss (27.62%). By comparing these results with the above study, it can said that the association of smoking with lung cancer and heart attack were well known to the participants of both studies.

In our study, about 46.98% people had cigarette smoking habit among which 90.54% were male and 9.46% female. Majority (66.89%) of the smokers started smoking at the age of 18-25 years and 30.41% before the age of 18 years. About 37.14% the total respondents were

current smokers & 9.84% were former smokers. Among the current smokers, 54.70% were chain smokers whereas about 45.30% mentioned to smoke occasionally. Similar results were observed in the study done by Akhtar *et al*. (2011) among a rural population of Bangladesh where the prevalence of current smoking amongst male (89.3%) was significantly higher in comparison with the female (10.7%) and the current smoking prevalence was 39.4%.

In our study, about 9.52% respondents mentioned that they were sent by their family members to buy cigarette at <18 years and 3.81% at an age of ≥18 years. About 52.03% of the smokers responded that their friends influenced them to smoke cigarette whereas 39.19% were not influenced by anybody to smoke cigarette. About 38.46% smoker took free sample of cigarette and 27.35% had discount offer on purchasing. These reasons might have influenced them to start or continue cigarette smoking. The influence of the smoking behavior of peers and parents was also observed in the study on male teenagers of Dhaka city where peers were more important for the students. Advertising may also have been an important influence on students since smokers in this group could better identify tobacco advertisements compared with their nonsmoking peers (Ahsan, Underwood and Atkinson, 1991).

While they were asked about the reasons behind smoking, 23.65% answered that they smoke for relaxing, 16.89% for relieving boredom, 15.54% to enjoy the pleasant events, 13.51% smoke to boost self-confidence, 12.84% smoke cigarette to relieve pressure of working hard and 12.16% for the relieve anger & frustration. This study suggests that, 43.92% of the smoker spent less than 50 tk. per day but 27.03% spent 50-100 tk. and 24.32% smoker spent 101-200 tk. per day. Only 4.73% smoker spent money more than 200 tk. per day.

About 13.51% smoker answered that they visited a doctor due to health problem caused by smoking. Among the current smokers, only 22.22% had the urge to quit smoking and 33.11% already tried to do so but 66.89% didn't even try. About 35.04% smoker was not sure how to quit smoking and 19.66% didn't want to stop it. About one-fourth (25.64%) mentioned that they would continue smoking one year from now.

According to our study, majority (54.84%) of the former smokers quit smoking at the age of 20-29 years and 38.71% after reaching 30. Most of the smoker quit smoking due to the harmful effect on health (51.61%) and under the Influence of spouse/family members (19.35%). About

6.45% said that they quit smoking for not creating a bad example to their children. Majority (38.71%) of the former smokers mentioned that they just quit/stop suddenly whereas 35.48% gradually decreased the number of cigarettes and 12.90% used nicotine chewing gum/patch.

Among the participants 69.84% were unmarried, 29.52% were married & only a few were divorced (0.64%). From the married participants, 27.62% have children where. About 79.73% of the total smokers said that they didn't smoke in the presence of family members and 76.35% smoker didn't smoke in their work places. But 52% smoker mentioned that they smoke in the public places although 70.79% participants were aware that smoking can't be done in public places in our country and about 61.27% of study people knew the consequences of doing so.

Among total participants, positive attitude were shown by 78.73% respondents about banning of smoking in our country, 85.08% about banning of advertisement, 89% about banning of selling tobacco/cigarettes to minors & within 100 yards of educational institutions and 93.97% about giving health warning through media & educational institute in order to reduce the prevalence of smoking.

Chapter 6: Conclusion

This study gives us the view about smoking status of the population of Dhaka city with indicating the higher percentage of male smokers. Both smokers and nonsmokers have the knowledge about impact of smoking on some diseases like lung cancer, oral cancer, stroke but they had poor knowledge about the link with impotency, diabetes, tuberculosis, premature aging & hearing loss. The habit of smoking in public places was observed among the smokers although majority of them were aware of the law regarding this. The main reasons of smoking were very lame such as for relaxation, relieving boredom, to enjoy the pleasant events or to boost self-confidence. Suffering from health problem and influence of family played vital role in quitting smoking. Most of the respondents were positive about the steps necessary to take for reducing smoking. In order to save the population from this bad habit of smoking, Government should arrange awareness programs about its health consequences and take measures to reduce the chances for selling tobacco products. The proper implementation of the tobacco control law can also play a vital role in this regard.

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