

A Survey on passive smoking among Bangladeshi population

**A Dissertation submitted to the Department of Pharmacy,
East West University, Bangladesh, in partial fulfillment of the
requirements for the Degree of Bachelor of Pharmacy**

Submitted by

Saifur Rahman

ID:-2012-3-70-048



**Department of Pharmacy
East West University**

Declaration by the Research Candidate

I, Saifur Rahman, ID: 2012-3-70-048, hereby declare that the dissertation entitled— A Survey on passive smoking among Bangladeshi population || submitted by me to the Department of Pharmacy, East West University in partial fulfillment of the requirement for the award of the degree of Bachelor of Pharmacy is a record of research work under the supervision and guidance of Nishat Nasrin, Senior Lecturer, Department of Pharmacy, East West University, Dhaka.

.....

Saifur Rahman

ID: 2012-3-70-048

Department of Pharmacy,

East West University

Certificate by the Supervisor

This is to certify that the thesis entitled " A Survey on passive smoking among Bangladeshi population " submitted to the Department of Pharmacy, East West University for the partial fulfillment of the requirement for the award of the degree Bachelor of Pharmacy is a bonafide record of original and genuine research work carried out by Saifur Rahman, ID: 2012-3-70-048 in 2016 of his research in the Department of Pharmacy, East West University, under the supervision and guidance of me.

Nishat Nasrin

Senior Lecturer

Department of Pharmacy

East West University

Certificate by the Chairperson

This is to certify that the thesis entitled “A Survey on passive smoking among Bangladeshi population” submitted to the Department of Pharmacy, East West University for the partial fulfillment of the requirement for the award of the degree Bachelor of Pharmacy is a bonafide record of original and genuine research work carried out by Saifur Rahman, ID: 2012-3-70-048 in 2015.

Dr. Shamsun Nahar Khan

Associate Professor and Chairperson

Department of Pharmacy

East West University

Acknowledgement

At first, I am grateful to the ALLAH for the good health and wellbeing that were necessary to complete this research. I would like to express my deepest gratitude to my research supervisor, **Nishat Nasrin**, Senior Lecturer, Department of Pharmacy, East West University, who had been always optimistic and full of passion and ideas. Her generous advice, constant supervision, intense support, enthusiastic encouragements and reminders during the research work not only helped shape this study but also molded me into being a better researcher. Her in-depth thinking, motivation, timely advice and encouragement have made it possible for me to complete this research.

I put forward my most sincere regards and profound gratitude to Chairperson **Dr. Shamsun Nahar Khan**, Associate Professor, Department of Pharmacy, East West University, for his inspiration in my study. She also paid attention for the purpose of my research work and extending the facilities to work.

I want to give special thanks to **Zahid Hasan Jony , Md. Monowar Zahid, Md.Mazharul Islam** and my all friends, who gave me support for my research work and for their extended cooperation for my study.

I express my sincere thankfulness to my family for guiding me all through my life, including that for my research project. During the course of this research work, a lot of experiences I have received in which is of inestimable value for my life.

Dedication

This research work is dedicated to my beloved parents,
honorable faculties and loving friends.

List of Table

Title		Page Number
List of Figures		I-III
Abstract		IV
Key Words		IV
Chapter 1	Introduction	1-20
1.1	Overview	2
1.2	Smoking	3
1.3	Brief history of smoking	3
1.3.1	Tobacco had been around	3
1.3.2	Tobacco was first considered to be dangerous to health	3-4
1.3.3	Development of cigarettes	4
1.3.4	Caused of the growth and later decline of smoking in traditional markets	4
1.4	Types of Smoking	5
1.4.1	Active smoking	5
1.4.2	Passive Smoking (secondhand smoke)	5-6
1.5	Second hand smoke is more dangerous	6
1.6	Health risks of passive smoking	6-7
1.7	Forms of tobacco smoked	7
1.7.1	Cigarette	7
1.7.2	Menthol cigarette	7
1.7.3	E- cigarette	7-8
1.7.4	Hookahs and shisha	8
1.7.5	Dissolvables	8
1.7.5	Bidis	8
1.8	Nicotine	8-9
1.8.1	Psychodynamic effects of nicotine	9

1.8.2	Pharmacokinetics of nicotine	9
1.8.3	Nicotine Addiction	10
1.8.4	Other dangerous chemicals in tobacco smoke	10-12
1.9	The Effects of Smoking on the Body	12-13
1.9.1	Effects of smoking on the central Nervous System	13
1.9.2	Effects of smoking on the respiratory System	13
1.9.3	Effects of smoking on the cardiovascular System	13-14
1.9.4	Effects of smoking on the ear	14
1.9.5	Effects of smoking on the digestive System	14
1.9.6	Effects of smoking on the reproductive System	14-15
1.9.7	Effects of smoking on the immune system	15
1.9.8	Effects of smoking on the circulatory system	15
1.9.9	Effects of smoking on the musculoskeletal system	15-16
1.10	Smoking cause High blood pressure	16
1.11	Smoking cause Impotence	16
1.12	Smoking cause Hair loss	16
1.13	Smoking cause Birth Defects	16-17
1.14	Smoking cause Tuberculosis	17
1.15	Smoking cause Oral cancer	17
1.16	Smoking cause eye irritation and eye disease	17-18
1.17	Smoking and premature birth	18
1.18	Smoking cause allergy	18
1.19	Smoking and asthma	18-19
1.20	Smoking and ulcer	19
1.21	Epidemiology	19-21

Chapter 2	Literature Review	22-26
	Significance of the Study	27-28
	Aims and objective of this study	29
Chapter 3	Methodology	30-32
3.1	Type of the Study	31
3.2	Study Population	31
3.3	Inclusion Criteria	31
3.4	Exclusion Criteria	31
3.5	Data Collection Method	31
3.6	Development of the Questionnaire	31
3.7	Sampling Technique	31
3.8	Data collecting period	32
3.9	Data Analysis	32
Chapter 4	Results	33-54
4.1	Personal Information	34
4.1.1	Age Distribution	34
4.1.2	Gender Distribution	34-35
4.1.3	Educational Qualification	35
4.1.4	Occupation Status	35-36
4.1.5	Monthly Income Distribution	36
4.1.6	Living Area	37
4.1.7	Smoking Status	37-38
4.2	Knowledge and Attitude	38
4.2.1	Knowledge about passive smoking	39
4.2.2	Knowledge about Harmful effect of Passive Smoking	39
4.2.3	Effect of Passive Smoking	39
4.2.4	Breathing Problems associated with passive smoking	40
4.2.5	Lung Cancer associated with passive smoking	40-41
4.2.6	Oral Cancer associated with passive smoking	41
4.2.7	Stained Teeth associated with passive smoking	41-42
4.2.8	Impotency associated with passive smoking	42

4.2.9	High Blood Pressure associated with passive smoking	42-43
4.2.10	Heart Disease associated with passive smoking	43
4.2.11	Eye Irritation associated with passive smoking	43-44
4.2.12	Hearing Loss associated with passive smoking	44
4.2.13	Developmental Defects in Children associated with passive smoking	44-45
4.2.14	Premature Birth associated with passive smoking	45
4.2.15	Allergy associated with passive smoking	45-46
4.2.16	Asthma associated with passive smoking	46
4.2.17	Tuberculosis associated with passive smoking	46-47
4.2.18	Other Problems associated with Passive Smoking associated with passive smoking	47
4.2.19	Exposure to Passive Smoking	47-48
4.2.20	Area of Exposure	48
4.2.21	Restriction in Area of Exposure	48-49
4.2.22	People Compliance with Smoking Restriction	49
4.2.23	Comfortableness in No-Smoking Zone	49-50
4.2.24	Botheration in Passive Smoking	50
4.2.25	Way of Dealing with Passive Smoking	51
4.2.26	Restriction in Buying Cigarettes Aged Below 16	51-52
4.2.27	Strict Law Enforcement to Stop Public Smoking	52
4.2.28	Restriction in Smoking Advertisement	52-53
4.2.29	Organizing Awareness Programs	53
4.2.30	Information on Effects of Smoking in Academic Curriculum must be contain	53-54
4.2.31	Reasons of Smoking	54
Chapter 5	Discussion and Conclusion	55-58
Chapter 6	References	59-66

List of Figure

Serial	Title	Page
4.1.1	Graphical Representation of Age Distribution	34
4.1.2	Graphical Representation of Gender Distribution	34
4.1.3	Graphical Representation of Educational Qualification	35
4.1.4	Graphical Representation of Occupation Status	35
4.1.5	Graphical Representation of Monthly Income Distribution	36
4.1.6	Graphical Representation of Living Area	37
4.1.7	Graphical Representation of Smoking Status	37
4.2.1	Graphical Representation of Knowledge about passive smoking	38
4.2.2	Graphical Representation of Knowledge about Harmful effect of Passive Smoking	39
4.2.3	Graphical Representation of Effect of Passive Smoking	39
4.2.4	Graphical Representation of Breathing Problems associated with passive smoking	40
4.2.5	Graphical Representation of Lung Cancer associated with passive smoking	40
4.2.6	Graphical Representation of Oral Cancer associated with passive smoking	41
4.2.7	Graphical Representation of Stained Teeth associated with passive smoking	41
4.2.8	Graphical Representation of Impotency associated with passive smoking	42
4.2.9	Graphical Representation of High Blood Pressure associated with passive smoking	42
4.2.10	Graphical Representation of Heart Disease associated with passive smoking	43

4.2.11	Graphical Representation of Eye Irritation associated with passive smoking	43
4.2.12	Graphical Representation of Hearing Loss associated with passive smoking	44
4.2.13	Graphical Representation of Developmental Defects in Children associated with passive smoking	44
4.2.14	Graphical Representation of Premature Birth associated with passive smoking	45
4.2.15	Graphical Representation of Allergy associated with passive smoking	45
4.2.16	Graphical Representation of Asthma associated with passive smoking	46
4.2.17	Graphical Representation of Tuberculosis associated with passive smoking	46
4.2.18	Graphical Representation of Other Problems associated associated with passive smoking with Passive Smoking	47
4.2.19	Graphical Representation of Exposure to Passive Smoking	47
4.2.20	Graphical Representation of Area of Exposure	48
4.2.21	Graphical Representation of Restriction in Area of Exposure	48
4.2.22	Graphical Representation of People Compliance with Smoking Restriction	49
4.2.23	Graphical Representation of Comfortableness in No-Smoking Zone	49
4.2.24	Graphical Representation of Botheration in Passive Smoking	50
4.2.25	Graphical Representation of Way of Dealing with Passive Smoking	51
4.2.26	Graphical Representation of Restriction in Buying Cigarettes Aged Below 16	51

4.2.27	Graphical Representation of Strict Law Enforcement to Stop Public Smoking	52
4.2.28	Graphical Representation of Restriction in Smoking Advertisement	52
4.2.29	Graphical Representation of Organizing Awareness Programs	53
4.2.30	Graphical Representation of Information on Effects of Smoking in Academic Curriculum must be contain	53
4.2.31	Graphical Representation of Reasons of Smoking	54

Abstract

Secondhand smoke (SHS), the smoke generated by active smokers, remains a widespread health hazard worldwide. Smoking is a chemical toxicosis which is able to cause detrimental effects either of acute or chronic type on different structures of the body being some of these like cardiovascular system, respiratory system and epithelial glands target organs. The aim of this study was to find out the knowledge about passive smoking and its harmful effects among general people of Bangladesh. The general people, both smokers and non smokers were the study population. The total number of study population was 703 where the rickshaw puller, tea stall manager, pharmacy worker and labor from both rural and urban area participated in the study, Among the participants 97% were male and only 3% female, majority of whom were from rural area. Not only non-smokers but also smokers felt bothered in passive smoke. About 56% respondents said SHS cause severe health problem and about 37% said that it causes minor problem. According to the respondents tea stall is the major area where people get exposed to second hand smoke and exposure also occur due to no restriction were present in the exposure area. In the most (92%) cases there were no restriction. Most of the study population supported anti-smoking initiatives. Government campaigns and policies now need to focus on reducing SHS exposure in settings of Bangladesh in order to reduce the health hazards of SHS.

Key Words: Secondhand smoking, Knowledge of passive smoking, Attitude, Exposure, Restriction.

Chapter 1

Introduction

1.1 Overview

Tobacco smoking is one of the leading causes of disease burden around the globe. Based on current trends, it is estimated that tobacco smoking will account for 8.4 million premature deaths each year by 2020 (a 180% increase from 1999). Projections from a recent nationally representative survey in China indicate that there are 301 million current smokers in China, 86% of whom are daily smokers with an average daily consumption of 14.2 cigarettes. Awareness of the urgent need to stem the smoking epidemic in China has resulted in several anti-smoking regulations and many regional and national anti-smoking campaigns since the mid-1980s. However, these efforts have had relatively little effect. Smoking is still prevalent in men—53% of adult men are current smokers—and only 15% of smokers quit smoking. Smoking cessation rates in China were the lowest among the 17 high- and low-to-middle-income countries considered in a recent multi-national study (Cheng *et al.*, 2013).

The World Health Organization estimates that tobacco causes approximately 5 million deaths annually worldwide, a number expected to double by 2025. Cigarette consumption grew from only a few billion per year in 1900 to present values of approximately 5.5 trillion worldwide. Historical causes for the rise of smoking include the invention of flue curing, safety matches, and cigarette rolling machines, but also the distribution of cigarettes to soldiers during World War I, mass marketing, the failure of governments to limit consumption, and the duplicitous denial of hazards by manufacturers. Cancers of the lip, throat, and tongue were linked to tobacco as early as the 18th century, but a lung cancer hazard from smoking was not suspected until the first decade of the 20th century (RN, 2016). Smoking is one of the major lifestyle factors influencing the health of human beings. Life-long cigarette smokers have a higher prevalence of common diseases such as atherosclerosis and COPD with significant systemic impact and other diseases of the respiratory tract such as cancer, particularly lung cancer and cancers of the larynx and tongue. The present review evaluates current knowledge concerning possible pathways through which cigarette smoking can affect human health, with special focus on extra pulmonary effects. Long-term smoke exposure can result in systemic oxidants-antioxidants imbalance as reflected by increased products of lipid peroxidation and depleted levels of antioxidants like vitamins A and C in plasma of smokers (Yanbaeva *et al.*, 2007).

1.2 Smoking

Smoking as the inhalation of the smoke of burned tobacco that may occur occasionally or habitually as a consequence of a physical addiction to some chemicals, primarily nicotine, cannot be fully accepted today since several clinical, biological, metabolic, epidemiologic, statistic and socio-economic factors which play a basic role in determining individual damage due to smoking are missing in this assessment. The analysis of findings shows undoubtedly that several constituents of cigarette smoking play a strong role in the development and progression of cardiovascular damage, primarily atherosclerotic lesions. Nicotine and its metabolites, carbon monoxide and thiocyanate seem to be the most specific markers of damage that, in the time, becomes irreversible. Cigarette smoking is addictive because of nicotine and nicotine withdrawal causes many side effects of quitting smoking as well as nicotine itself usually increases cardiovascular risk. Smoking is a chemical toxicosis which is able to cause detrimental effects either of acute or chronic type on different structures of the body being some of these like cardiovascular system, respiratory system and epithelial glands target organs. Smoking also causes physical addiction, primarily due to nicotine, that adversely influences smoking cessation. From these observations there is evidence that a large number of socio-economic and epidemiologic implications arise in smokers and that requires the necessity of specific structures which may help to face up the problem (Leone, 2016).

1.3 Brief history of smoking

1.3.1 Tobacco had been around

- Tobacco had been growing wild in the Americas for nearly 8000 years.
- Around 2,000 years ago tobacco began to be chewed and smoked during cultural or religious ceremonies and events (Cancer Council NSW, 2011).

1.3.2 Tobacco was first considered to be dangerous to health

- In 1602 an anonymous English author published an essay titled *Worke of Chimney Sweepers* (sic) which stated that illnesses often seen in chimney sweepers were caused

by soot and that tobacco may have similar effects. This was one of the earliest known instances of smoking being linked to ill health.

- In 1795 Samuel Thomas von Soemmering of Mainz (Germany) reported that he was becoming more aware of cancers of the lip in pipe smokers
- In 1798 the US physician Benjamin Rush wrote on the medical dangers of tobacco
- During the 1920s the first medical reports linking smoking to lung cancer began to appear. Many newspaper editors refused to report these findings as they did not want to offend tobacco companies who advertised heavily in the media
- A series of major medical reports in the 1950s and 1960s confirmed that tobacco caused a range of serious diseases (Cancer Council NSW, 2011).

1.3.3 Development of cigarettes

- Cigarette making machines were developed in the latter half of the 1800s. The first such machines produced about 200 cigarettes per minute (today's machines produce about 9,000 per minute). Cheap mass production and the use of cigarette advertising allowed tobacco companies to expand their markets during this period (Cancer Council NSW, 2011).

1.3.4 Caused the growth and later decline of smoking in traditional markets

- The prevalence of cigarette smoking continued to grow in the early 20th Century.
- The development of new forms of tobacco promotion
- The ability of the tobacco industry through its power and wealth to influence the policies of political parties.
- Smoking increased dramatically during the world wars, mainly due to the policy of providing free cigarettes to allied troops as a 'morale boosting' exercise.
- Later in the twentieth century, smoking became less popular due to a rapid increase in knowledge of the health effects of both active and passive smoking.
- The first successful lawsuits against tobacco companies over smoking-related illness happened in the latter part of the 20th Century (Cancer Council NSW, 2011).

1.4 Types of Smoking

- Active smoking
- Passive Smoking

1.4.1 Active smoking

Inhalation and exhalation of the fumes of burning tobacco in cigars and cigarettes and pipes. Some persons draw the smoke into their lungs; others do not. Smoking was probably first practiced by the indigenous peoples of the Western Hemisphere. Originally used in religious rituals, and in some instances for medicinal purposes, smoking and the use of tobacco became a widespread practice by the late 1500s (Infoplease, 2016).

There are two types of tobacco smoke:

- **Mainstream smoke:** The smoke exhaled by a smoker.
- **Sidestream smoke:** Smoke from the lighted end of a cigarette, pipe, or cigar, or tobacco burning in a hookah. This type of smoke has higher concentrations of cancer-causing agents (carcinogens) and is more toxic than mainstream smoke. It also has smaller particles than mainstream smoke. These smaller particles make their way into the lungs and the body's cells more easily (American Cancer Society, 2016).

1.4.2 Passive Smoking (secondhand smoke)

Secondhand smoke (SHS) is inhalation of other people's tobacco smoke. SHS is also commonly known as 'passive smoking', 'environmental tobacco smoke' and 'involuntary smoking'. Inhaling SHS is an unavoidable consequence of being in a smoke-filled environment. SHS is a mixture of air-diluted 'side stream' smoke from the burning tip of a cigarette, and the exhaled 'mainstream' smoke exhaled by the smoker. Mainstream smoke inhaled by a smoker contains over 4000 chemicals (both particles and gases), including chemical irritants and almost 70 carcinogens (cancer causing substances). Side stream is dangerous as whilst it has a similar composition to mainstream smoke, the concentrations of toxins and carcinogens are often much higher. Breathing in someone else's cigarette smoke (passive smoking or secondhand smoking) can increase your risk of cancer and other health problems. It is also particularly harmful for children. When someone smokes a cigarette, the

smoke from the burning tip is released into the air. So is the smoke they breathe out. Smoke can stay in the air for up to 2.5 hours, even with a window open. It may still be there even if you can't see it or smell it (Cancer Research UK, 2015).

1.5 Second hand smoke is more dangerous

A person smoking causes bystanders to inhale second-hand smoke (SHS). Second-hand smoke is what a smoker produces for those around him/her to inhale themselves. Emanates from the burning tip of the cigarette or cigar or pipe being smoked added to the smokers' actual breathing out of the inhaled substance. The burning cigarette produces side-stream smoke and makes up 85% of passive smoke while what the smoker exhales, mainstream smoke, contributes to second-hand smoke by only 15%. This smoke is a mixture of gases and particles containing thousands of chemicals of which hundreds cause disease (Valentino, 2016).

1.6 Health risks of passive smoking

- Passive smoke is one of the most preventable causes of coronary artery disease (CAD), and of acute myocardial infarction (AMI) next to obesity and a sedentary lifestyle. Toxins produced by SHS directly affect the cardiovascular system through well known multiple mechanisms, such as an increase in platelet activation, endothelial dysfunction, oxidative stress and inflammation, among others. Several studies, have shown the reduction of AMI incidence after implementation of smoking bans in public places in a variety of countries.
- Second hand smoking may induce AMI through such mechanisms as the prothrombotic state, increased myocardial workload, and reduced oxygen-carrying capacity of blood caused by carbon monoxide, coronary vasoconstriction, and catecholamine release.
- Moreover SHS is responsible for accelerating atherosclerosis by lipid profile alteration, endothelial dysfunction and damage, hemodynamic stress, oxidant injury, neutrophil activation, enhanced thrombosis, increased fibrinogen and blood viscosity. Even a brief exposure to SHS can cause platelet aggregation and other hemodynamic

changes favoring AMI onset and these effects seem to disappear a short time after SHS exposure cessation. There is no safe level of exposure to cigarette smoke (Valentino, 2016).

1.7 Forms of tobacco smoked

Tobacco companies market their products in several forms, and while some may look harmless, all have the potential to cause health problems (American Academy of Pediatrics, 2016).

1.7.1 Cigarette

Cigars are large, tightly-rolled, fermented bundles of dried tobacco that are smoked. Cigars may also be called cigarillos, and come in several sizes. Depending on the size of the cigar, there is an average of 5 milligrams (mg) of nicotine in each, compared to an average of 1.5 mg in cigarettes. Cigars are sold in a variety of flavors, and can be purchased in low numbers, which make them both cheap and popular with youth (American Academy of Pediatrics, 2016).

1.7.2 Menthol cigarette

Menthol cigarettes tend to be “easier” to smoke — the added menthol produces a cooling sensation in the throat when the smoke is inhaled. It lessens the cough reflex and covers the dry feeling in the throat that smokers often have. Menthol cigarettes can inhale deeper and hold the smoke in longer. Studies have shown that by smoking these cigarettes are less likely to try to quit and are less likely to succeed when someone do try (Simon, 2016).

1.7.3 E- cigarette

E-cigarettes are a type of electronic smoking device. Some people do not view using an e-cigarette as smoking, and instead call it “vaping.” E-cigarettes are available in a wide variety of youth-friendly flavors, and can be refilled with liquid. This liquid often contains nicotine—a highly addictive chemical. Young children have been poisoned from these liquid nicotine containers, and one child died from liquid nicotine. E-cigarettes are very popular with youth. A recent Centers for Disease Control and Prevention (CDC) survey showed that e-cigarettes

are the tobacco product teens use the most—even more than cigarettes (American Academy of Pediatrics, 2016).

1.7.4 Hookahs and shisha

Hookahs, or water pipes, are a more socially-oriented form of tobacco use. Tobacco is heated, filtered by water, and then inhaled through a hose to a mouthpiece. The hose is then passed to the next person in the group, and they then inhale the smoke. Hookah use can lead to several types of cancers, as well as heart and lung diseases. In addition, because multiple people are sharing a mouthpiece, there is also a risk of hepatitis, herpes, and tuberculosis. Hookah bars and lounges are gaining popularity as a way for people to socialize and embrace multiculturalism while smoking. These lounges are especially popular with younger populations like college students and teens (American Academy of Pediatrics, 2016).

1.7.5 Dissolvables

Dissolvable tobacco consists of small pieces of compressed, finely ground tobacco powder, binders and flavorings that are shaped into pellets, sticks or strips. When placed in the mouth, they dissolve within minutes, providing a nicotine hit (Roan, 2013).

1.7.6 Bidis

A bidi is a hand rolled, leaf-wrapped cigarette. Bidis can be tied with a string at one or both ends. A bidi can be flavored with child-friendly flavors like chocolate or cherry. The amount of nicotine in bidi smoke is 3-5 times higher than the amount of nicotine in cigarette smoke. Several research studies have found that many of the same health problems associated with cigarettes can be common with bidi use (American Academy of Pediatrics, 2016).

1.8 Nicotine

Nicotine is a nitrogen-containing chemical - an alkaloid, which is made by several types of plants, including the tobacco plant. Nicotine is also produced synthetically. Nicotine is "A poisonous volatile alkaloid derived from tobacco (*Nicotiana* spp.) and responsible for many of the effects of tobacco; it first stimulates (small doses), then depresses (large doses) at autonomic ganglia and myoneural junctions. Its principal urinary metabolite is cotinine.

Nicotine is an important tool in physiologic and pharmacologic investigation, is used as an insecticide and fumigant, and forms salts with most acids. Nicotine's molecular formula is $C_{10}H_{14}N_2$ (Medical News Today, 2015).

1.8.1 Psychodynamic effects of nicotine

Nicotine is a sympathomimetic drug that releases catecholamines, increases heart rate and cardiac contractility, constricts cutaneous and coronary blood vessels, and transiently increases blood pressure. Nicotine also reduces sensitivity to insulin and may aggravate or precipitate diabetes, and nicotine may contribute to endothelial dysfunction. These various effects of nicotine on the cardiovascular system could, in theory, promote atherogenesis and precipitate acute ischemic events in people who have coronary artery disease (Benowitz, 2009).

1.8.2 Pharmacokinetics of nicotine

The oral bioavailability of nicotine would be expected to be less than 20%. The limited data available in the literature appear to support this conclusion. Absorption from the oral mucosa is the principal site of nicotine absorption in subjects who chew tobacco or nicotine gum. Absorption by this route is highly pH dependent. Nicotine is also readily absorbed from the nasal mucosa, and after topical administration. Nicotine distributes extensively into body tissues with a volume of distribution ranging from 1.0 to 3.0 L/kg. Nicotine has been shown to transfer across the placenta and into breast milk in humans. Plasma protein binding is negligible, ranging from 4.9 to 20%. The predominant route of nicotine elimination is hepatic metabolism. Although a number of metabolites of nicotine have been identified, it is unclear whether any of these compounds contribute to the pharmacological effect of nicotine. Nicotine is also excreted unchanged in urine in a pH-dependent fashion. With urinary pH less than 5, an average 23% of the nicotine dose is excreted unchanged. When urinary pH is maintained above 7.0, unchanged nicotine urinary excretion drops to 2%. After intravenous administration, nicotine exhibits biexponential decline in plasma. Total plasma clearance ranges from 0.92 to 2.43 L/min. During urinary acidification, renal clearance averages 0.20 L/min. Non-renal blood clearance averages 1.2 L/min, indicating that nicotine elimination is dependent on hepatic blood flow (CK, 2016).

1.8.3 Nicotine Addiction

Nicotine is highly addictive. People who regularly consume nicotine and then suddenly stop experience withdrawal symptoms, which may include cravings, a sense of emptiness, anxiety, depression, moodiness, irritability, and inattentiveness. The American Heart Association says that nicotine (from smoking tobacco) is one of the hardest substances to quit - at least as hard as heroin. According to a report published by the Massachusetts Department of Public Health, tobacco companies steadily increased the nicotine content of their cigarettes from 1998 to 2004, by approximately 10%. The higher the nicotine dose in each cigarette, the harder it is for the regular smoker to quit. The Department accused the tobacco companies of deliberately making their customers more addicted, so that they could secure sales. Doctors complain that this business strategy of getting customers more hooked undermines the success rates of smoking cessation therapies. In November 2012, tobacco companies were ordered by US District Judge Gladys Kessler to inform consumers that they had deliberately manipulated their cigarettes so that smokers would become more addicted. A study carried out at the National Institute on Drug Abuse found that nicotine consumption makes cocaine more addictive (Medical News Today, 2015).

1.8.4 Other dangerous chemicals in tobacco smoke

The most damaging components of tobacco smoke are:

- **Acetaldehyde** - this chemical is used in resins and glues. It is believed to be a carcinogen. Experts say it is likely that it facilitates the absorption of other dangerous chemical into the bronchial tubes.
- **Acetone** - this chemical is used in solvents. It irritates the eyes, nose and throat. Long-term exposure can damage the liver and kidneys..
- **Benzene** - used in gasoline, causes several cancers, including leukemia
- **Benzo[a]pyrene** - this chemical is found in coal tar pitch, and creosote. It is a known carcinogen, especially for lung and skin cancers. It can also undermine human fertility.
- **Cadmium** - a known carcinogen. It damages the brain, kidneys and liver. Cadmium is used in non-corrosive metal coatings, storage batteries, pigments, and bearings.
- **Catechol** - it elevates blood pressure and irritates the upper respiratory tract. It can also cause dermatitis. Catechol is used as an antioxidant in oils, inks and dyes.

- **Chromium** - known to cause lung cancer. It is used in wood treatment, wood preservatives, metal plating and alloys. Those involved in welding have the greatest risk of exposure.
- **Cresol** - acute inhalation can cause throat, nasal and upper respiratory irritation. It is used in disinfectants, wood preservatives and solvents.
- **Crotonaldehyde** - a warning agent in fuel gasses. Experts say it messes up the human immune system. It can also cause chromosomal changes.
- **Formaldehyde** - part of the resin used in foam insulation, plywood, fiberboard and particleboard. It can cause nasal cancer, as well as damaging the digestive system, skin and lungs.
- **Hydrogen Cyanide** - some states use this chemical in their gas chambers for executions. It weakens the lungs and causes fatigue, headaches and nausea. It is used in the production of acrylic plastics and resins, and can also be a fumigant.
- **Lead** - lead damages the nerves in the brain, as well as the kidneys and the human reproductive system. Lead intake can also cause stomach problems and anemia. It is a known carcinogen and is particularly toxin to children. Lead is used in paint and metal alloys.
- **Nickel** - a known carcinogen, nickel also causes bronchial asthma and upper respiratory irritation.
- **Nitric Oxide** - this is a major contributor to smog and acid rain. It is made by gasoline combustion. Scientists say it is linked to a higher risk of developing Alzheimer's disease, Parkinson's disease, Huntington's disease and asthma.
- **Propionaldehyde** - irritates the respiratory system, skin and eyes. It is used as a disinfectant.
- **Pyridine** - irritates the eyes and upper respiratory tract. It also causes nervousness, headaches and nausea. Experts say it might cause liver damage. This substance is used in solvents.
- **Quinoline** - it is used for stopping corrosion and also as a solvent for resins. It is a severe eye irritant, is harmful to the liver, and causes genetic mutations. Experts believe it may be a carcinogen.

- **Resorcinol** - irritates the eyes and skin. It is used in resins, adhesives (glue) and laminates.
- **Styrene** - irritates the eyes, may slow down reflexes, and causes headaches. It is linked to a higher risk of leukemia. This substance is used in fiberglass, pipes, plastic and insulation materials.
- **Carbon Monoxide** - this is a poisonous gas. It has no smell or taste. The body finds it hard to differentiate carbon monoxide from oxygen and absorbs it into the bloodstream. Faulty boilers emit dangerous carbon monoxide, as to car exhausts. If there is enough carbon monoxide around you and you inhale it, you can go into a coma and die. Carbon monoxide decreases muscle and heart function, it causes fatigue, weakness, and dizziness. It is especially toxic for babies still in the womb, infants and individuals with heart or lung disease.
- **Tar** - consists of several cancer-causing chemicals. When a smoker inhales cigarette smoke, 70% of the tar remains in the lungs. Try the handkerchief test. Fill the mouth with smoke, don't inhale, and blow the smoke through the handkerchief. There will be a sticky, brown stain on the cloth. Do this again, but this time inhale and then blow the smoke through the cloth, there will only be a very faint light brown stain (Nordqvist, 2015).

1.9 The Effects of Smoking on the Body

Tobacco smoke is enormously harmful to your health. There's no safe way to smoke. Replacing your cigarette with a cigar, pipe, or hookah won't help you avoid the health risks associated with tobacco products. Cigarettes contain about 600 ingredients. When they burn, they generate more than 7,000 chemicals, according to the American Lung Association. Many of those chemicals are poisonous and at least 69 of them can cause cancer. Many of the same ingredients are found in cigars and in tobacco used in pipes and hookahs. According to the National Cancer Institute, cigars have a higher level of carcinogens, toxins, and tar than cigarettes.

When using a hookah pipe, you're likely to inhale more smoke than you would from a cigarette. Hookah smoke has many toxic compounds and exposes you to more carbon monoxide than cigarettes do. Hookahs also produce more secondhand smoke. In the United

States, the mortality rate for smokers is three times that of people who never smoked, according to the Centers for Disease Control and Prevention. It's one of the leading causes of preventable death (Pietrangelo, 2016).

1.9.1 Effects of smoking on the central Nervous System

One of the ingredients in tobacco is a mood-altering drug called nicotine. Nicotine reaches your brain in mere seconds. It's a central nervous system stimulant, so it makes you feel more energized for a little while. As that effect subsides, you feel tired and crave more. Nicotine is habit forming. Smoking increases risk of macular degeneration, cataracts, and poor eyesight. It can also weaken your sense of taste and sense of smell, so food may become less enjoyable. Your body has a stress hormone called corticosterone, which lowers the effects of nicotine. If you're under a lot of stress, you'll need more nicotine to get the same effect. Physical withdrawal from smoking can impair your cognitive functioning and make you feel anxious, irritated, and depressed. Withdrawal can also cause headaches and sleep problems (Pietrangelo, 2016).

1.9.2 Effects of smoking on the respiratory System

The alveoli of the lungs suffer from cigarette smoking, eventually breaking down and losing their effectiveness in transferring oxygen to the blood. This second stage of COPD, emphysema, is characterized by shortness of breath and difficulty exhaling, the ALA notes. COPD restricts exercise tolerance, making everyday activities more difficult and strenuous exercise impossible for many individuals. Chemicals and particulate from tobacco use continue on to the bronchi, the airways that lead to the lungs. There, the smoke acts on the cilia, tiny hairs that sweep away debris to keep the airways clear. When damaged cilia can no longer function, excess mucus and foreign matter clog the bronchial space (Clarke, 2015).

1.9.3 Effects of smoking on the cardiovascular System

The acute hemodynamic effects of cigarette smoking or smokeless tobacco are mediated primarily by the sympathomimetic action. The intensity of its hemodynamic effect is greater with rapid nicotine delivery. Nicotine causes catecholamine release both locally and systemically leading to an increase in heart rate, blood pressure and cardiac contractility. It

reduces blood flow in cutaneous and coronary vessels; and increases blood flow in the skeletal muscles. Due to restricted myocardial oxygen delivery there is reduced cardiac work. Chewing a low dose (4 mg) of nicotine gum by healthy nonsmokers blunted the increase in coronary blood flow that occurs with increased heart rate produced by cardiac pacing. Thus, persistent stimulation by nicotine can contribute to Coronary Vascular Disease by producing acute myocardial ischemia. In the presence of coronary disease, myocardial dysfunction can be worsened (Chaturvedi *et al.*, 2015).

1.9.4 Effects of smoking on the ear

Cigarettes contain a lot of nasty chemicals, including formaldehyde, arsenic, ammonia, hydrogen cyanide and nicotine. Nicotine and carbon monoxide deplete oxygen levels and constrict blood vessels all over the body – including those in inner ear responsible for maintaining hair cell health. Nicotine interferes with neurotransmitters in the auditory nerve, which are responsible for telling the brain which sound you are hearing (Clason, 2015).

1.9.5 Effects of smoking on the digestive System

Smokers are at great risk of developing oral problems. Tobacco use can cause gum inflammation (gingivitis) or infection (periodontitis). These problems can lead to tooth decay, tooth loss, and bad breath. Smoking also increases risk of cancer of the mouth, throat, larynx, and esophagus. Smokers have higher rates of kidney cancer and pancreatic cancer. Even cigar smokers who don't inhale are at increased risk of mouth cancer. Smoking also has an effect on insulin, making it more likely that you'll develop insulin resistance. That puts you at increased risk of type 2 diabetes. When it comes to diabetes, smokers tend to develop complications at a faster rate than nonsmokers. Smoking also depresses appetite, so you may not be getting all the nutrients your body needs. Withdrawal from tobacco products can cause nausea (Pietrangelo, 2016).

1.9.6 Effects of smoking on the reproductive System

Restricted blood flow can affect a man's ability to get an erection. Both men and women who smoke may have difficulty achieving orgasm and are at higher risk of infertility. Women who smoke may experience menopause at an earlier age than nonsmoking women. Smoking

increases a woman's risk of cervical cancer. Smokers experience more complications of pregnancy, including miscarriage, problems with the placenta, and premature delivery. Pregnant mothers who are exposed to secondhand smoke are also more likely to have a baby with low birth weight. Babies born to mothers who smoke while pregnant are at greater risk of low birth weight, birth defects, and sudden infant death syndrome (SIDS). Newborns who breathe secondhand smoke suffer more ear infections and asthma attacks (Pietrangelo, 2016).

1.9.7 Effects of smoking on the immune system

Smoking weakens the immune system by depressing antibodies and cells that are in the body to protect against foreign invaders. There is an association between smoking and the increased incidence of certain malignant diseases and respiratory infections, according to the National Center for Biotechnology Information (NCBI). There is also a significant decrease in immune cells that normally help the body. But this process can be reversed if a smoker gives up cigarettes. Smokers who stop show increased levels of natural killer cell (NK) activity that targets cancerous cells in the body (Shaw, 2013).

1.9.8 Effects of smoking on the circulatory system

It was discovered during the latter-half of the 20th century that smoking is not a healthy social habit. The American Heart Association reports that smoking is one of the most preventable causes of death. In fact, the Centers for Disease Control and Prevention (CDC) estimates that 443,000 Americans die each year from smoking-related complications. Smoking adversely affects every part of your body, including the circulatory system. The circulatory system is comprised of the blood vessels, muscles and organs that transport blood throughout your body (Cherney, 2013).

1.9.9 Effects of smoking on the musculoskeletal system

Cigarette smoking has deleterious effects on the musculo-skeletal system. The loss of bone mineral content and increased incidence of fractures are the best known negative consequences. The pathogenesis is complex, due to direct toxic effects on osteoblasts/osteoclasts activity of nicotine, and indirect actions on sex and adrenocortical

hormones, vitamin D, intestinal calcium absorption, vessels and oxygen supply (Abate, 2013).

1.10 Smoking cause High blood pressure

Smoking causes an immediate spike in blood pressure and can raise systolic blood pressure levels by as much as 4 millimeters of mercury (mm Hg). The nicotine in tobacco products spur the nervous system to release chemicals that can constrict blood vessels and contribute to high blood pressure. Smoking also causes long-term damage to blood vessels, so beyond the hypertension risk, this habit further increases the chance of developing problems like stroke, heart disease, and heart attack. The combination of smoking and hypertension puts you at greater risk of having a heart attack, stroke, or other cardiovascular event compared to non-smokers with hypertension (Rodriguez, 2016).

1.11 Smoking cause Impotence

The risk of smoking to your erectile health is specifically due to the effects of cigarette chemicals on the blood vessels in the penis. An erection results when the arteries in the penis expand and fill with blood after receiving signals from nerves in the penis. The nerves are responding to sexual arousal signals from the brain. Even if the nervous system is operating at full strength, an erection might not be physically possible if the blood vessels are unhealthy due to smoking (Roland, 2016).

1.12 Smoking cause Hair loss

Tobacco Smoke cause hair loss is that nicotine and carbon monoxide – substances found in cigarettes – restrict the flow of blood and oxygen to the body's extremities, including the hair follicles, which go into their telogone (dormant) phase. The hair lacks nourishment and, as a result, starts falling away from the scalp (Alopecia UK, 2016).

1.13 Smoking cause Birth Defects

Experts have long suspected that exposure to smoke of the cigarettes was unhealthy for mother and baby. Indeed, cigarette labels already include the federally mandated warning that "smoking during pregnancy can harm baby. Babies born to mothers who exposed to

smoked had higher odds of having shortened or missing arms and legs, cleft lips and cleft palates, and abnormally shaped heads or faces compared to babies born to nonsmoking mothers. Exposure to smoke associated with a risk of gastrointestinal abnormalities, including problems with the throat, esophagus, colon, intestine, bile ducts, gall bladder, and liver. Additionally, infants born with their intestines hanging outside the body and a increased risk of being born with a blocked or closed anus (Surtenich, 2016).

1.14 Smoking cause Tuberculosis

There is a strong association between smoking tobacco and TB. Cigarette smoking or second hand smoking can affect how someone becomes infected with the TB bacteria and how the infection progresses to active TB disease in three main ways:

- Smoking damages the lungs and can make smokers more susceptible to TB infection.
- Smoking harms the body's immune system, meaning smokers are less able to combat TB infection; and
- Smoking reduces the effectiveness of TB treatment which can lead to longer periods of infection and/or more severe forms of the disease.

That smoking or secondhand smoke also causes type 2 diabetes. In fact, smokers are 30–40% more likely to develop type 2 diabetes than nonsmokers. And people with diabetes who smoke are more likely than nonsmokers to have trouble with insulin dosing and with controlling their disease (Deepak , 2016).

1.15 Smoking cause Oral cancer

Some of the chemicals contained in tobacco smoke cause, initiate or promote cancer.

These chemicals cause genetic changes in cells of the mouth cavity which can lead to the development of oral cancer .Tobacco use increases the risk of oral cancer by exposing the mouth to these carcinogenic chemicals, either during inhalation while smoking or through direct contact while chewing tobacco products (National Cancer Institute, 2016).

1.16 Smoking cause eye irritation and eye disease

Nearly every type of chronic eye disease appears to be linked to cigarette smoking. And since smoking decreases circulation and oxygen flow to the eyes, it can also directly affect your

vision. In fact, two of the leading causes of severe visual impairment and blindness - cataracts and age-related macular degeneration are accelerated by smoking. Dry eye syndrome describes insufficient tears on the eye's surface, which are needed to keep the eye lubricated and healthy. Sufferers of dry eye can experience eye redness, itchiness, a "foreign body" sensation and even watery eyes. Tobacco smoke is a known eye irritant and worsens dry eye , even among second-hand smokers particularly for contact lens wearers. People who smoke are nearly twice as likely to have dry eyes (Surtenich, 2016).

1.17 Smoking and premature birth

Smoking during pregnancy has been associated with a host of complications, including low birth weight, premature rupture of the membranes, placenta previa, placental abruption, and preterm birth. Preterm birth was defined as a gestation of less than 37 weeks, and very preterm birth was defined as a gestation of less than 33 weeks (Medscape, 2016).

1.18 Smoking cause allergy

Cigarettes contain 4,000 chemicals, of which 69 are cancer-causing agents that irritate the throat, airways and lungs. These chemicals and noxious particles cause inflammation of the airways leading to the lungs, as well as an influx of immune cells to the airways. Neutrophils , mast cells, CD8+ T cells and macrophages are immune cells that migrate to the walls and space within the airways, as well as the lungs, during an allergic reaction to cigarette smoke. These immune cells initiate and perpetuate the immune response by causing the release of histamine and other immune mediators into the airways. The release of histamine results in the signs and symptoms associated with an allergic reaction to cigarette smoke (Stevens, 2015).

1.19 Smoking and asthma

When a person inhales tobacco smoke, irritating substances settle in the moist lining of the airways. These substances can cause an attack in a person who has asthma. In addition, tobacco smoke damages tiny hair-like structures in the airways called cilia. Normally, cilia sweep dust and mucus out of the airways. Tobacco smoke damages cilia so they are unable to work, allowing dust and mucus to accumulate in the airways. Smoke also causes the lungs to

make more mucus than normal. As a result, even more mucus can build up in the airways, triggering an attack (Jesse J. Sturm, 2004) (Sturm *et al.*, 2004).

1.20 Smoking and ulcer

Cigarettes interfere with the body's natural protective mechanisms against stomach acid. Normally, this acid starts breaking food down as it hits the stomach, priming the food for the more powerful digestive enzymes it will encounter further down the digestive tract. Whatever acid isn't absorbed is neutralized by sodium bicarbonate, a natural antacid. This neutralization occurs in the duodenum, the first part of the intestine. Sodium bicarbonate is made by the pancreas, a vital organ that sits next to the duodenum. There's evidence to suggest that smoking increases stomach acid production over time, and that it reduces bicarbonate production. The duodenum, the first part of the small intestine, is also a major ulcer site. Smokers are particularly at risk of developing duodenal ulcers. They can also develop ulcers in the esophagus, the body part that leads to the stomach (Macready, 2016).

1.21 Epidemiology

1.21.1 Global Epidemiology

Secondhand smoke (SHS), the smoke generated by active smokers, remains a widespread health hazard worldwide. Several studies have clearly linked exposure to SHS, also known as tobacco smoke pollution (TSP) or passive smoking, to a number of health consequences in non-smokers, including lung cancer, heart disease, and asthma in children . The World Health Organization (WHO) has estimated that in 2004, about one-third of adults and 40% of children worldwide were exposed to SHS, and that this exposure caused 1.0% of all deaths and 0.7% of the worldwide burden of disease and disability-adjusted life years in that year . Smoke-free policies for public and private environments are the most effective way to reduce SHS exposure, and therefore decrease the SHS induced health consequences .In response to the growing awareness of the health risks posed by SHS, an increasing number of countries have introduced legislation to reduce or eliminate exposure to SHS in public places. Article 8 of the WHO Framework Convention on Tobacco Control (FCTC) includes guidelines for protection from TSP. These guidelines recommend comprehensive bans on smoking in

public places and workplaces in order to achieve 100% smoke-free environments. Households, however, are not protected under the FCTC, thus household smoking bans must be initiated voluntarily. As a result, even as smoke-free restrictions in public places are becoming more widespread, the home remains a predominant source of exposure to SHS, particularly among vulnerable children. During the last decade, a significant amount of research had been conducted addressing the SHS exposure at home. However, the majority of research on household exposure to SHS comes from developed or high income countries, and information about the prevalence of SHS exposure in the home and measures to reduce this exposure in developing countries is limited. It was argued that the actual conditions of SHS exposure and the burden of the resulting health outcomes differ greatly between developed and developing countries. For example, factors such as the number of smokers in the home, the intensity of the smoke, construction aspects of the home (i.e. space, ventilation), and even cultural factors such as gender dynamics can all influence the experience of and the impact of SHS exposure in the home among non-smokers and children in developing countries. Information on the pattern and correlates of SHS exposure at home in developing country would guide the development of evidence-based educational and policy initiative, specific to developing countries (Lubick, 2011).

1.21.2 Present condition of Bangladesh

With 41.1 million tobacco users in Bangladesh, including 20.9 million people who smoke, exposure to SHS at home is a major public health concern. In Bangladesh, smoking is prohibited in public places and public transportation; however, designated smoking areas are permitted. Data on SHS exposure in Bangladesh is limited; however some information on the prevalence of SHS exposure is available from the 2009 Global Adult Tobacco Survey (GATS). According to the GATS Bangladesh survey, 63% and 45% of all adult workers were exposed to tobacco smoke at the workplace and in public places, respectively, and 76% and 70% of non-smokers were exposed in these places. In the absence of any data, it could be estimated that a significant proportion of Bangladeshi non-smokers and children are exposed to SHS at home. A 2011 study conducted among Bangladeshi households with children reported a high prevalence (67%) of SHS exposure among children. In this study, only 43.5% of respondents had complete smoking restrictions in the home. This low

prevalence of home smoking restrictions suggests that many non-smokers who live with at least one smoker in the home are regularly exposed to SHS (Abdullah *et al.*, 2014).

Chapter 2

Literature Review

2.1 To examine knowledge, attitudes and experiences of London casino workers regarding exposure to second hand smoke (SHS) in the workplace.

Postal survey of 1568 London casino workers in 25 casinos who were members of the TGWU or GMB Trade Unions. Of the workers, 559 responded to the survey (36% response), 22% of whom were current smokers. Of the respondents, 71% report being nearly always exposed to heavy levels of SHS at work, and most (65%) want all working areas in their casino to be smoke-free. The majority (78%) are bothered by SHS at work, while 91% have wanted to move away from where they are working because of it. Fifty-seven per cent believe their health has suffered as a result of SHS. Of the workers who smoke at work, 59% believe that they would try to quit smoking if no one was allowed to smoke in the casino. The majority of responders are bothered by SHS, and many are concerned about the health impacts. Most want all working areas in their casino to be smoke-free. Despite difficulties in generalizing from this limited sample, these findings add weight to the argument that the legislation on smoking in public places in England should encompass all workplaces, without exemption (Pilkington *et al.*, 2006).

2.2 Attitudes to, and knowledge of, secondhand smoke in New Zealand homes and cars

To review the evidence on knowledge and attitudes among the New Zealanders' knowledge about SHS effects has improved since 1989, with 90% or more of the adult population aware of a risk to health, this knowledge may be shallow. Wellington area surveys indicate that significant proportions of the population are not aware of both the major consequences of SHS, that is, strokes and heart disease. Survey data indicates increasing public support for smokefree homes during 1999– 2003, particularly among Maori who showed a 68% increase in support during that period. In 2003, over 80% of New Zealand smokers indicated that people have a right to smokefree homes. However, these attitudes do not necessarily result in smokefree homes. Of those 14–15 year olds with at least one parent who smoked, less than 45% reported having a smokefree home. Improved tobacco control and increased investment in mass media campaigns on SHS issues are needed to strengthen healthy norms around smokefree homes and cars. public concerning secondhand smoke (SHS) and smoking in homes and cars (Thomson *et al.*, 2016).

2.3 Knowledge, Attitudes, and Behavior in Avoiding Secondhand Smoke Exposure Among Non-Smoking Employed Women with Higher Education in Jordan

Secondhand smoke (SHS) exposure is a serious public health threat worldwide; in the developing world there are less serious efforts towards controlling women's and children's exposure to SHS. Knowledge, attitudes and avoidance practices among Jordanian women have never been thoroughly studied. The purpose of this study was to assess the knowledge, attitudes, and avoidance behavior towards SHS exposure among employed Jordanian women with higher education. A survey was conducted among employed Jordanian women at two universities. A total of 209 women were included in the analysis. Two questionnaires regarding SHS exposure were used to measure knowledge, attitudes and avoidance practices. Most respondents were regularly exposed to SHS in various locations during daily life, even though they were very knowledgeable about the dangers of SHS exposure for women and children. However, the subject's attitudes and avoidance behavior did not reflect the level of knowledge about SHS risks. The results suggests there is a large discrepancy between SHS exposure, knowledge, attitudes and avoidance behavior among highly educated Jordanian women that is likely influenced by culture and traditional gender roles. Public health initiatives are needed in Jordan to address public policy, institutional practices and to empowerment of women to reduce SHS exposure (Gharaibeh *et al.*, 2011).

2.4 Passive Smoking: Perceptions and Practices among Urban Working Adults in Malaysia

Many are aware that smoking is harmful to the health of smokers but minimal concern is given to those around smokers who are known as passive smokers. Many non-smokers are killed annually as a result of exposure to secondhand smoke. Passive smoking has also been strongly associated with poor health outcomes such as cardiovascular diseases, chronic obstructive pulmonary disease (COPD) and a range of cancers. The Aim & Objectives of the study to assess the awareness and practices among Malaysian urban working adults towards passive smoking. A cross-sectional survey to assess awareness and attitudes towards passive smoking was conducted among consenting working adults from urban areas in Malaysia. A total of 186 adults aged between 22-87 years participated in the study where 56.3% of the respondents were females and 43.7% males. Majority (98.9%) agreed that cigarette smoke is

harmful to the non-smokers around while 22.4% were not sure if the smoke from shisha/water pipe was harmful. 66.1% agreed that sidestream smoke was more harmful than mainstream smoke whereas 29.5% were unsure which kind of smoke is more harmful. A total of 87.4% did not like people to smoke around them and 95.6% of the respondents did not like people to smoke in their house. Besides, 86.9% believed that smoking should not be permitted in the workplace. Most adults (74.9%) agreed that they have the right to ask people to not smoke in their presence whereas the rest (19.7%) were either unsure of their rights or disagreed (5.5%). Almost all of the participants (99.5%) felt that people should not smoke in front of children and children should be taught about the bad effects of smoking. The awareness among urban working adults on passive smoking was fair though the practices were poor. Health education efforts on smoking should address the empowerment of non-smokers and must include culturally appropriate ways to express their desire for a smoke free environment (Ooi *et al.*, 2016).

2.5 Exposure to tobacco smoke among adults in Bangladesh

The study examine exposure to second-hand smoke (SHS) at home, in workplace, and in various public places in Bangladesh. Data from 2009 Global Adult Tobacco Survey (GATS) conducted in Bangladesh was analyzed. The data consists of 9,629 respondents from a nationally representative multi-stage probability sample of adults aged 15 years and above. Exposure to second-hand smoke was defined as respondents who reported being exposed to tobacco smoke in the following locations: Indoor workplaces, homes, government building or office, health care facilities, public transportation, schools, universities, restaurants, and cafes, coffee shops or tea houses. Exposure to tobacco smoke in these places was examined by gender across various socioeconomic and demographic sub-groups that include age, residence, education and wealth index using SPSS 17.0 for complex samples. The study shows high prevalence of SHS exposure at home and in workplace and in public places. Exposure to SHS among adults was reported high at home (54.9%) (male-58.2% and female-51.7%), in workplace (63%) (male-67.8% and female-30.4%), and in any public place (57.8%) (male-90.4% and female-25.1%) 30 days preceding the survey. Among the public places examined exposure was low in the educational institutions (schools-4.3%) and health care facilities (5.8%); however, exposure was high in public transportation (26.3%), and

restaurants (27.6%). SHS exposure levels at home, in workplace and public places were varied widely across various socioeconomic and demographic sub-groups (Palipudi *et al.*, 2011).

2.6 Tobacco use, secondhand smoke exposure and their related knowledge, attitudes and behaviors among Asian Americans

The study examined tobacco use, secondhand smoke exposure and related knowledge, attitudes and behaviors among Asian Americans in the Delaware Valley of Pennsylvania and New Jersey, and the relationship between acculturation and smoking, social influence patterns on smoking, and stages of change of smoking among Asian subgroups. Study sample was 1174 Chinese, Koreans, Vietnamese, Cambodians, and other Asians. Findings revealed mean age of initiation to be 18.3, 40% ever and 30% current users. Significant differences were reflected in smoking by gender, ethnicity, educational level, marital and employment status. While knowledge and attitudes about smoking and secondhand smoke were associated with these variables, ethnic pride and smoking status played significant roles. Fathers and brothers had greater social influence on young male smoking behavior; smoking friends had influence on both genders. Stages of change of smoking and acculturation impact on smoking varied with gender, age, and time living in the U.S. Findings provide comprehensive insights into tobacco use and related KAB among Asian Americans that reflect the need for developing culturally appropriate programs for this underserved population (Ma *et al.*, 2005).

Significance of the Study

Second-hand smoke is sometimes referred to as environmental tobacco smoke. It is a combination of the smoke exhaled by a smoker and the smoke that comes from the end of a burning cigarette or cigar. When someone breathes in this smoke, it is often referred to as passive smoking. For a non-smoker (as well as for a smoker), breathing in second-hand tobacco smoke still carries significant health risks. There is no known safe level of exposure to passive smoking (Melissa, M. 2016).

Tobacco smoke contains many chemicals that are harmful to both smokers and nonsmokers. Breathing even a little tobacco smoke can be harmful. Of the more than 7,000 chemicals in tobacco smoke, at least 250 are known to be harmful, including hydrogen cyanide, carbon monoxide, and ammonia. Among the 250 known harmful chemicals in tobacco smoke, at least 69 can cause cancer (National Cancer Institute, 2016).

Nicotine is the main ingredient that is inhaled by both the active and passive smokers. Nicotine is the harmful, addictive substance found in all tobacco products. When you smoke a cigarette, chew tobacco, or otherwise ingest nicotine, the effects are immediate: Nicotine travels through the body in the bloodstream and heads straight for the brain, arriving in 7 to 15 seconds. In the brain, nicotine boosts the “reward center,” releasing chemicals that cause a pleasant, happy feeling. Adrenaline is then released, increasing heart rate and blood pressure, and making breathing rapid and shallow. As nicotine use continues, these effects can damage your heart, arteries, and lungs, increasing the risk for heart attack, stroke, and chronic lung disease (Polito, 2016).

Smoking and passive smoking are collectively the biggest preventable cause of death in Bangladesh, with major public health burden of morbidity, disability, mortality and community costs Leading to an annual five million deaths around the globe. It is estimated that if current smoking patterns carry on, the annual death toll could rise to more than eight million by 2030 The available studies of tobacco use in Bangladesh, however, do not necessarily employ nationally representative samples needed to monitor the problem at a national scale. Many people now a days smoke cigarette even teenagers smoke. Some people

have no idea about the chemical of a tobacco and what it can cause to a human body. This paper sets an idea of the factors that trigger cigarette smoking amongst young generation of today, effects of cigarette, like cancer, heart disease, emphysema, and chronic bronchitis .The heavier the usage of an individual and the longer he smokes, the higher the risks for smoking-related illnesses From the study we can gain knowledge about the effects of smoking cigarette.

Aims and Objectives of the Study

The aims of this study were

- To survey the opinions of people about Second hand smoking (SHS).
- To identify the knowledge about health problems that SHS may cause.
- To know either general people support or not to stop passive smoking.

Chapter 3

Methodology

3.1 Type of the Study

It was a survey based study.

3.2 Study Population

The general people, both smokers and non smokers were the study population. The study was carried out in Savar and Narayanganj .The total number of study population is 703 The rickshaw puller, tea stall manager, pharmacy worker and labor working in different sectors was targeted as the people who are not higher educated or illiterate. University students and job holders in different sectors were targeted as higher educated people.

3.3 Inclusion Criteria

- Both males and females
- Anyone over the age of 18 years

3.4 Exclusion Criteria

- Anyone under the age of 18

3.5 Data Collection Method

The data was collected through questionnaire that is formed in English language. It is a questionnaire consists of multiple choice type questions. The data was collected by both face to face interview and by questionnaire supply.

3.6 Development of the Questionnaire

The questionnaire was developed based on different findings in available journal and research paper. Also from the observation of different behavior of Bangladeshi people.

3.7 Sampling Technique

In this study random sampling was followed.

3.8 Data collecting period

The duration of the study was about three months that started from January, 2016 up to March , 2016.

3.9 Data Analysis

After collecting, all the data were checked and analyzed with the help of Microsoft Excel 2007.

Chapter 4

Results

4.1 Personal Information

4.1.1 Age Distribution

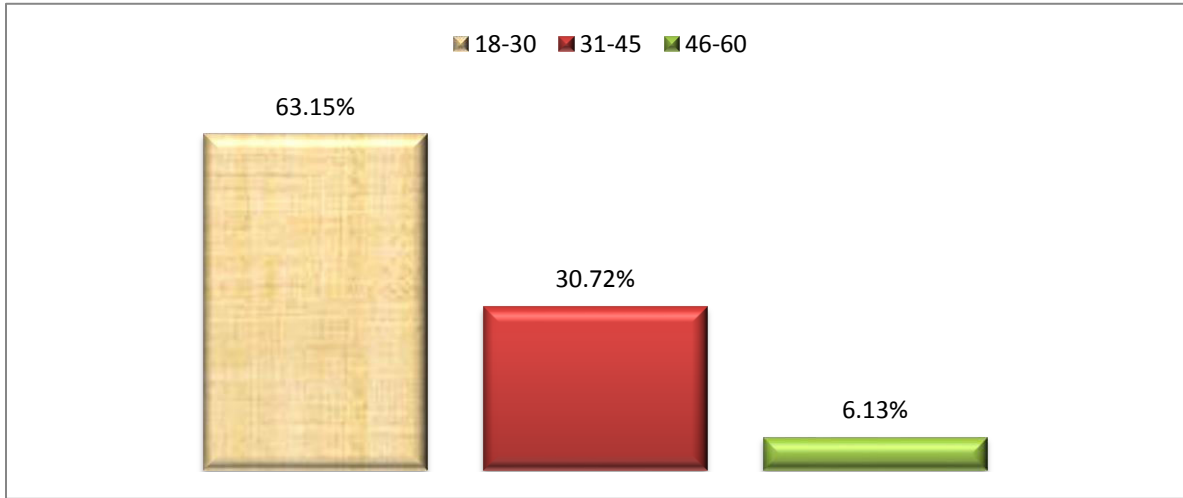


Fig 4.1.1: Age Distribution

Most (63.15%) of the respondents were between the ages of 18-30 years. About 31% people were above 30 but below 46 years and only 6.13% were aged between 46-60 years.

4.1.2 Gender Distribution

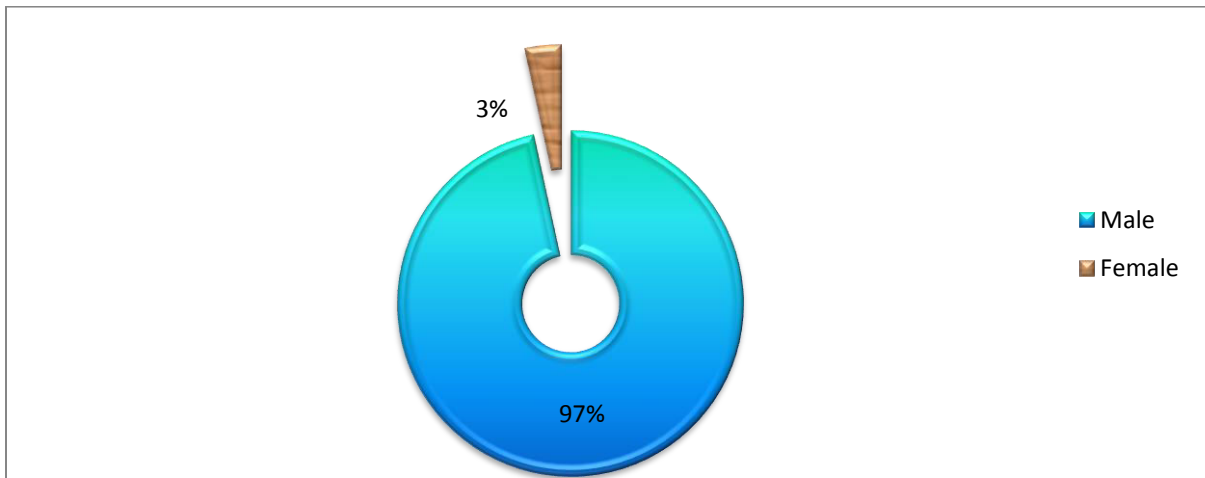


Fig 4.1.2: Gender Distribution

Most of the respondents were male (97%) were male and only 3% Female.

4.1.3 Educational Qualification

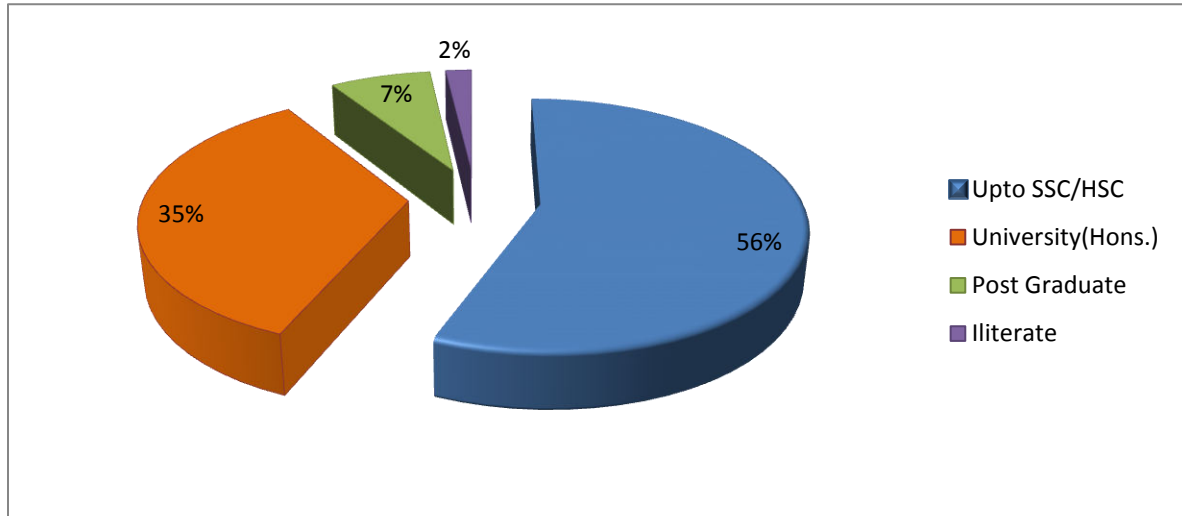


Fig 4.1.3: Educational Qualifications

Most (56%) people continued there study either up to S.S.C OR H.S.C and 35% were either current university students or completed their graduation.

4.1.4 Occupational Status

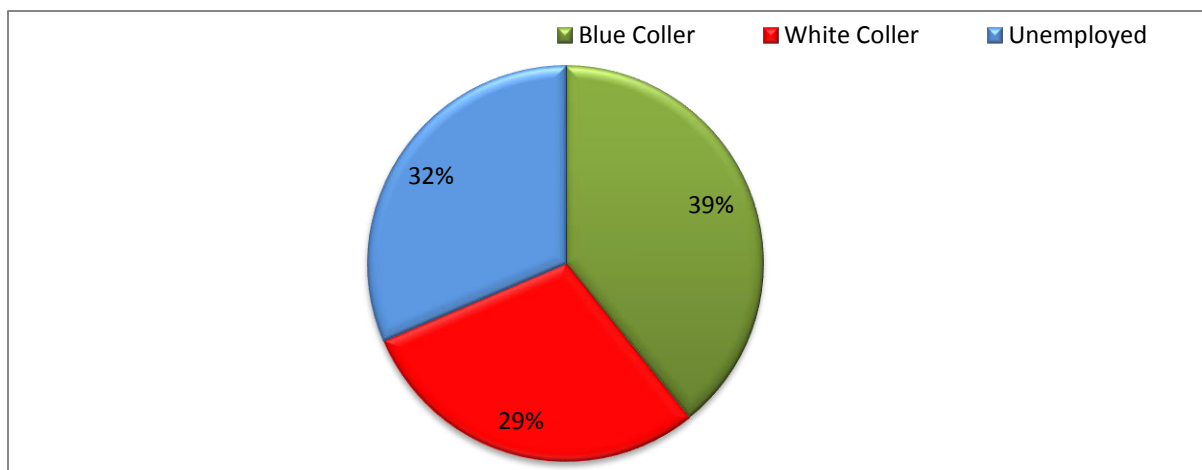


Fig 4.1.4: Occupational Status

Blue collar refers to employees whose job entails (largely or entirely) physical labor, such as in a factory or workshop. For a piece of work to be termed blue collar. White collar Refers to employees whose job entails, largely or entirely, mental or clerical work, such as in an office. The term white collar work used to characterize non-manual workers (Business Dictionary, 2016). Most (39%) of the people were blue collar and 29% were white collar. 32% people were unemployed.

4.1.5 Monthly Income Distribution

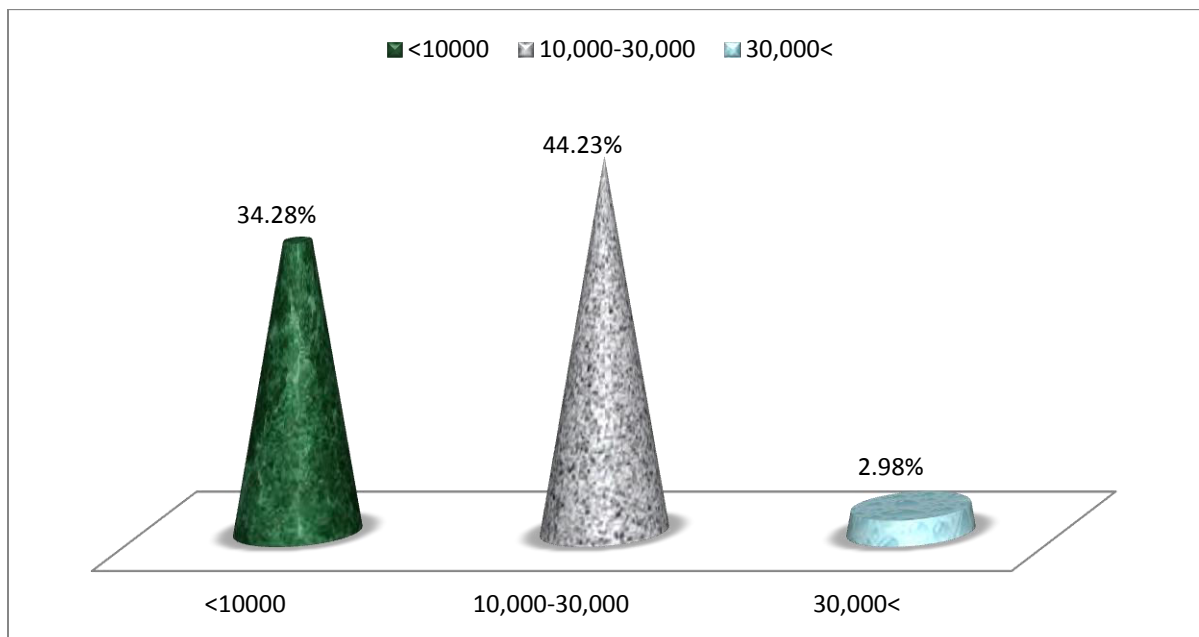


Fig 4.1.5: Monthly Income Distribution

Most (44.23%) of the respondents monthly income were 10,000-30,000tk .Only 2.98% people earned above 30,000 tk monthly.

4.1.6 Living Area

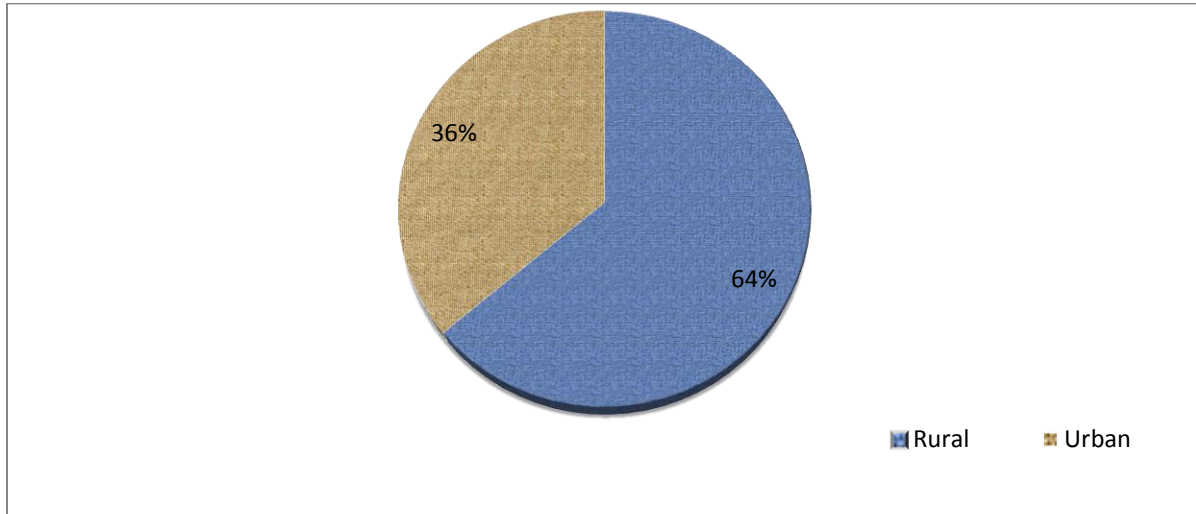


Fig 4.1.6: Living Area

Most (64%) people live in rural area and only 36% were urban.

4.1.7 Smoking Status

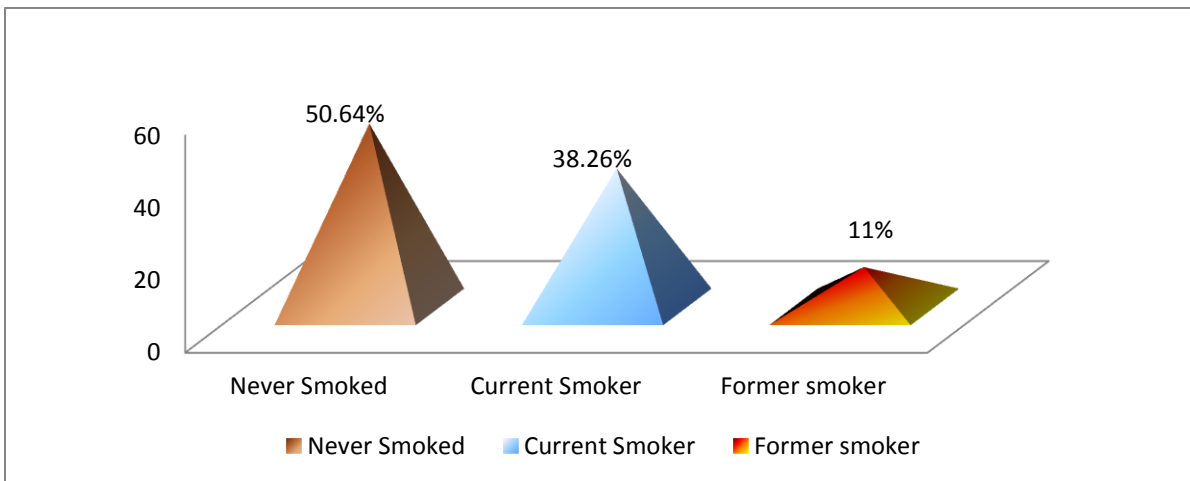


Fig 4.1.7: Smoking Status

Many types of smoker can be define as following: 1. Never Smokers – Adults who have never smoked a cigarette or who smoked fewer than 100 cigarettes in their entire lifetime. 2. Former Smokers – Adults who have smoked at least 100 cigarettes in their lifetime, but say

they currently do not smoke. 3.Current Smokers – Adults who have smoked 100 cigarettes in their lifetime and currently smoke cigarettes every day (Salimetrics,2010). Most (50.64%) of the respondents were no-smokers. Only 38.26% people were smokers.

4.2 Knowledge and Attitude

4.2.1 Knowledge about Passive Smoking

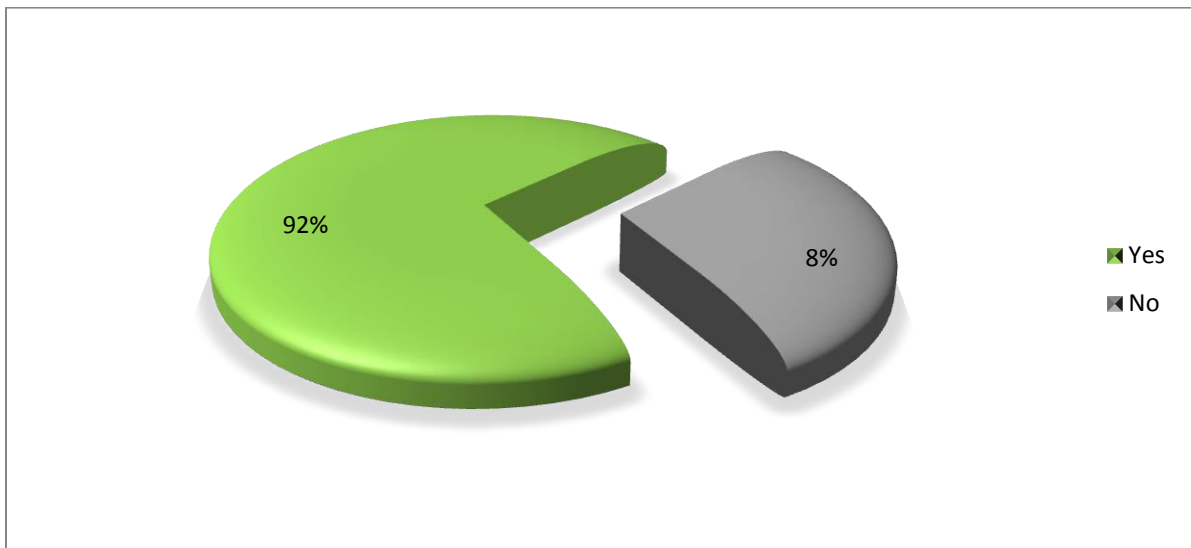


Fig 4.2.1: Knowledge about passive smoking

Most (92%) people knew about passive smoking and only 8% people though they did not knew about the term passive smoking but they are conscious about the effect of passive smoking.

4.2.2 Knowledge about Harmful effect of Passive Smoking

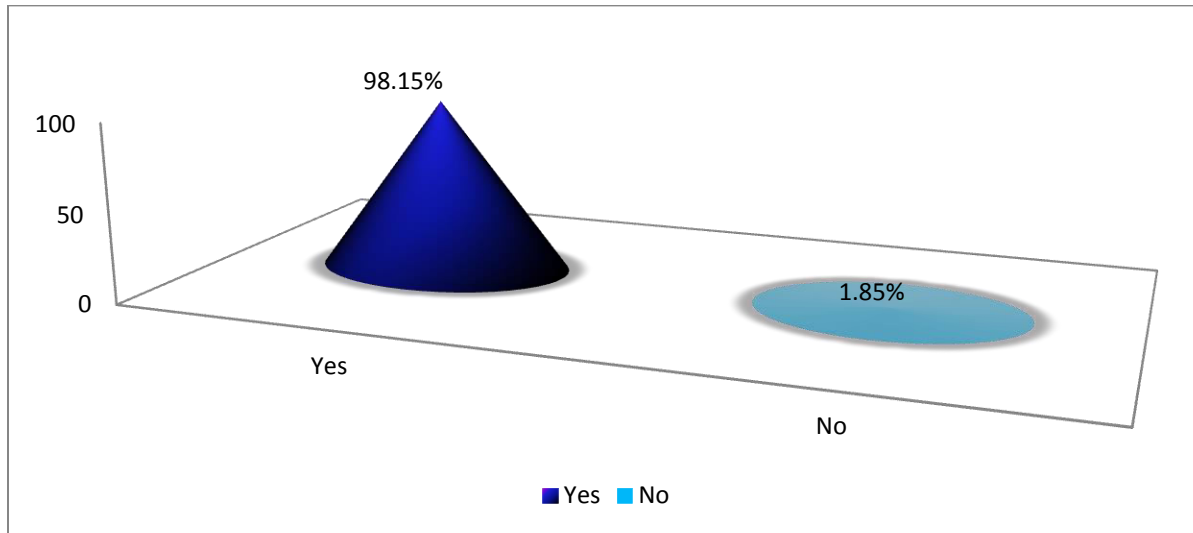


Fig 4.2.2: Knowledge about Harmful effect of Passive Smoking

Most (98.15%) people knew that passive smoking is harmful, only 1.85% did not know passive smoking is harmful for health.

4.2.3 Effect of Passive Smoking

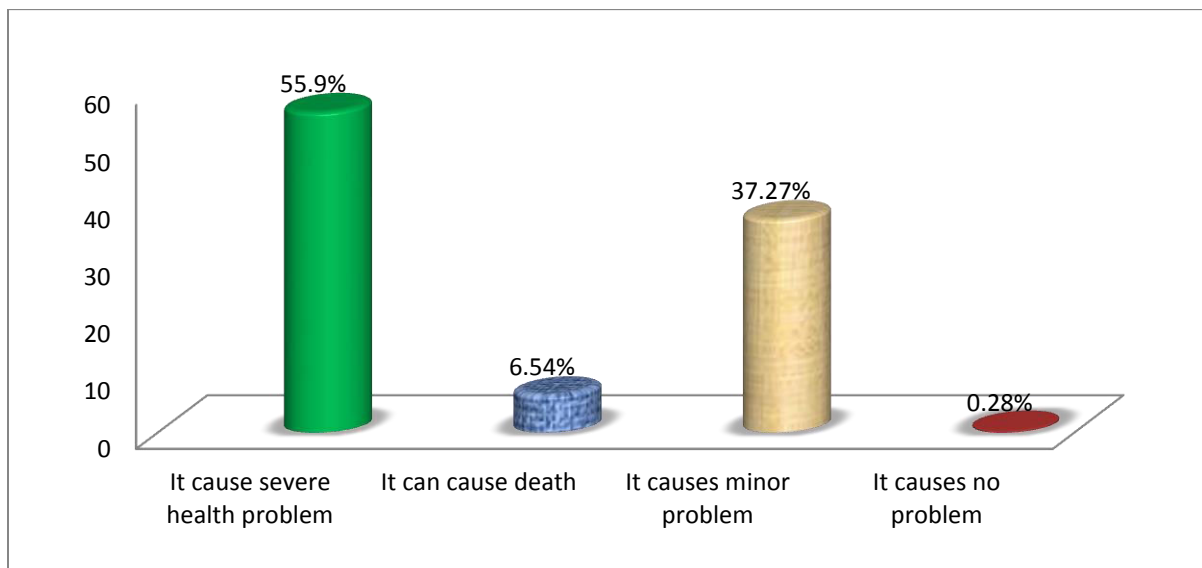


Fig 4.2.3: Effect of Passive Smoking

Majority (55.9%) of the people said that it can cause severe health problem, only 0.28% said it has no effect on health.

4.2.4 Breathing Problem associated with passive smoking

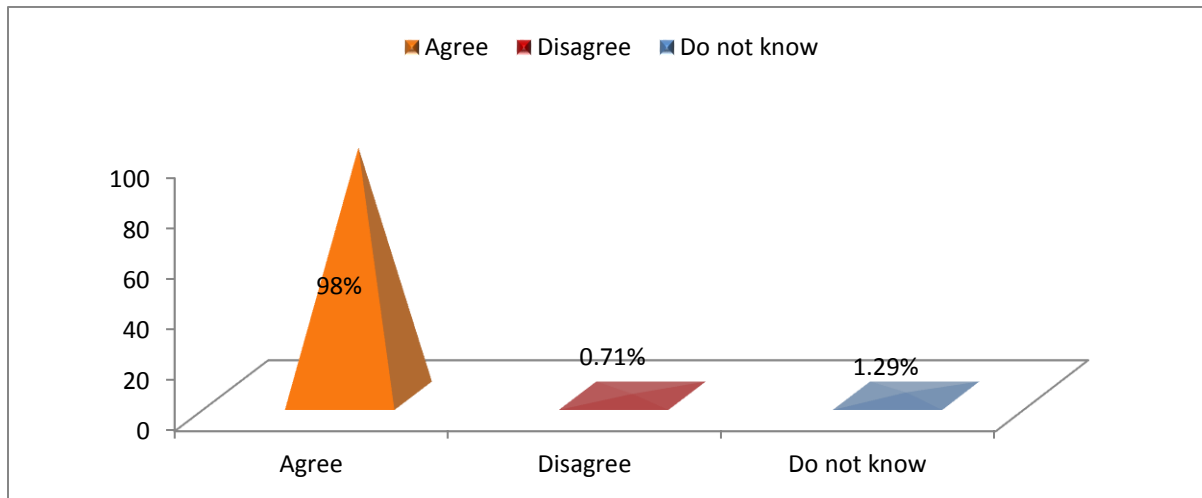


Fig 4.2.4: Breathing Problems associated with passive smoking

Most (98%) people agreed on the matter that breathing problem is associated with passive smoking. Only 1.29% of the respondents disagreed.

4.2.5 Lung Cancer associated with passive smoking

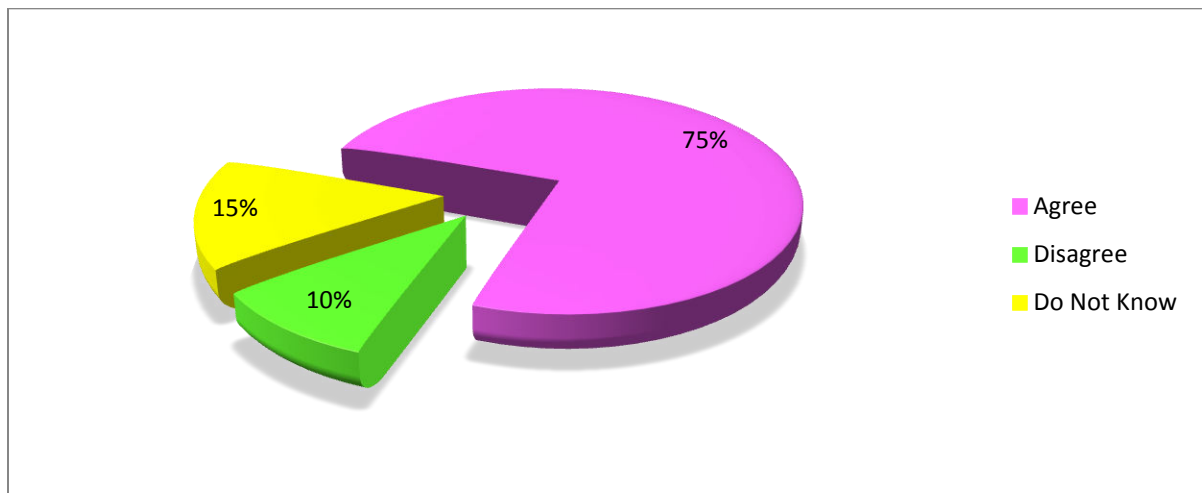


Fig 4.2.5: Lung Cancer associated with passive smoking

Most (82%) people believed that lung cancer is associated with passive smoking. Only 8% disagreed on this matter.

4.2.6 Oral Cancer associated with passive smoking

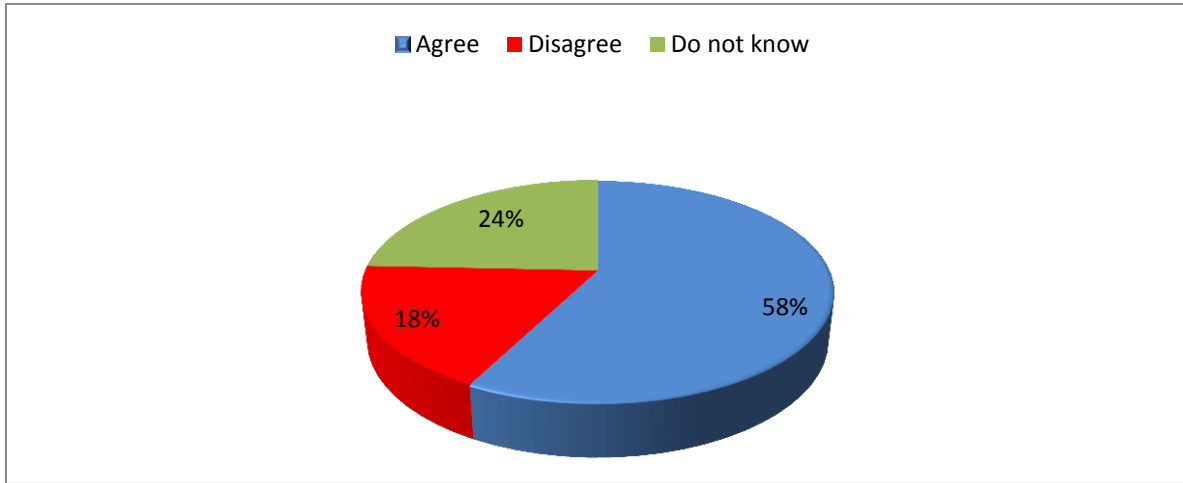


Fig 4.2.6: Oral Cancer associated with passive smoking

Most (58%) people agreed that lung cancer is associated with passive smoking. Only 18% disagreed on this matter.

4.2.7 Stained Teeth associated with passive smoking

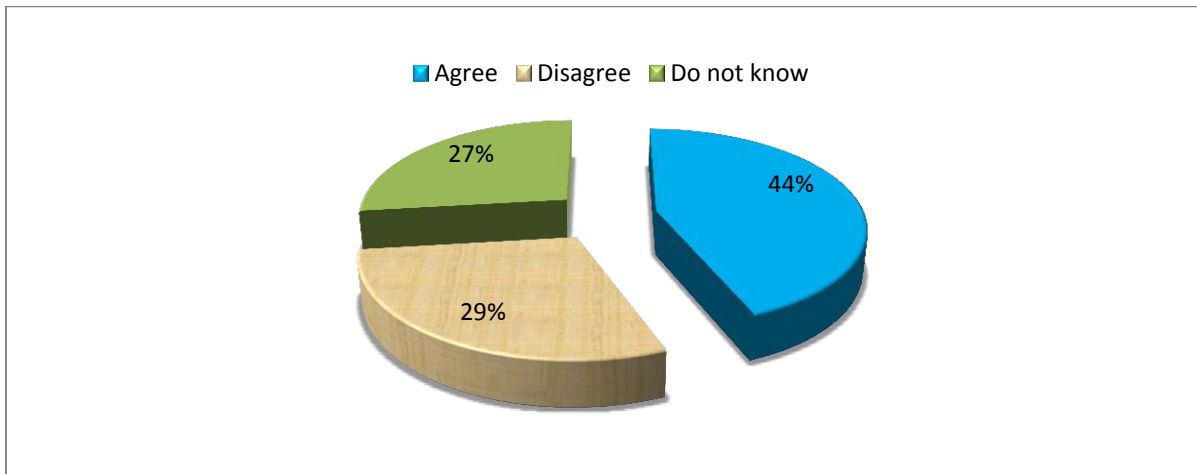


Fig 4.2.7: Stained Teeth associated with passive smoking

Most (44%) people said that passive smoking is associated with stained teeth. Only 29% people disagreed on this matter.

4.2.8 Impotency associated with passive smoking

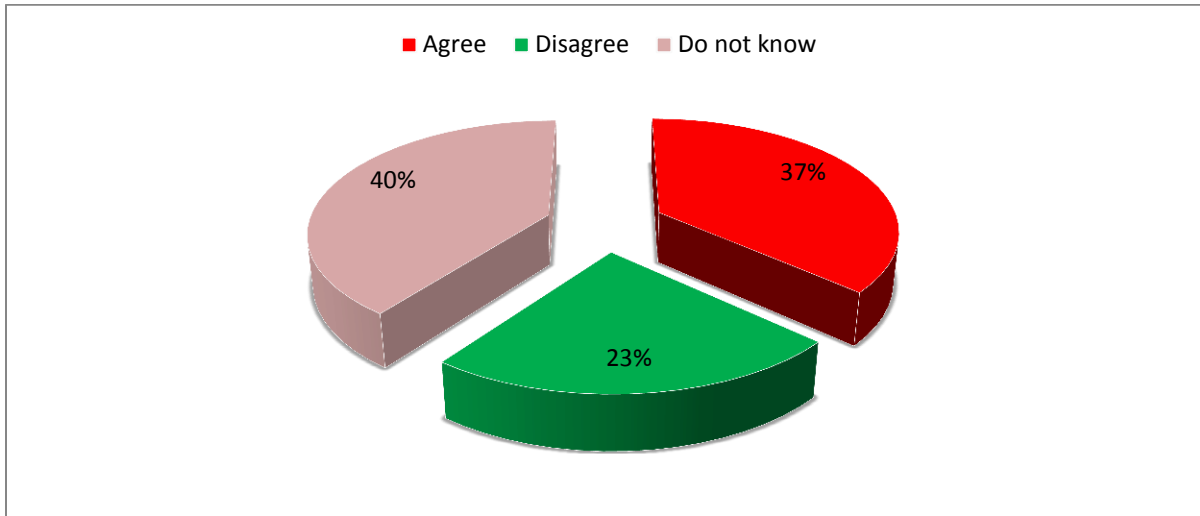


Fig 4.2.8: Impotence associated with passive smoking

Most (40%) of the respondents did not know that impotence is associated with passive smoking and 23% were disagreed.

4.2.9 High Blood Pressure associated with passive smoking

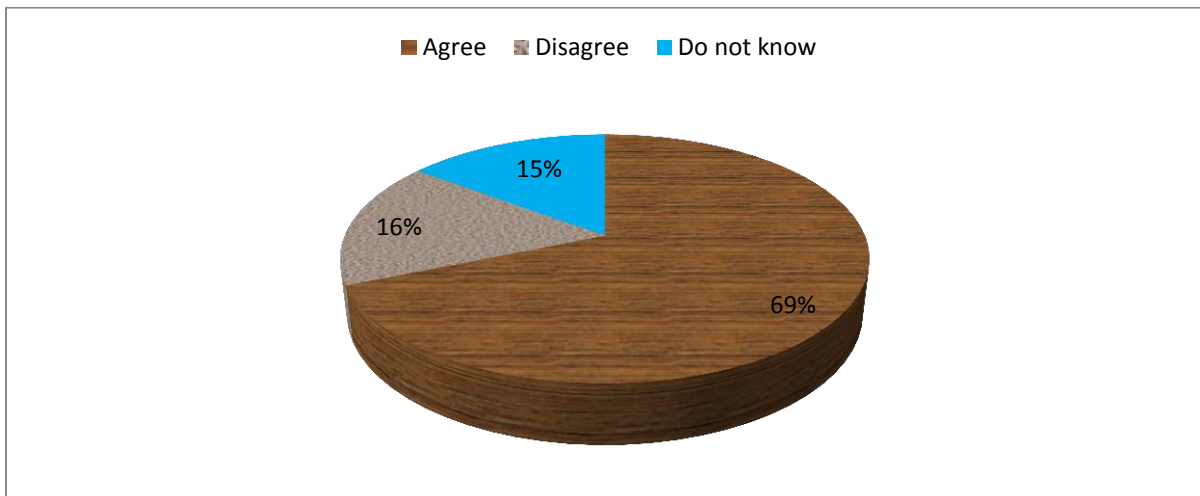


Fig 4.2.9: High Blood Pressure associated with passive smoking

Most (69%) of the respondents agreed that high blood pressure is associated with passive smoking. Only 16% respondents disagreed on this.

4.2.10 Heart Disease associated with passive smoking

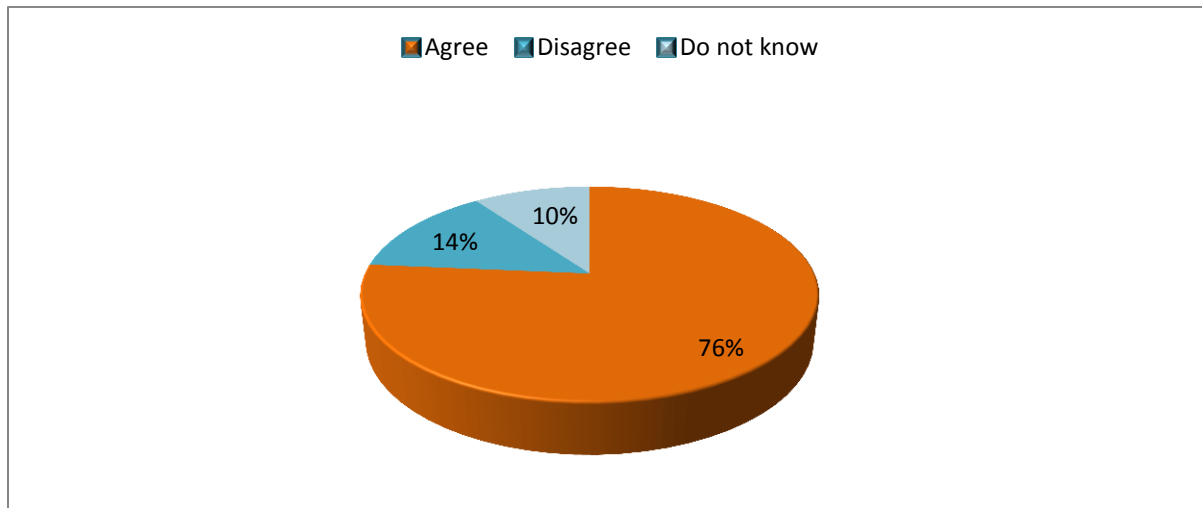


Fig 4.2.10: Heart Disease associated with passive smoking

Most (76%) of the respondents said that passive smoking is associated with heart disease and only 14% disagreed on this matter.

4.2.11 Eye Irritation associated with passive smoking

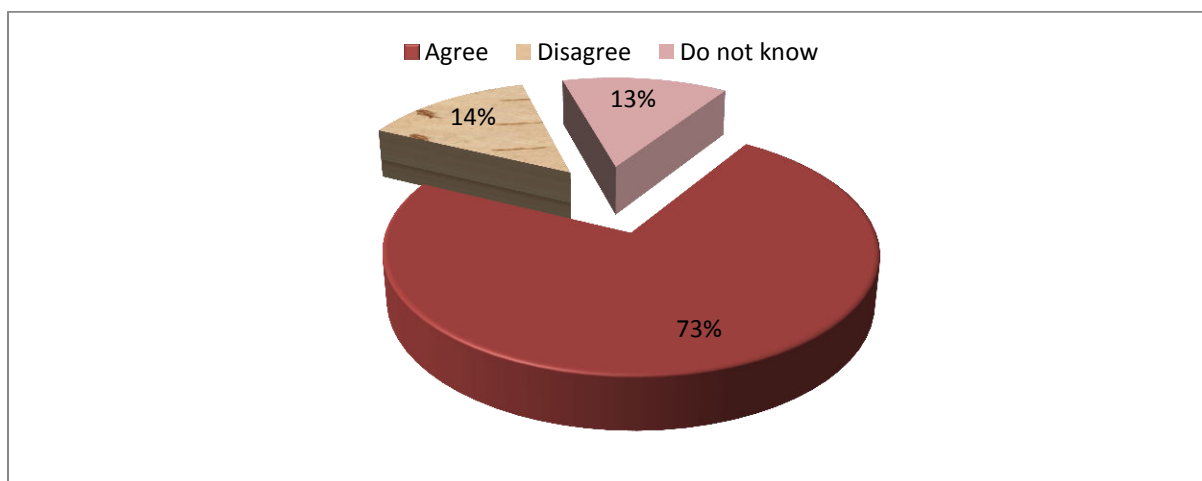


Fig 4.2.11: Eye Irritation associated with passive smoking

Most (73%) people agreed on the matter that eye irritation is associated with passive smoking and only 14% disagreed on this matter.

4.2.12 Hearing Loss associated with passive smoking

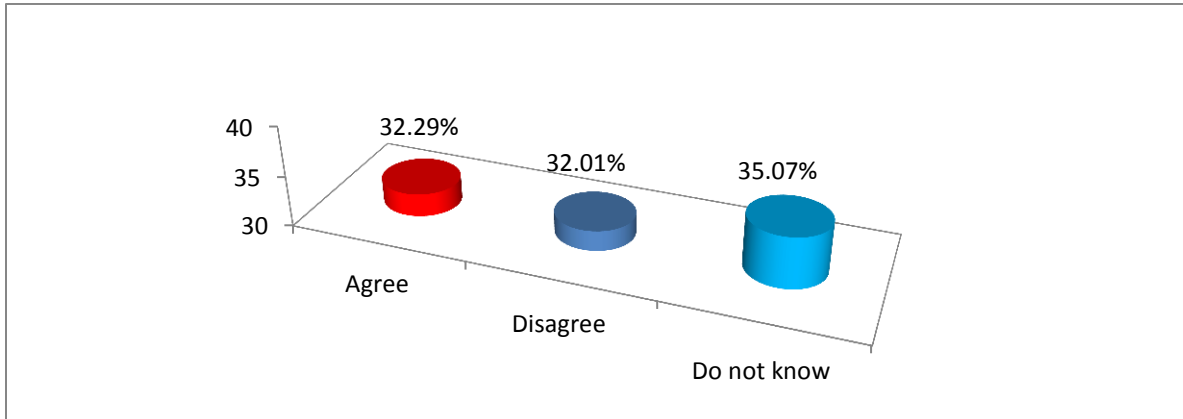


Fig 4.2.12: Hearing loss associated with passive smoking

Most (35.07%) people do not know that hearing loss is associated with passive smoking. Only 32.29% agreed on this matter.

4.2.13 Developmental Defects in Children associated with passive smoking

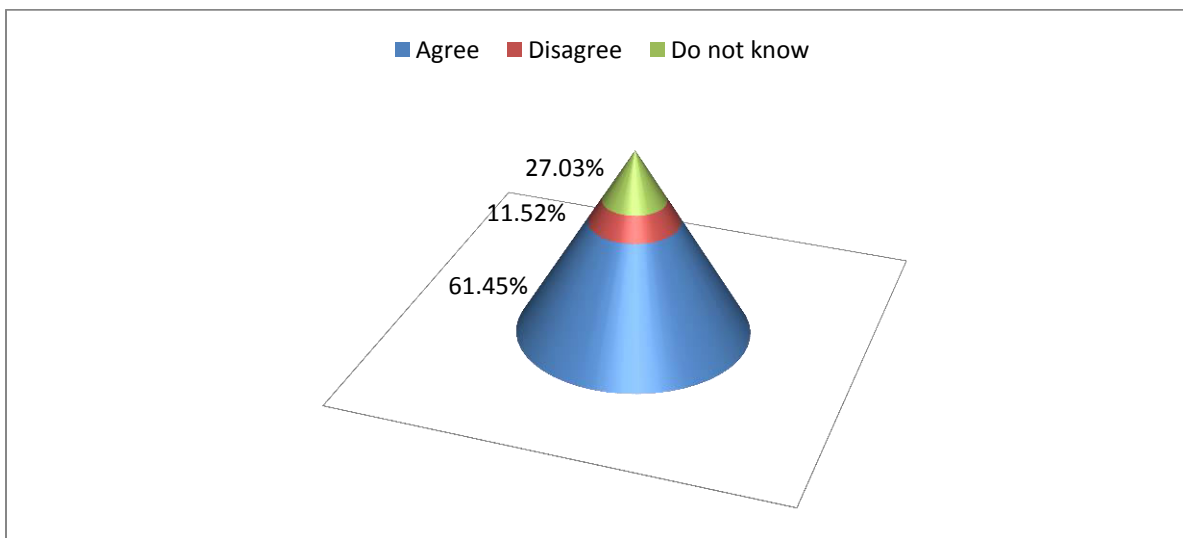


Fig 4.2.13: Developmental Defects in Children associated with passive smoking

Most (61.45%) agreed that developmental defects in children is associated with passive smoking and 11.52% disagreed on the association.

4.2.14 Premature Birth associated with passive smoking

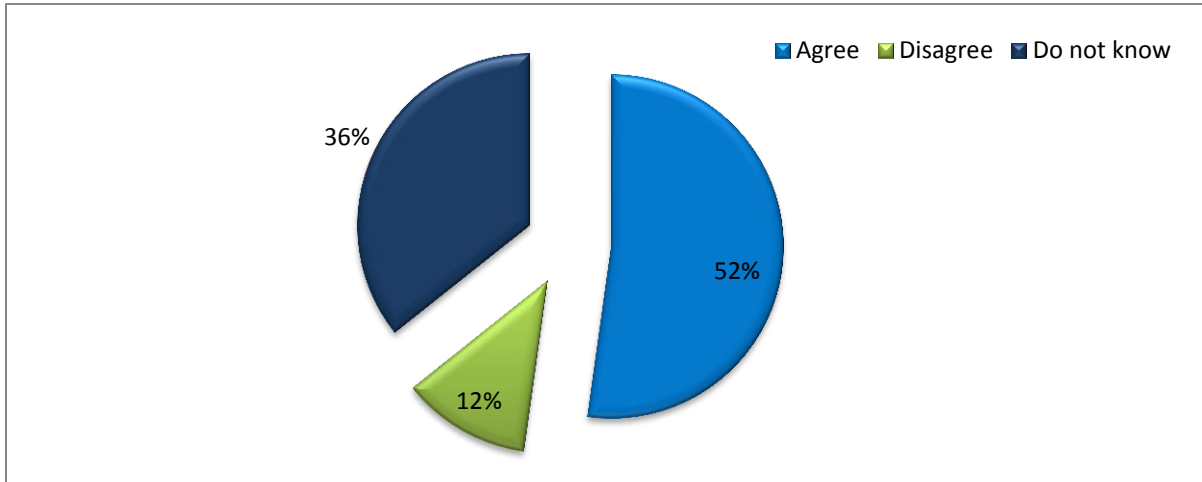


Fig 4.2.14: Premature Birth associated with passive smoking

Most (52%) people agreed that premature birth is associated with passive smoking and 12% were disagreed on this.

4.2.15 Allergy associated with passive smoking

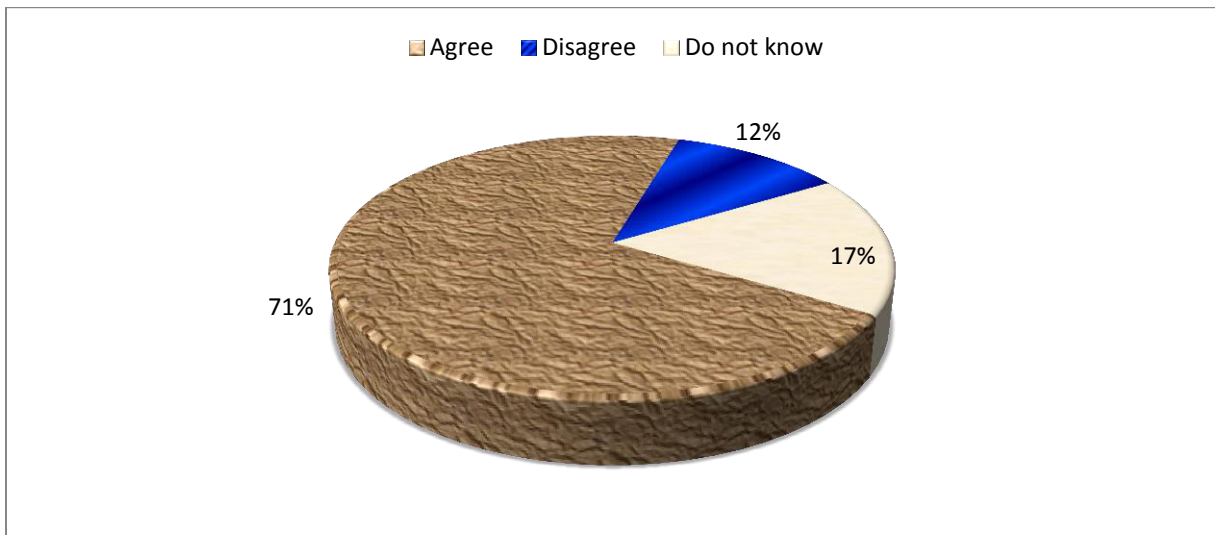


Fig 4.2.15: Allergy associated with passive smoking

Most (71%) people agreed that allergy is associated with passive smoking. Only 12% disagreed on this.

4.2.16 Asthma associated with passive smoking

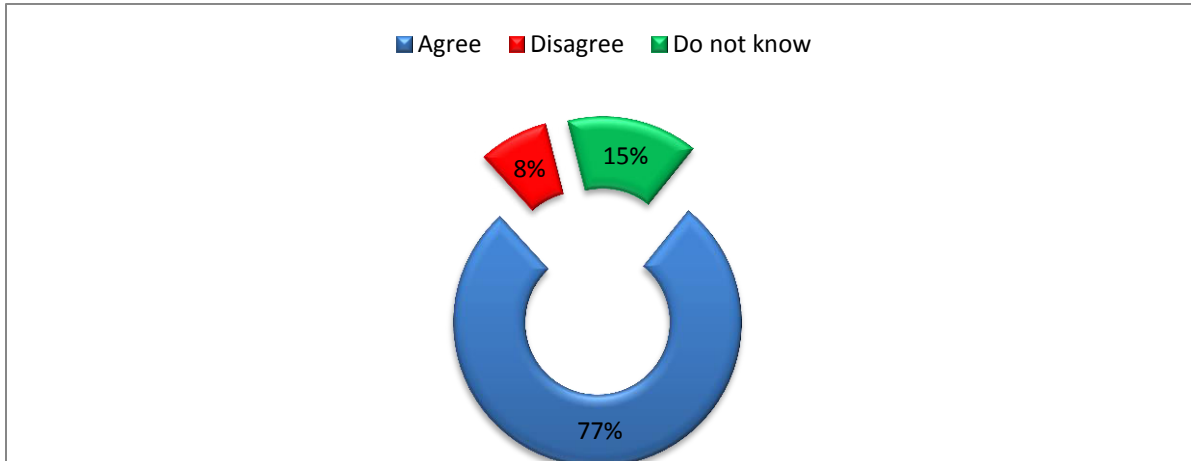


Fig 4.2.16: Asthma associated with passive smoking

Most (77%) people agreed that asthma is associated with passive smoking. Only 8% disagreed on this.

4.2.17 Tuberculosis associated with passive smoking

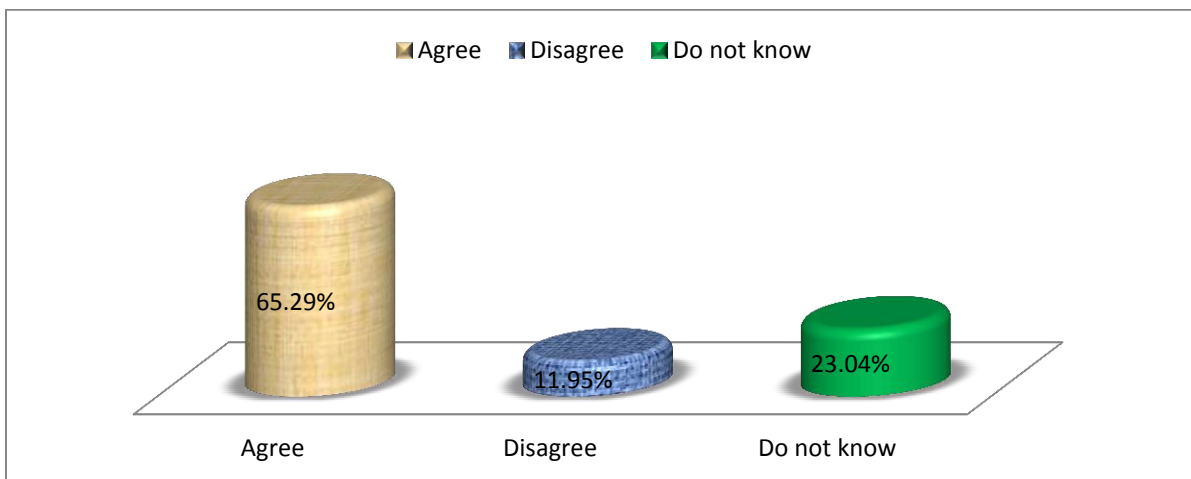


Fig 4.2.17: Tuberculosis

Most (65.29%) people agreed that allergy is associated with passive smoking. Only about 12% disagreed on this.

4.2.18 Other Problems associated with Passive Smoking

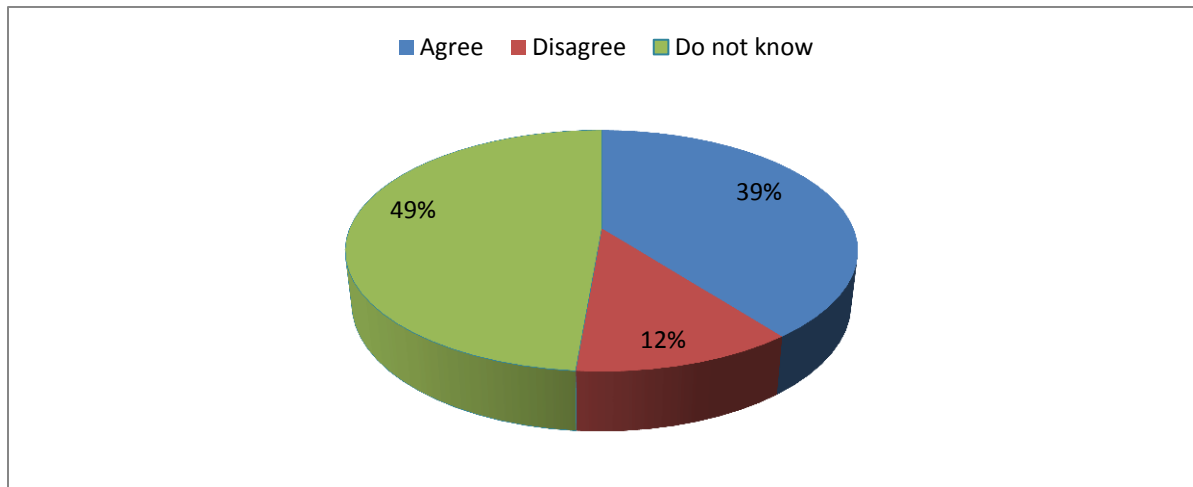


Fig 4.2.18: Other Problems Associated With Passive Smoking

Most (49%) people do not know that passive smoking is associated with other problems such as diabetes, ulcer etc. Only 12% respondents disagreed that passive smoking is associated with other problems such as diabetes, ulcer etc.

4.2.19 Exposure to Passive Smoking

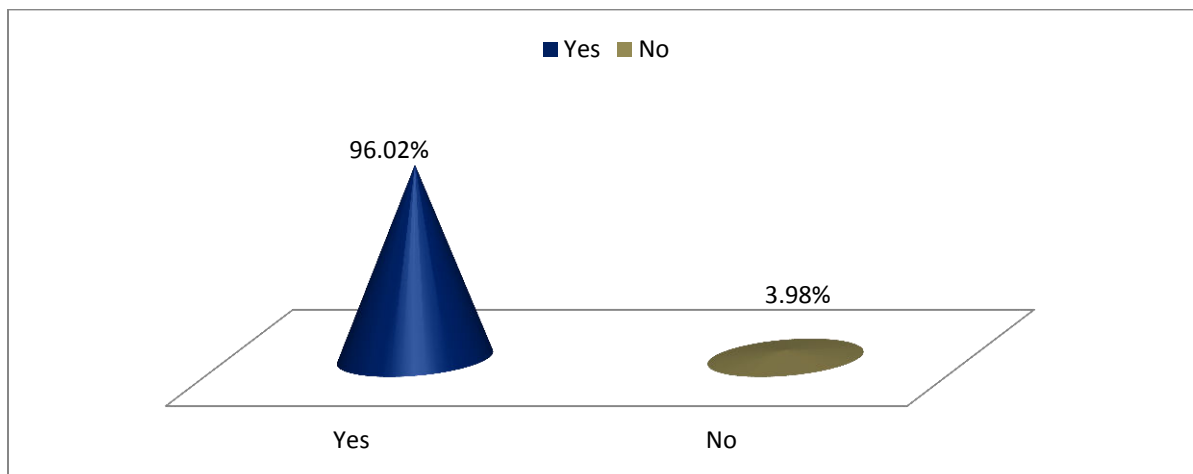


Fig 4.2.19: Exposure to Passive Smoking

Most (96.02%) people were exposed to passive smoking. Only about 4% of the respondents did not get exposed to passive smoking.

4.2.20 Area of Exposure

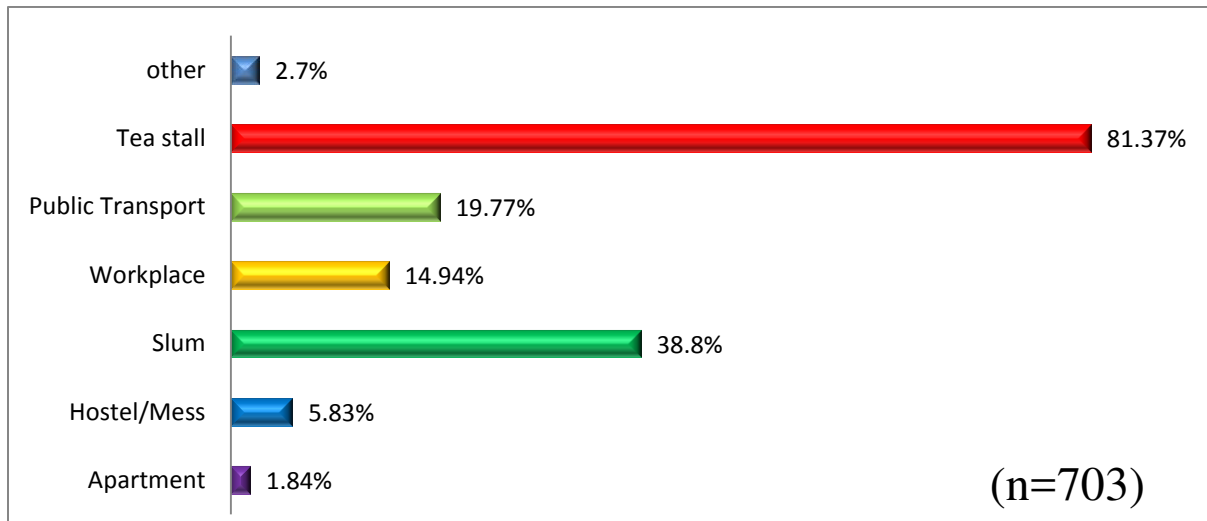


Fig 4.2.20: Area of Exposure

Most (81.37%) of the respondents get exposed to passive smoking at tea stall. Only about 2% people got exposed to passive smoking in road side and campus.

4.2.21 Restriction in Area of Exposure

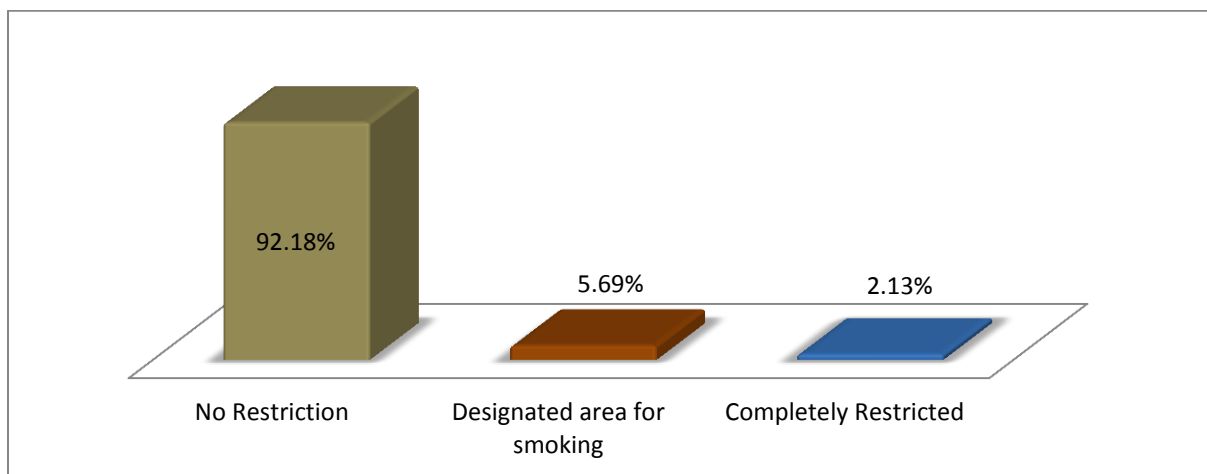


Fig 4.2.21: Restriction in Area of Exposure

In most (92.18%) cases there were no restriction in the area of exposure. In only about 2% cases the areas were completely restricted.

4.2.22 People Compliance with Smoking Restriction

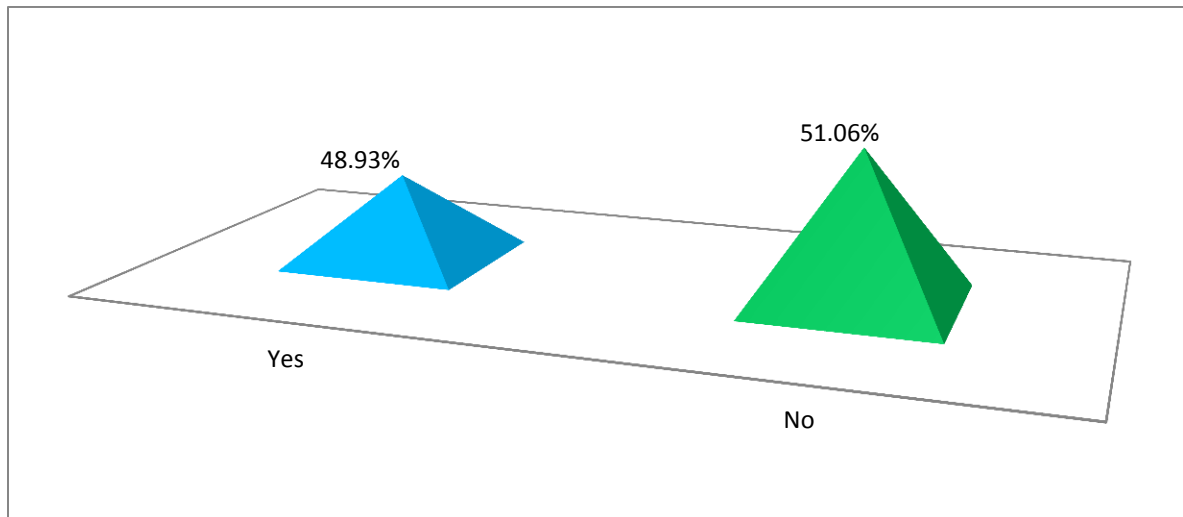


Fig 4.2.22: People Compliance with Smoking Restriction

In most (51.06%) cases people thought smokers did not comply with the restriction and in about 49% cases they did comply.

4.2.23 Comfortableness in No-Smoking Zone

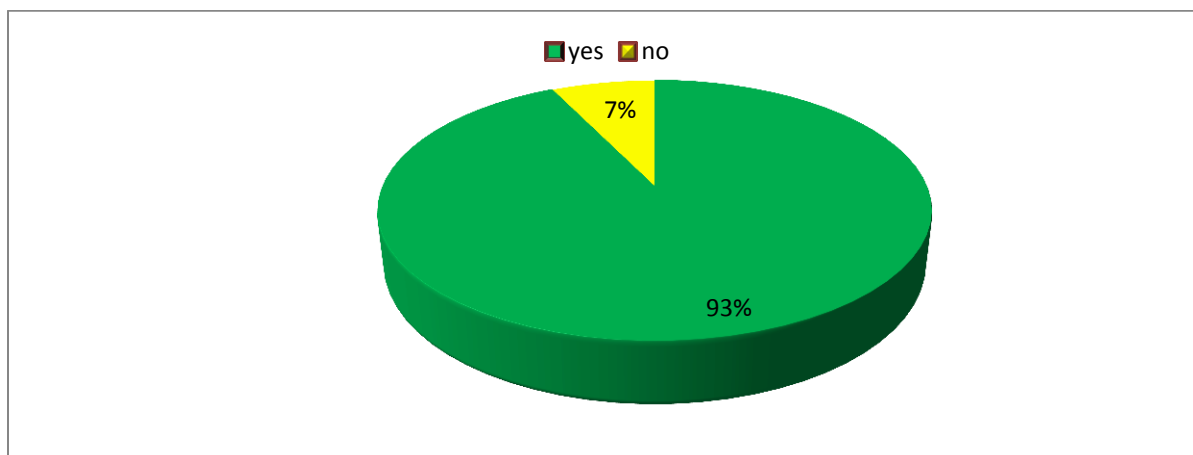


Fig 4.2.23: Comfortableness in No-Smoking Zone

Most (93%) of the respondents said that they felt comfortable in a no-smoking zone. Only 7% respondents said that they did not feel comfortable in a no-smoking zone.

4.2.24 Botheration of Passive Smoking

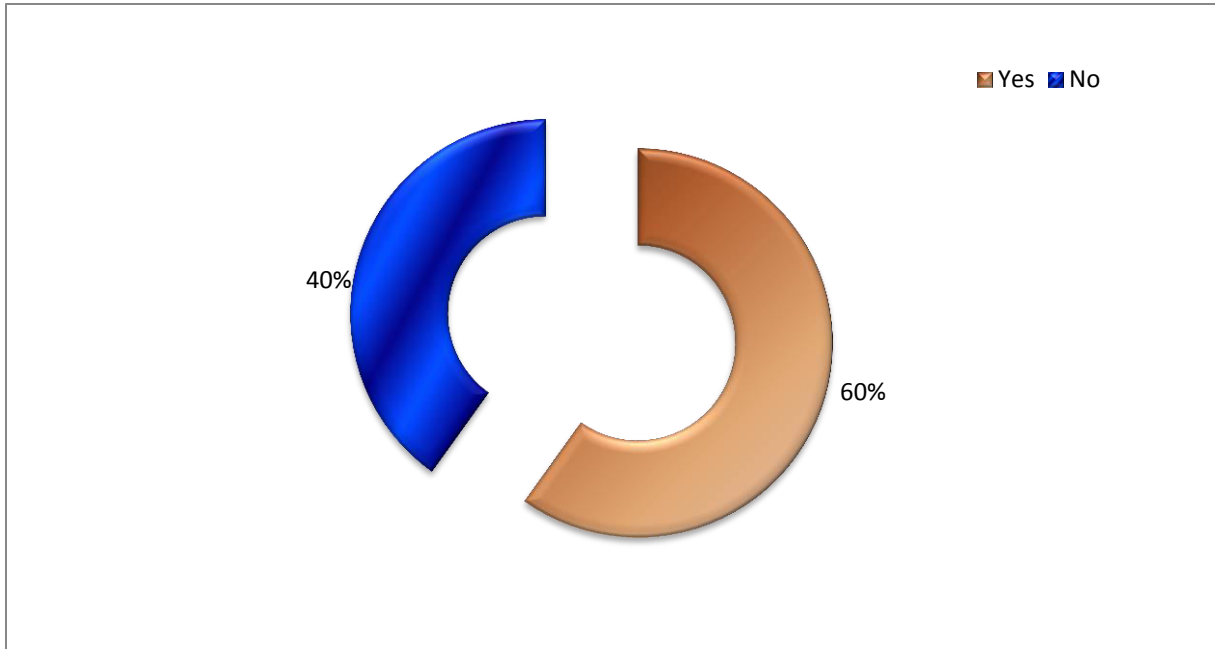


Fig 4.2.24: Botheration in Passive Smoking

Most (60%) people said that they felt bother when exposed to passive smoking and 40% were respond to they did not bother.

4.2.25 Way of Dealing with Passive Smoking

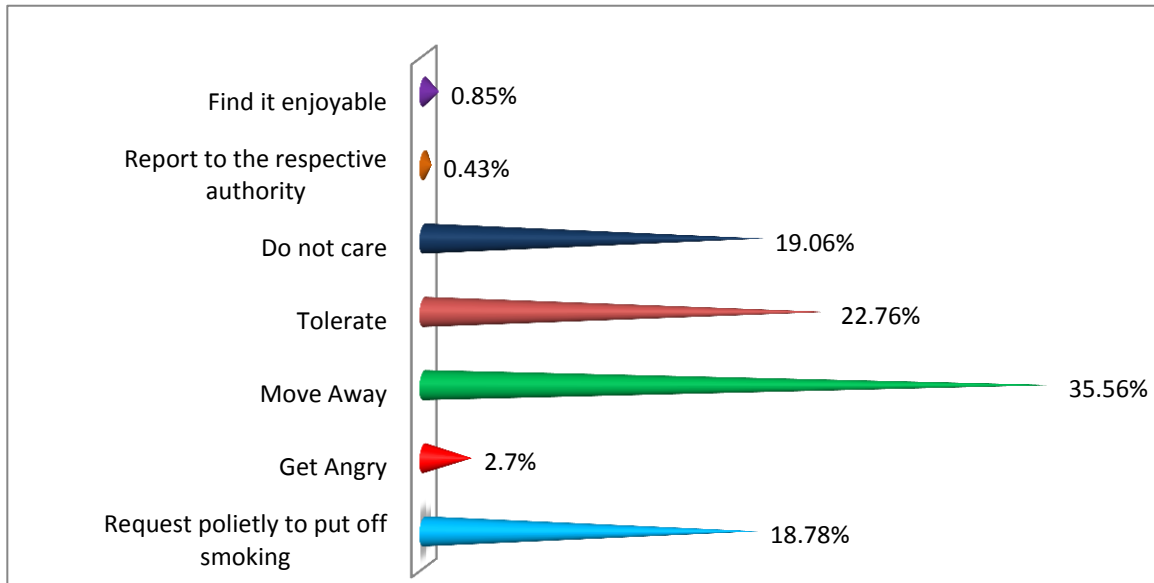


Fig 4.2.25: Way of Dealing with Passive Smoking

Most (35.56%) of the people said that they move away when someone smoking around them and about 19% request politely to putting off smoking. Only 0.43% said that they report the respective authority.

4.2.26 Restriction in Buying Cigarettes Aged Below 16

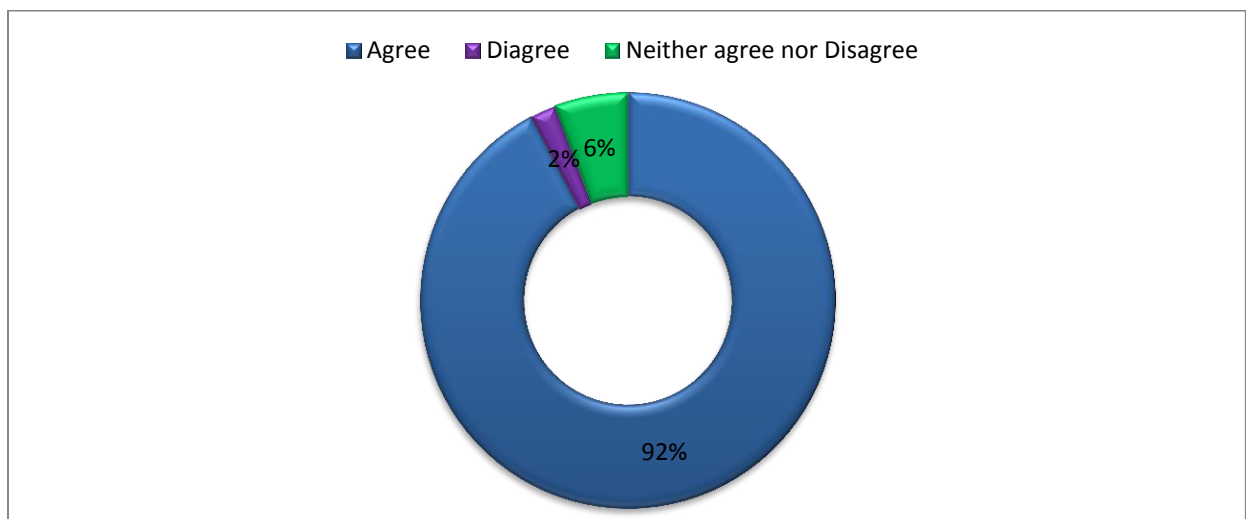


Fig 4.2.26: Restriction in Buying Cigarettes Aged Below 16

Most (92%) people agreed that no one under the age of 16 should be allowed to buy cigarette. Only 2% disagreed on this matter.

4.2.27 Strict Law Enforcement to Stop Public Smoking

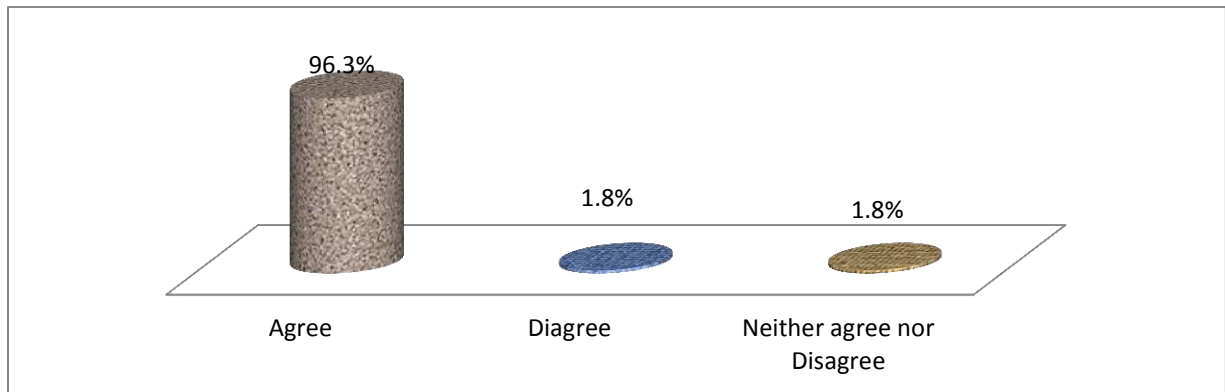


Fig 4.2.27: Strict Law Enforcement to Stop Public Smoking

Most (96.3%) people agreed that strict law should be enforced to stop public smoking. Only 1.8% disagreed on this.

4.2.28 Restriction in Smoking Advertisement

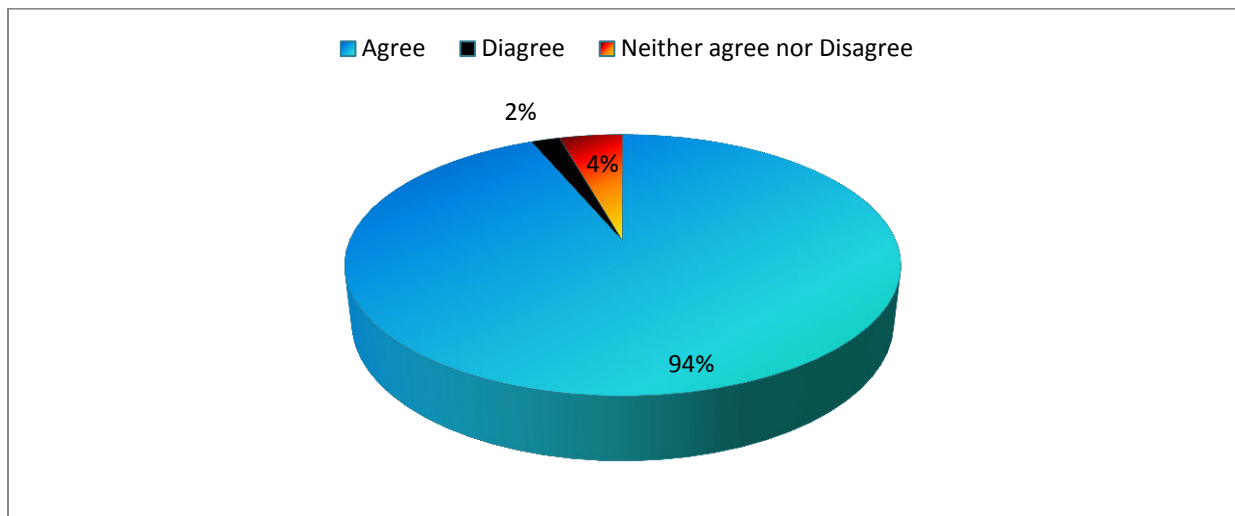


Fig 4.2.28: Restriction in Smoking Advertisement

Most (94%) people agreed that any advertisement about cigarette should never be presented in the media. Only 2% people disagreed on this matter.

4.2.29 Organizing Awareness Programs

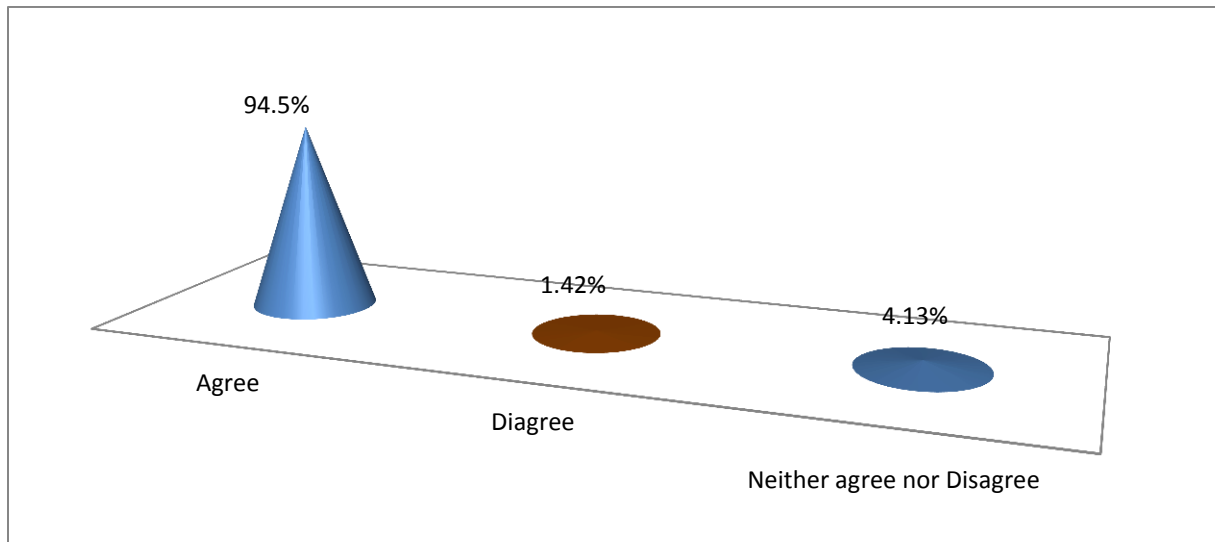


Fig 4.2.29: Organizing Awareness Programs

Most (94.5%) people said that awareness program should be organized to increase the awareness in the general people. Only 1.42% respondents disagreed on this matter.

4.2.30 Information on Smoking effect in Academic Curriculum

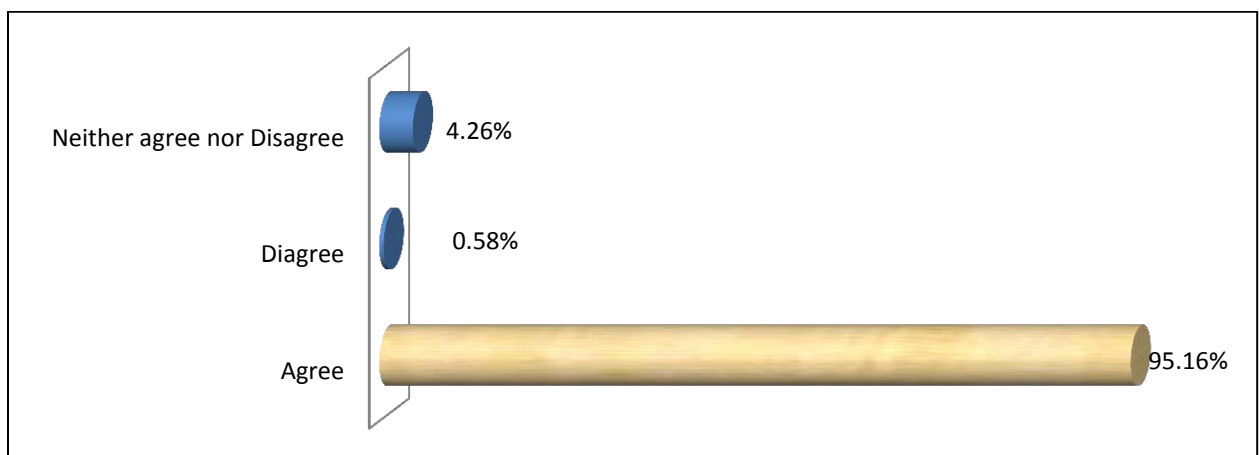


Fig 4.2.30: Information on Effects of Smoking in Academic Curriculum must be contain.

Most (95.16%) people said that it would be good to add information about the passive smoking in the academic curriculum to raise awareness of the impact of effects of smoking . Only about 0.6% respondents disagreed on this matter.

4.2.31 Reasons of Smoking

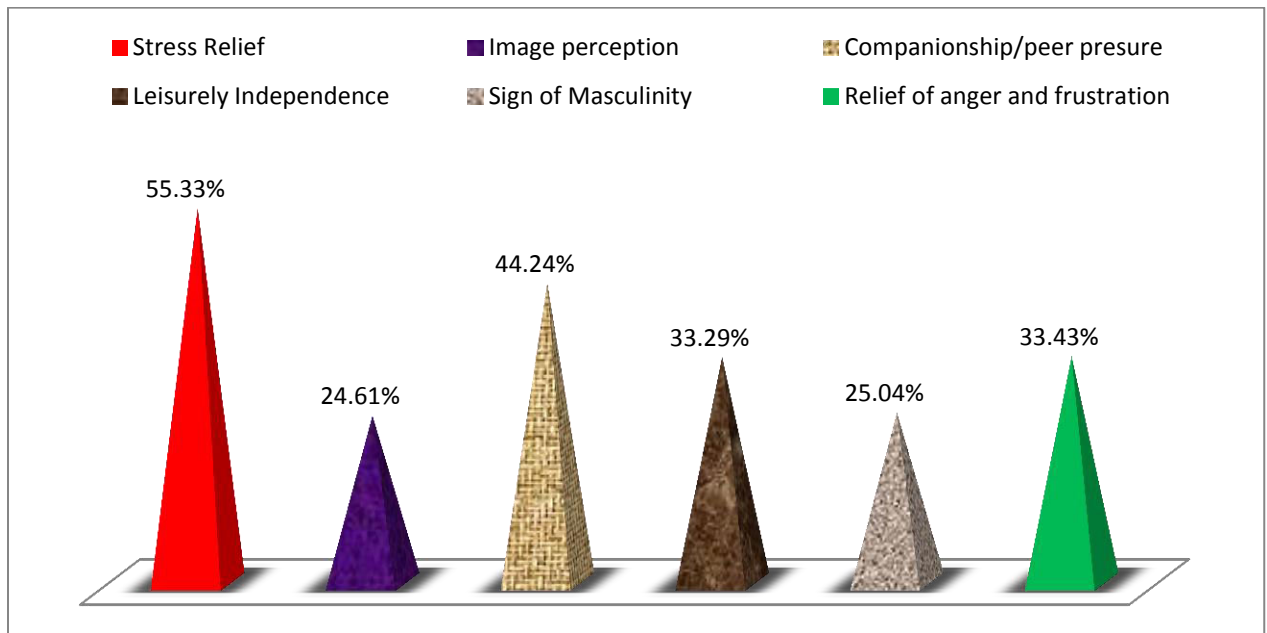


Fig 4.2.31: Reasons of Smoking

People about 55% thought that smoking is the cause of stress relief. About 44% thought peer pressure is also cause and 25.58% responds masculinity is the reason for smoking.

Chapter 5

Discussion and Conclusion

5.1 Discussion

Although low- and middle-income countries (LMICs) generally lag behind high-income countries in tobacco control, Bangladesh is noted as one of those countries in the LMICs that have implemented tobacco control policies effectively since the early 1990s. It was a very timely initiative on the part of the government of Bangladesh to implement the TCA in 2005 that banned smoking in public places and transports, advertising and promotion, and tobacco product vending machines (Nargis *et al.*, 2015).

In a study conducted on knowledge and attitudes among the New Zealand While New Zealanders' knowledge about SHS effects has improved since 1989, with 90% or more of the adult population aware of a risk to health, this knowledge may be shallow. Over 80% of New Zealand smokers indicated that people have a right to smoke-free homes. However, these attitudes do not necessarily result in smoke-free homes (Thomson *et al.*, 2016).

In another Study a cross-sectional survey to assess awareness and attitudes towards passive smoking was conducted among consenting working adults from urban areas in Malaysia. A total of 186 adults aged between 22-87 years participated in the study where 56.3% of the respondents were females and 43.7% males. Majority (98.9%) agreed that cigarette smoke is harmful to the non-smokers around while 22.4% were not sure if the smoke from shisha/water pipe was harmful. A total of 87.4% did not like people to smoke around them and 95.6% of the respondents did not like people to smoke in their house. Besides, 86.9% believed that smoking should not be permitted in the workplace (Ooi *et al.*, 2016).

According to the present study 97% male and 3% female participated in this study where about 96% were exposed to passive smoking and 60% people said that they felt bother when exposed to passive smoking. Half (50.64%) of the respondents were no-smokers. Only 38.26% people were current smokers and 11% were former smoker. About 56% respondents said SHS cause severe health problem and about 37% said that it causes minor problem. Breathing problem is one of the major problems associated with SHS in which most (98%) respondents agreed. Hearing loss is another cause of SHS where only about 32% respondents agreed and about 35% did not know about it. Most (77%) agreed asthma is associated with SHS. Most people (about 81%) said that they get exposed to SHS at a tea stall and reason behind the exposure was lack of restriction in that area. In the 92% cases there were no

restriction and about 51% thought smoker did not comply with the restriction. Most (94.5%) people said that awareness program should be organized to increase the awareness in the general people and also 94% people agreed that any advertisement about cigarette should never be presented in the media. Most (96.3%) respondents said that strict law should be enforced to stop public smoking so it can be said that not only non-smoker but also some smokers were supported the idea of banning the public place smoking.

5.2 Conclusion

The health risks from SHS exposure are now well documented and there is no risk-free level of exposure to SHS. Most of adults and aged people continue to be exposed to SHS in tea stall; slum and public transport because of no restrictions are present in most of the place of exposure. Most of the people support anti-smoking initiatives. Government campaigns and policies now need to focus on reducing SHS exposure in these settings of Bangladesh in order to reduce the health hazards of SHS.

Chapter 6

References

Abdullah, A., Driezen, P., Sansone, G., Nargis, N., Hussain, G., Quah, A. and Fong, G. (2014). Correlates of exposure to secondhand smoke (SHS) at home among non-smoking adults in Bangladesh: findings from the ITC Bangladesh survey. *BioMed Central Pulmonary Medicine*, 14(1), pp.117.

Abate, M. (2013). Cigarette smoking and musculoskeletal disorders. *MLTJ*. [online] Available at: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3711704/> [Accessed 13 Apr. 2016].

Alopecia uk. (2016). *Can smoking cause hair loss* -. [online] Available at: http://www alopeciaonline.org.uk/forum/forum_posts.asp?TID=20611 [Accessed 13 Apr. 2016].

American Cancer Society, (2016). *Health Risks of Secondhand Smoke*. [online] Cancer.org. Available at: <http://www.cancer.org/cancer/cancercauses/tobaccocancer/secondhand-smoke> [Accessed 13 Apr. 2016].

American Academy of Pediatric, (2016). *Alternative Forms of Tobacco are Dangerous*. [online] Available at: <https://www.healthychildren.org/English/health-issues/conditions/tobacco/Pages/Alternative-Forms-of-Tobacco.aspx> [Accessed 13 Apr. 2016].
[ume-12/A-look-at-second-hand-smoking](http://www.ume-12.com/A-look-at-second-hand-smoking) [Accessed 13 Apr. 2016].

Benowitz, N. (2009). Pharmacology of Nicotine: Addiction, Smoking-Induced Disease, and Therapeutics. *Annual Review Pharmacology Toxicology.*, 49(1), pp.57-71.

BusinessDictionary,(2016). *What does white collar mean, definition and meaning*. [online] Available at: <http://www.businessdictionary.com/definition/white-collar.html> [Accessed 14 Apr. 2016].

Cancer Council NSW. (2011). *A brief history of smoking - Cancer Council NSW*. [online] Available at: <http://www.cancercouncil.com.au/31899/uncategorized/a-brief-history-of-smoking/> [Accessed 15 Mar. 2016].

Cancer Research UK. (2015). *Passive smoking*. [online] Available at: <http://www.cancerresearchuk.org/about-cancer/causes-of-cancer/smoking-and-cancer/passive-smoking> [Accessed 6 Apr. 2016].

Chaturvedi, P., Mishra, A., Datta, S., Sinukumar, S., Joshi, P. and Garg, A. (2015). Harmful effects of nicotine. *indian journal of medical paediatric oncology*, 36(1), pp.24.

Cheng, H., McBride, O. and Phillips, M. (2013). Relationship between knowledge about the harms of smoking and smoking status in the 2010 Global Adult Tobacco China Survey. *Tobacco Control*, 24(1), pp.54-61.

Cherney, K. (2013). *What Can Smoking Do to Your Circulatory System?* | *livestrong.com*. [online] *livestrong.com*. available at: <http://www.livestrong.com/article/204132-what-can-smoking-do-to-your-circulatory-system/> [Accessed 13 Apr. 2016].

Clarke, N. (2015). *The Effects of Smoking on Your Respiratory System* | *Livestrong.Com*. [online] *Livestrong.Com*. Available at: <http://www.livestrong.com/article/141588-the-effects-smoking-your-respiratory-system/> [Accessed 13 Apr. 2016].

Clason, D. (2015). *Smoking and hearing loss*. [online] *Healthy Hearing*. Available at: <http://www.healthyhearing.com/report/50940-Smoking-and-hearing-loss> [Accessed 24 Apr. 2016].

CK, S. (2016). *Clinical pharmacokinetics of nicotine*. - *PubMed - National Center for Biotechnology Information*. [online] *Ncbi.nlm.nih.gov*. Available at: <http://www.ncbi.nlm.nih.gov/pubmed/3545615> [Accessed 13 Apr. 2016].

Deepak KG, e. (2016). *Smokeless tobacco use among patients with tuberculosis in Karnataka: the need for cessation services*. - *PubMed - National Center for Biotechnology Information*. [online] *Ncbi.nlm.nih.gov*. Available at: <http://www.ncbi.nlm.nih.gov/pubmed/22963290> [Accessed 6 Apr. 2016].

Gharaibeh, H., Haddad, L., Alzyoud, S., El-Shahawy, O., Baker, N. and Umlauf, M. (2011). Knowledge, Attitudes, and Behavior in Avoiding Secondhand Smoke Exposure Among Non-Smoking Employed Women with Higher Education in Jordan. *International Journal of Environmental Research and Public Health*, [online] 8(12), pp.4207-4219. Available at: <http://www.mdpi.com/journal/ijerph> [Accessed 19 Mar. 2016].

Infoplease (2016). *smoking: Introduction*. [online] Available at: <http://www.infoplease.com/encyclopedia/science/smoking.html> [Accessed 17 Apr. 2016].

Kyrklund-Blomberg NB, e. (2016). *Maternal smoking and causes of very preterm birth*. - *PubMed - National Center for Biotechnology Information*. [online] Ncbi.nlm.nih.gov. Available at: <http://www.ncbi.nlm.nih.gov/pubmed/15901269> [Accessed 11 Apr. 2016].

Leone, A. (2016). *What is tobacco smoke? Sociocultural dimensions of the association with cardiovascular risk*. - *PubMed - National Center for Biotechnology Information*. [online] Ncbi.nlm.nih.gov. Available at: <http://www.ncbi.nlm.nih.gov/pubmed/20550508> [Accessed 15 Apr. 2016].

Lubick, N. (2011). Global Estimate of SHS Burden. *Environ Health Perspect*, 119(2), pp.66-67.

Ma, G., Shive, S., Tan, Y., Toubbeh, J., Fang, C. and Edwards, R. (2005). Tobacco use, secondhand smoke exposure and their related knowledge, attitudes and behaviors among Asian Americans. *Addictive Behaviors*, 30(4), pp.725-740.

Medical News Today. (2015). *Nicotine: Facts, Effects, Nicotine Addiction*. [online] Available at: <http://www.medicalnewstoday.com/articles/240820.php> [Accessed 15 Mar. 2016].

Macready, N. (2016). *Smoking and Ulcers*. [online] EverydayHealth.com. Available at: <http://www.everydayhealth.com/ulcer/smoking-and-ulcers.aspx> [Accessed 13 Apr. 2016].

Medscape. (2016). *Smoking During Pregnancy Increases Risk for Preterm Birth*. [online] Available at: <http://www.medscape.com/viewarticle/717666> [Accessed 15 Apr. 2016].

Melissa, M. (2016). *Secondhand Smoke: Get Facts on the Effects & Dangers*. [online] MedicineNet. Available at: http://www.medicinenet.com/secondhand_smoke/article.htm [Accessed 11 Apr. 2016].

National Cancer Institute. (2016). *Harms of Cigarette Smoking and Health Benefits of Quitting*. [online] Available at: <http://www.cancer.gov/about-cancer/causes-prevention/risk/tobacco/cessation-fact-sheet> [Accessed 6 Apr. 2016].

Nargis, N., Thompson, M., Fong, G., Driezen, P., Hussain, A., Ruthbah, U., Quah, A. and Abdullah, A. (2015). Prevalence and Patterns of Tobacco Use in Bangladesh from 2009 to 2012: Evidence from International Tobacco Control (ITC) Study. *plos one*, 10(11), p.e0141135.

Nordqvist, C. (2015). *What Chemicals Are In Cigarette Smoke?*. [online] Medical News Today. Available at: <http://www.medicalnewstoday.com/articles/215420.php> [Accessed 13 Apr. 2016].

Ooi, j., Teh, K., Tam, C. and Sadasivan, S. (2016). Passive Smoking: Perceptions and Practices among Urban Working Adults. *International Journal of Collaborative Research on Internal Medicine & Public Health*, 6, pp.1.

Polito, J. (2016). *Nicotine Addiction 101*. [online] Whyquit.com. Available at: <http://whyquit.com/whyquit/LinksAAddiction.html> [Accessed 11 Apr. 2016].

Pietrangelo, A. (2016). *The Effects of Smoking on the Body*. [online] Healthline. Available at: <http://www.healthline.com/health/smoking/effects-on-body> [Accessed 13 Apr. 2016].

Palipudi, K., Choudhury, S., Andes, L., Sinha, D., Mustafa, Z. and Asma, S. (2011). Exposure to tobacco smoke among adults in Bangladesh. *Indian Journal of Public Health*, [online] 55(3),

p.210. Available at: <http://www.ijph.in/article> [Accessed 19 Mar. 2016].

Pilkington, P., Gray, S., Gilmore, A. and Daykin, N. (2006). Attitudes towards second hand smoke amongst a highly exposed workforce: survey of London casino workers. *Journal of Public Health*, [online] 28(2), pp.104-110. Available at: <http://jpubhealth.oxfordjournals.org/> [Accessed 19 Mar. 2016].

Reynolds, P., Hurley, S., Goldberg, D., Anton-Culver, H., Bernstein, L., Deapen, D., Horn-Ross, P., Peel, D., Pinder, R., Ross, R., West, D., Wright, W. and Ziogas, A. (2004). Active Smoking, Household Passive Smoking, and Breast Cancer: Evidence From the California Teachers Study. *Journal of the National Cancer Institute*, 96(1), pp.29-37.

Roan, S. (2013). *Smokeless tobacco: Safety of dissolvable tobacco products disputed*. [online] latimes. Available at: <http://articles.latimes.com/2011/jul/21/health/la-he-dissolvable-tobacco-20110721> [Accessed 13 Apr. 2016].

Rodriguez, D. (2016). *Alcohol and Cigarettes: Hypertension Risk Factors to Avoid*. [online] EverydayHealth.com. Available at: <http://www.everydayhealth.com/hypertension/preventing/controllable-risk-factors.aspx> [Accessed 13 Apr. 2016].

Roland, J. (2016). *Smoking Cigarettes Cause Impotence*. [online] Healthline. Available at: <http://www.healthline.com/health/erectile-dysfunction/impotence-and-smoking#SmokingandBloodVessels2> [Accessed 13 Apr. 2016].

RN, P. (2016). *The global smoking epidemic: a history and status report*. - PubMed - NCBI. [online] Ncbi.nlm.nih.gov. Available at: <http://www.ncbi.nlm.nih.gov/pubmed/15217537> [Accessed 6 Apr. 2016].

Salimetrics. (2016). *Smoking Definitions*. [online] Available at: <https://www.salimetrics.com/article/smoking-definitions> [Accessed 15 Apr. 2016].

Shaw, J. (2013). *How Does Cigarette Smoking Affect Your Immune System?* | *livestrong.com*. [online] *livestrong.com*. Available at: <http://www.livestrong.com/article/27919-cigarette-smoking-affect-immune-system/> [Accessed 13 Apr. 2016].

Simon, S. (2016). *FDA Investigates Menthol in Cigarettes*. [online] *Cancer.org*. Available at: <http://www.cancer.org/cancer/news/fda-investigates-menthol-in-cigarettes> [Accessed 13 Apr. 2016].

Stevens, D. (2015). *The Symptoms of Allergies to Cigarettes* |. [online] *LIVESTRONG.COM*. Available at: <http://www.livestrong.com/article/538513-the-symptoms-of-allergies-to-cigarettes/> [Accessed 15 Mar. 2016].

Sturm, J., Loomis, D. and Yeatts, K. (2004). Effects of Tobacco Smoke Exposure on Asthma Prevalence and Medical Care Use in North Carolina Middle School Children. *American Journal of Public Health*, [online] 94(2), p.308. Available at: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1448248/> [Accessed 15 Apr. 2016].

Surtenich, A. (2016). *How Smoking Harms Your Vision*. [online] *All About Vision*. Available at: <http://www.allaboutvision.com/smoking/> [Accessed 15 Mar. 2016].

Thomson, G., Wilson, N. and Howden-Chapman, P. (2016). Attitudes to, and knowledge of, secondhand smoke in New Zealand homes and cars. *The New Zealand Medical Journal*, [online] 1213(1175 8716), p.1. Available at: <http://www.nzma.org.nz/journal/118-1213/1407/> [Accessed 19 Mar. 2016].

Valentino, D. (2016). *A look at second-hand smoking*. [online] Escardio.org. Available at: <https://www.escardio.org/Guidelines-&-Education/Journals-and-publications/ESC-journals-family/E-journal-of-Cardiology-Practice/Vol>

Yanbaeva, D., Dentener, M., Creutzberg, E., Wesseling, G. and Wouters, E. (2007). Systemic Effects of Smoking. *Chest*, 131(5), pp.1557-1566.