A Study on Knowledge and Attitude regarding Passive Smoking among Students of East West University

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: Saki Tamanna

ID: 2014-1-70-033

Department of Pharmacy

East West University

Declaration by the research candidate

I, Saki Tamanna, ID: 2014-1-70-022, hereby declare that the dissertation entitled ‘A study on Knowledge and Attitude regarding Passive smoking among students of East West University’’ submitted by me to the department of Pharmacy, East West University in Partial fulfillment of the requirement for the award of the degree Bachelor of Pharmacy is trustworthy record of the original research of the genuine research work carried out by me.

……..

Saki Tamanna
ID: 2014-1-70-033
Dept. of Pharmacy
East West University

Certificate by the Supervisor

This is to certify that the thesis entitled ‘A study on Knowledge and Attitude regarding Passive smoking among students of East West University’’ submitted to the department of Pharmacy, East West University in Partial fulfillment of the requirement for the award of the degree Bachelor of Pharmacy is trustworthy record of the original research of the genuine research work carried out by Saki Tamanna, ID: 2014-1-70-033 under my supervision and guidance.

……..

Nishat Nasrin
Assistant Professor and Supervisor
Department of Pharmacy
East West University

Certificate by the Chairperson

This is to certify that the thesis entitled ‘A study on Knowledge and Attitude regarding Passive smoking among students of East West University’’ submitted to the department of Pharmacy, East West University in Partial fulfillment of the requirement for the award of the degree Bachelor of Pharmacy is trustworthy record of the original research of the genuine research work carried out by Saki Tamanna, ID: 2014-1-70-033.

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Dr. Chawdhury Faiz Hossain

Professor and Chairperson

Dept. of Pharmacy

East West University

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Dedication

This research work is dedicated to my respected teachers of dept. of Pharmacy, East West University and my loving parents.

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List of Abbreviation

SHS- Second hand smoking

SIDS- Sudden Infant death syndrome

LDL- Low Density Lipoprotein

DALYs- Disability-adjusted life years

WHO- World Health Organization

Abstract

Exposure to other people's tobacco smoking is term as passive smoking. As smoking is very much harmful for health so second hand smoking or passive smoking is also harmful but generally less concern is given on this fact. Our study purpose was to determine the knowledge, attitude and awareness level of university students regarding passive smoking and also assume the reasons behind smoking. A questionnaire was developed based on those facts we wanted to determine and the survey was done on both undergraduate and graduate students of different departments. A total 502 participants responded to the questionnaire. Majority (82%) of the participants have the basic knowledge about passive smoking. Almost (92%) participants considered passive smoking is harmful for their health. Majority (93%) stated that severe breathing problem can occur due to exposure to passive smoking and (78%) of participants believed that passive smoking can cause lung cancer. Significant percentages (90%) of participants have considered that strict law enforcement should be provided and proper knowledge should be provided to reduce the exposure of passive smoking. It can be concluded that knowledge level of the target population was satisfactory regarding passive smoking but as it is done on only one university so the condition in other environment could not able to determine. In spite of that from our study we can decide that proper law enforcement and more seminar and awareness program regarding the severity of passive smoking exposure should help to improve the situation more.

Key Words: Passive smoking, breathing problem, Purpose, law enforcement, harmful.

Chapter-1

Introduction

1.1Overview

Passive smoke or secondhand smoke is the combination of "sidestream" smoke and "mainstream" smoke. When smokers smoke, they emit sidestream smoke that is from the lit-end of a cigarette and mainstream smoke that is exhaled by the smoker. The non-smoking population is thus exposed to both sidestream and mainstream smoke resulting in their passive smoking. In burning a cigarette many harmful chemicals are exposed which causes severe health problems. There is a misconception among the general public that the sidestream smoke is not as harmful compared to the mainstream smoke but evidence indicates that sidestream smoke is more toxic than mainstream smoke. If it gets into lungs on a regular basis, it can seriously damage health (Huangfu et al. 2017). As a passive smoker, people have a greater chance of getting serious illnesses – the same ones smokers get. That means the chances of having a heart attack, lung cancer and chest problems like asthma and bronchitis. It causes more than 7,000 lung cancer deaths each year in people around the world. It can also lead to lung conditions and heart disease. Some studies have linked passive smoking to mental and emotional changes, too. Children exposed to SHS are also at risk of middle ear disease, sudden infant death syndrome (SIDS) and lower respiratory illnesses. Reports also indicate an inversely proportional relationship between the infants' birth weight and the levels of exposure to SHS by their mother during pregnancy (Leone et. al 2010).

1.2 Smoking

Smoking is defined as the inhalation of the smoke of burning tobacco of cigarettes, pipes or cigars. It may be an occasional habit or, more often, a smoking habit involving a physical addiction to tobacco products, primarily nicotine. Such behavior can cause serious health consequence in long run. Generally smoking can be performed in two different ways.

1.2.1 Active smoking

Smoke that a smoker directly inhales through a cigarette – "mainstream smoke". Taking the mainstream smoke is called active smoking.

1.2.2 Passive smoking

Passive smoke is the Combination of two types of smoke that are mainstream smoke and sidestream smoke.

1.2.2.1 Mainstream smoke

The smoke exhaled by a smoker.

1.2.2.2 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.

1.3 Chemical exposure in smoking

Burning cigarettes can produce so many harmful chemicals. Among, the more than 7,000 chemicals that have been identified in secondhand tobacco smoke, at least 250 are known to be harmful, for example, hydrogen cyanide, carbon monoxide, and ammonia. At least 69 of the toxic chemicals in secondhand tobacco smoke cause cancer.

1.3.1. Type of Chemicals

Arsenic

Benzene

Beryllium (A toxic metal)

1, 3-Butadien (A hazardous gas)

Cadmium

Chromium (A metallic element)

Ethylene oxide and Nickel (A metallic element)

1.3.2. Factors Affecting Chemical Exposure

Other harmful elements which also present are: Polonium-210 (a radioactive chemical lement), Vinyl chloride. Other toxic chemicals in secondhand smoke are suspected to cause cancer, including: Formaldehyde, Benzopyrene and Toluene. Many factors affect which chemicals are found in secondhand smoke, such as the type of tobacco, the chemicals added to the tobacco, the way the tobacco product is smoked, and, for cigarettes and cigars, the material in which the tobacco is wrapped (NZ Health2015)

1.4 **Types of smoker**

According to the number and how often people smoke, there is different types of smoker. They are the following:

1.4.1 Current smoker

Current smoker' is someone who has smoked greater than 100 cigarettes (including hand rolled cigarettes, cigars, cigarillos etc) in their lifetime and has smoked in the last 28 days.

1.4.2 Ex-smoker

Ex-smoker' is someone who has smoked greater than 100 cigarettes in their lifetime but has not smoked in the last 28 days.

1.4.3 Never smoker

Never smoker' is someone who has not smoked greater than 100 cigarettes in their lifetime and does not currently smoke (NZ Health, 2015).

1.5 Disease associate with active & passive smoking

Like active smoking, passive smoking can be harmful in many ways. For instance,

- ✓ Cancer generally associated with Lung cancers
- ✓ Cardiac problem
- ✓ Respiratory disease
- ✓ Others diseases

1.5.1Cancer

Smoking can causes cancer almost everywhere in the body mainly:

- ✓ Lung cancer
- ✓ Blood (acute myeloid leukemia)
- ✓ Cervix
- ✓ Colon and rectum (colorectal)
- ✓ Esophagus
- ✓ Kidney and ureter
- ✓ Larynx
- ✓ Liver
- ✓ Oropharynx (includes parts of the throat, tongue, soft palate, and the tonsils)
- ✓ Pancreas
- ✓ Stomach
- ✓ Trachea, bronchus.

In many researches it is found that smoking can cause cancer and then blocks body's immunity to fighting it.

- Poison in cigarette smoke can weaken the body's immune system, making it harder to kill cancer cells. When this happens, cancer cells keep growing without being stopped.

- Poisons in tobacco smoke can damage or change a cell's DNA. DNA is the cell's "instruction manual" that controls a cell's normal growth and function. When DNA is damaged, a cell can begin growing out of control and create a cancer tumor (Hecht et. al., 1999).

Doctors have known for years that smoking causes most lung cancers. It's still true today, when nearly 9 out of 10 lung cancers are caused by smoking cigarettes. In fact, smokers have a greater risk for lung cancer today than they did in 1964, even though they smoke fewer cigarettes. One reason may be changes in how cigarettes are made and what chemicals they contain. Treatments are getting better for lung cancer, but it still kills more men and women than any other type of cancer. In the United States, more than 7,300 nonsmokers die each year from lung cancer caused by secondhand smoke (Curran et.al 2010).

In many research it is found that inhaling secondhand smoke causes lung cancer in nonsmoking adults. Approximately 3,000 lung cancer deaths occur each year among adult nonsmokers in the United States as a result of exposure to secondhand smoke. The U.S. Surgeon General estimates that living with a smoker increases a nonsmoker's chances of developing lung cancer by 20 to 30 percent. Some research also suggests that secondhand smoke may increase the risk of breast cancer, nasal sinus cavity cancer, and nasopharyngeal cancer in adults and the risk of leukemia, lymphoma, and brain tumors in children. Additional research is needed to learn whether a link exists between secondhand smoke exposure and these cancers (Ooi et al. 2014).

1.5.2 Cardiac Disease

Cigarette smoking is a major cause of coronary heart disease, stroke, aortic aneurysm, and peripheral vascular disease. The risk is manifest both as an increased risk for thrombosis of narrowed vessels and as an increased degree of atherosclerosis in those vessels. The cardiovascular risks owing to cigarette smoking increase with the amount smoked and with the duration of smoking. Risks are not reduced by smoking cigarettes with lower machine-measured yields of tar and nicotine, but those who have only smoked pipes or cigars seem to have a lower risk for cardiovascular diseases. Cessation of cigarette smoking reduces disease risks, although risks may remain elevated for a decade or more after cessation.

Main cardiovascular events which are commonly seen in people smoke cigarette are:

1.5.2.1 Atherosclerosis

The mechanisms by which smoking results in cardiovascular events are described elsewhere in this issue, but they include both a causal role in the development of atherosclerotic changes in the various vascular beds and effects on acute thrombosis of the narrowed vascular lumen that precipitates an acute vascular event. Perhaps because of the rapid decline in risk for repeat infarction that occurs with cessation of cigarette smoking, there has been an emphasis on the influence of smoking on thrombosis, but there is abundant evidence to establish that smoking contributes to the development of atherosclerotic plaque as well.

1.5.2.2 Stroke

There is an increased risk for stroke and mortality from cerebrovascular disease among cigarette smokers compared with never-smokers, controlling for other risk factors, and a dose-response relationship is evident.

1.5.2.3 Peripheral Vascular Disease

Cigarette smoking, along with diabetes, is well established as the major risk factors for peripheral vascular disease, with a strong dose-response relationship even when controlling for the presence of other cardiovascular risk factors. This relationship also has been shown for asymptomatic peripheral vascular disease (PVD). Cigarette smoking also has been linked to progression of PVD over a 4-year interval (Burns, 2003).

There are several mechanisms may increase the risk of coronary heart disease in persons exposed to environmental tobacco smoke or passive smoke. The acute effects of passive smoking include increases in the heart rate at rest, blood pressure, and blood levels of carboxyhemoglobin and carbon monoxide. Other effects are an increase in the ratio of serum total cholesterol to high-density lipoprotein cholesterol, a decrease in the serum level of high-density lipoprotein cholesterol and increase in platelet aggregation, and endothelial-cell damage. Abnormal platelet aggregation is an independent risk factor for coronary heart disease. There is also evidence that passive smoking may contribute to atherosclerosis by sensitizing neutrophils, causing their activation and subsequent oxidant-mediated tissue damage. Cigarette smoking is the most important risk factor for young men and women. It produces a greater relative risk in persons under age 50 than in those over 50.Women who smoke and use oral contraceptives greatly increase their risk of coronary heart disease and stroke compared with nonsmoking women who use oral contraceptives.Smoking

decreases HDL (good) cholesterol. Cigarette smoking combined with a family history of heart disease also seems to greatly increase the risk (Huangfu et al., 2017).

1.5.3 Respiratory Disease

Smokers increase their risk of lung disease, including lung cancer. But they also increase their risk of other illnesses such as heart disease, stroke, and mouth (oral) cancer. Risks from smoking, as they relate to lung disease, include the following:

Chronic obstructive pulmonary disease (COPD). This includes:

- Chronic bronchitis. This is a long-term (chronic) inflammation of the large airways (bronchi). Symptoms include coughing mucus over a long period.

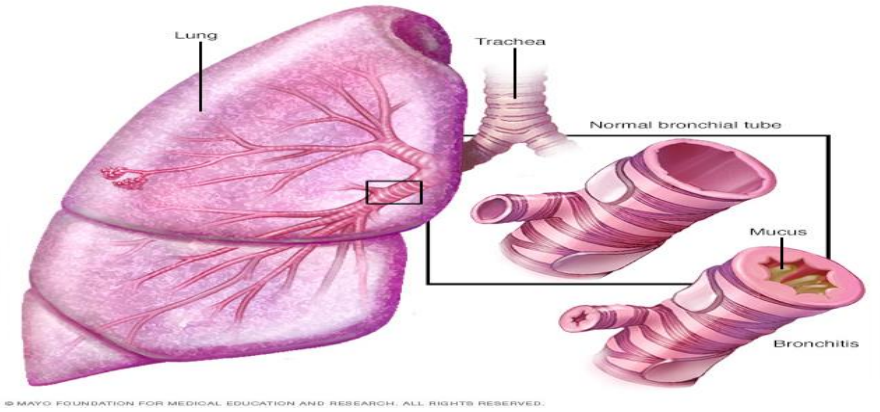


Figure: Lung condition in Chronic Bronchitis Patient.

- Emphysema. This chronic lung condition affects the air sacs (alveoli) in the lungs. Symptoms include shortness of breath, coughing, fatigue, sleep and heart problems, weight loss, and depression(Sibu et al, 2007)

1.5.4 Effect of Smoking on Pregnant women

Smoking during pregnancy increases the health risks of the unborn child as well as the mother. Women who smoke during pregnancy are at higher risk for spontaneous abortion, placenta pervia , abruption of placenta , pre-mature and prolonged rapture of the membranes and also having babies of low birth weights and reduced lung function . In utero exposure is also associated with late fetal and early neonatal death, birth defects and respiratory illness in early infancy. In homes if pregnant women are exposed to passive smoking it will cause harmful effect to the unborn child. Children exposed to maternal smoking have more chronic and acute lower respiratory problems in the first 2 years of life. Children's increased risk of poor health may also be influenced by the total number of smoker present in the house (Hecth et al, 1999).

1.5.5 Development of COPD

Cigarette smoking is the most important environmental risk factor for the development of COPD .Cigarette smoking intensity is known to be associated with clinical features of COPD such as the rate of lung function decline] and COPD exacerbation frequency . In Addition, it is correlated with symptoms of chronic bronchitis even in healthy smokers .However, the correlation between the amount of lifetime smoking measured as pack-years and the severity of emphysema on chest CT scans is weak .Although the extent of exposure to cigarette smoke is usually measured in pack-years, this metric does not reflect other aspects of smoking behaviors such as depth of inhalation, number of puffs per cigarette, and age of onset of smoking. Nicotine dependence develops in many smokers, and smoking. Smokers with dependency to nicotine tend to have increased smoking intensity. Thus, nicotine dependence may increase the impact of smoking exposure due to altering the frequency or depth of smoke inhalation, even in COPD patients with the same pack-year history. As a result, it is reasonable to hypothesize that increased dependence to nicotine would facilitate the development and progression of COPD. Detailed phenotyping of COPD includes measures of emphysema severity (Kim et.al 2011).

1.5.6 Gene Expression

Investigating the influence of cigarette smoke exposure on health is a highly complex problem. The particulate and vapor phase of cigarette smoke contains in excess of many Compounds, including five known human carcinogenic and many toxic agents. These toxins enter the bloodstream, via the pulmonary alveoli, and are distributed throughout the body. The widespread organ damage in active smokers reflects the systemic distribution of these compounds and the variety of cell types that are exposed. Studies of the effects of cigarette smoking have employed a variety of approaches to reduce the complexity of the problem such as studying animal models or individual cell types *in vitro* that are exposed to 'standardized' measures of cigarette smoke, or to individual components of the particulate or vapor phases. However, no one model is able to capture the biological heterogeneity of the

effects. This study utilized large-scale genome-wide expression profiling as an alternative approach to determine the systemic influence of cigarette smoke, as an environmental

exposure, on human physiology and health. Previous studies of gene expression as influenced by smoking have been seriously limited in size with the largest of the *in vivo* studies including only 42 smokers and 43 nonsmokers. The small sample sizes and general lack of

power have resulted in little concordance between these studies. Our hypothesis was that, given a sufficiently large set of related individuals, a stable and interpretable pattern of gene expression alterations attributable to cigarette smoke exposure may be obtained. In addition, a large and complex dataset allows for both the investigation of significant results at the individual gene level and provides the ability to determine elaborate networks of alteration. Studying these patterns of expression alteration in response to cigarette smoke exposure may provide the key to understanding the pathogenesis of many of the adverse health effects attributable to smoking and the interaction between them (Charleosworth et al, 2010)

1.6 Effect of Smoking on Oxidative Damage

Cigarette smoking is a serious health problem worldwide. Smoking has been strongly implicated as a risk factor for chronic obstructive pulmonary disease, cancer, and atherosclerosis. Because cigarette smoke is known to contain a large number of oxidants. It has been hypothesized that many of the adverse effects of smoking may result from oxidative damage to critical biologic substances. Such damage could result both from oxidants present in cigarette smoke and from the activation of Phagocytic cells that generate reactive oxygen species. Oxidative inactivation of antiproteases may be involved in the development of chronic obstructive pulmonary disease, and oxidative modification of DNA can lead to the development of cancer. It has been shown that oxidatively modified low-density lipoprotein (LDL), but not native LDL, is recognized by scavenger receptors and taken up by macrophages, a process considered pivotal in the development of foam cells in atherosclerotic lesions. Thus, oxidation of LDL by cigarette smoke may contribute to the causative link between cigarette smoking and atherogenesis. Although previously there was controversy about whether direct exposure of LDL to cigarette smoke in vitro results in oxidative modification. Scientists recently demonstrated the formation of lipid hydro peroxides after the exposure of plasma to the gas phase of cigarette smoke. Other evidence suggesting that smokers are subjected to oxidative stress includes the findings that they have lower levels of the antioxidant ascorbic acid (vitamin C) than nonsmokers and that smokers' risk of coronary artery disease correlates inversely with their intake of the antioxidants vitamin E and beta carotene (Marrow et.al 1995)

1.7 Physical and psychological effect of Nicotine

Absorption of cigarette smoke from the lung is rapid and complete, producing with each inhalation a high concentration arterial bolus of nicotine that reaches the brain within 10-16 seconds, faster than by intravenous injection. Nicotine has a distributional half life of 15-20 minutes and a terminal half life in blood of two hours. Smokers therefore experience a pattern of repetitive and transient high blood nicotine concentrations from each cigarette, with regular hourly cigarettes needed to maintain raised concentrations, and overnight blood levels dropping to close to those of non-smokers(Jarvis, 2004).

Nicotine has pervasive effects on brain neurochemistry. It exerts its effects by activating specific sites called receptor proteins. These in turn trigger the release of dopamine in the nucleus accumbens and the secretion of other nerve-stimulating chemicals such as acetylcholine and glutamate in the hippocampus and cerebral cortex (Jason et al.2002).
Their effects improve vigilance, attention and cognition, benefits that smokers often cite as reasons for continuing to smoke. Repeated administration of nicotine greatly increases the release of dopamine in a specific region of the nucleus accumbens called the accumbal core. The enhanced dopamine release is central to Pavlovian or classically conditioned learning, which associates the effects of nicotine with cues present in the environment and in tobacco smoke inhaled by the smoker. The linking of these responses to such cues is strongly linked to the transition to addiction, whereby addicted persons find it difficult to control their cravings for the drug. According to smokers, nicotine use helps them when they are depressed, stressed, embarrassed, bored, irritable or in a bad mood. Alleviating any of these unpleasant feelings by smoking a cigarette reinforces the psychological aspects of tobacco addiction. There is no intrinsic reason why tobacco use should serve this purpose, other than that it helps to avert the physiological and psychological discomfort of withdrawal (TIA 2017).

1.8 Epidemiology of Smoking

According to the WHO Report on the Global Tobacco Epidemic 2011, tobacco use not only kills nearly 6 million people annually but also causes huge economic damage worldwide each year. In many south-Asian country more than 10,000 people die from smoking-related illnesses every year despite the fact that tobacco use is preventable. If no urgent action is taken to reduce tobacco consumption, it is estimated that tobacco use related mortality will exceed one billion worldwide in the 21st century.

This investigation offers insights into system-wide pathological processes induced in response to cigarette smoke exposure by determining its influences at the gene expression level and development of COPD (Kim et al, 2011).

1.9 Smoking Status in Bangladesh

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

1.9.1 Bangladesh – National tobacco control law

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

The most important measure in the amendment is as follows:

- Smokeless tobacco has been brought under the definition of "Tobacco". Restaurants and indoor workplaces have now been included among the public places that are to be completely smoke-free.
- Fines for non-compliance with smoke-free regulations have increased from 50 Taka (approximately US$ 0.6) to 300 Taka (US$ 3.9), in addition to the penalties for violation of the other measure covered by the law.
- Advertisements at points of sale are now banned and "corporate social responsibility" activities restricted. Anti-tobacco messages will be shown if tobacco use is included in a movie.
- Sales of tobacco by minors have been banned (WHO 2016).

Chapter-2

Literature Review

2.1 Second-Hand Smoke in a University Campus: Attitudes and Perceptions of Faculty, Staff and Students

According to the United States (US) Surgeon General's report, "Smoking is the single greatest avoidable cause of disease and death". Second-hand smoke exposure in the workplace presents a similar public health threat. A study was done in 2011 to examine the attitudes and perceptions of faculty, staff and students concerning tobacco policies at a university campus in a tobacco producing state. A total of 2,914 individuals responded to the questionnaire.Majority of the respondents believed a smoke free policy on the university's campus which is a positive move that could improve the quality of life for students, faculty and staff. Second-hand smoke is also believed to be harmful to their health and hence the need for the campus to be smoke-free. This is consistent with the findings in the Rigotti study that concluded strong support for tobacco policies by students. While a majority of respondents were aware of the current campus smoking policy, the policy is perceived as not being enforced. The acknowledgement by the respondents of their rights to breathe clean air and the responsibility of the campus administration to protect the campus community from exposure to second-hand smoke in this study is note worthy. The finding reinforces earlier report that second hand smoke exposure is an important health issue on university campuses. The implication of this is that administration of university campuses in North America need to be conscious of the fact that they could be blamed for adverse health consequences of second-hand smoke exposure of their staff, faculty and students if they fail to develop and enforce smoke free policies on their campuses. Enforcement of the policies can serve as an effective intervention for students at a time when unhealthy behaviors may be developed (Mishra et al.2011)

2.2. Perception of parents about second hand smoke on the health of their children: an ethnographic study

Another study was done by the Central University of Anapolis, Brazil in 2014 to analyze the perception of parents about secondhand smoking in their children's health. The study was conducted by 58 parents participants with an average time of smoking of 15.3 years and an average quantity of cigarettes smoked per day of 2 were interviewed. Among them, 59% did not know what Environmental tobacco smoke was, and 60% stated knowing what a secondhand smoke was. However, when questioned about their children as secondhand smokers, 52% did not consider them to be. Some parents knew some of the effects of secondhand smoking in the health of their children. However, the majority (52%) of them did

not believe that their children would suffer any respiratory impairment or did not know about these impairments. When analyzing the results of this study a strong association was also demonstrated between exposure to household smoking and the development and increased severity of asthma in children.18---20As for the number of cigarettes smoked daily, in this study the parents smoked on average 20.1 cigarettes a day. A longitudinal study evaluating the increased incidence of asthma in children of smoking mothers showed that children whose mothers to become active smokers and acquire respiratory diseases, continuing the tobacco family cycle. Efforts to prevent morbidity and premature mortality depend on prevention programs, protection policies against tobacco, against tobacco exposure and effective smoking cessation programs. The cessation helps to reduce the bur-den of diseases caused by smoking, due to the immediate benefits for the health of smokers and people who live with smokers (Ribeiro et al. 2014).

2.3 Attitudes towards second hand smoke amongst a highly exposed workforce: survey of London casino workers

A study was conducted to examine knowledge, attitudes and experiences of London casino workers regarding exposure to second hand smoke (SHS) in the workplace. It was a postal survey of 1568 London casino workers in 25 casinos. This study has found that the majority of the casino workers who responded consider themselves heavily exposed to SHS at work, are bothered by this exposure, and many feel that it has affected their health. The majority of casino workers responding to the survey want all working areas in their casino to be smoke-free, although most would favor separate smoking and non-smoking staff rest areas. Compared with current smokers, non-smokers are more bothered by smoke and more supportive of smoke-free workplaces. However, a significant proportion of current smokers also want smoke-free working areas. Significantly, only 1% of all responders wanted smoking to be allowed throughout the whole casino—the current smoking policy in most casinos (Pilkington et al. 2006).

2.4. Knowledge, Attitudes, and Behavior in Avoiding Secondhand Smoke Exposure among Non-Smoking Employed Women with Higher Education in Jordan

The knowledge attitude of women of higher education about second hand smoking was observed by a study. 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. The observation was likely to that 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).

2.5. Knowledge and attitude toward smoke-free legislation and second-hand smoking exposure among workers in indoor bars, beer parlors and discotheques in Osun State of Nigeria

The knowledge attitude about the smoke free legislation and secondhand smoking exposure was observed by a survey. The main objective of this survey was to assess the knowledge and attitude of workers in indoor bars, beer parlors and discotheques to smoke-free legislation in general and the Osun State smoke-free law in particular. A convenience sampling of 36 hospitality centers was conducted. Interviewer-administered questionnaires were used to elicit responses about the objectives from non-smoking workers. The questionnaires had sections on knowledge of the Osun State smoke-free law, attitude toward the law and smoke-free legislation in general and exposure to second-hand tobacco smoke by the workers. Questions were also asked about the second-hand tobacco smoking status of these workers. We had 154 participants recruited into the study. There were 75 males (48.0%) and 79 females (52.0%). On the overall, respondents had a good knowledge of the effects of second-hand smoke on health (70.2%) with 75.0% of them being aware of the general smoke-free law and 67.3% being aware of the Osun State smoke-free law although none of them had ever seen a copy of the law. A high proportion (60.0%) was in support of the Osun smoke-free law although all of them think that the implementation of the law could reduce patronage and jeopardize their income. Attitude toward second-hand smoking was generally positive with 72.0% of them having no tolerance for second-hand tobacco smoke in their homes. Most participants (95.5%) had been exposed to tobacco smoke in the workplace within the past week. Despite the high level of awareness of the respondents about the dangers of second hand smoke and their positive attitude to smoke-free laws, nearly all were constantly being exposed to second hand smoke at work. This calls for policy level interventions to improve the implementation of the smoke-free law (Onigbogi et al. 2014).

2.6 Passive Smoking and Attitudes towards Tobacco Control Programs among Iranian Dental Students

Another study was done on the Iranian dental students to determine the knowledge attitude of them about the exposure of second hand smoke. This study was done in eight randomly

selected dental schools; all fourth-year students were surveyed by means of a self-administered anonymous questionnaire.The Global Health Professions Student Survey (GHPSS) questionnaire served as the data collection instrument. The response rate was 84% (325 students, 66% female). Exposure to ETS was reported by 74% of the participants. Men were significantly more exposed to ETS at home, and in other places than were women. Most of the students agreed on queried tobacco control policies. The lowest agreement (72%) was for banning smoking in coffee shops and teahouses. A logistic regression model showed that adjusted for gender, passive smoking at home is significantly associated with current tobacco use. A linear regression model suggested that the total score of attitudes is significantly associated with passive smoking at home, passive smoking in other places, tobacco use experience, and current tobacco use. A clear majority of the students were in favor of the tobacco control programs studied here. The decision came from this study was to fight against tobacco epidemic, health professionals ought to work together as a team and the oral health professionals as important members of this team should have required knowledge including information about the adverse effects of tobacco use and passive smoking on health, as well as about effective methods of tobacco use prevention and cessation counseling. To be able to fulfill this important responsibility they also need positive attitudes and required skills (Keshavaraz et al. 2013).

2.7 Passive Smoking: Perceptions and Practices among Urban working Adults

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 nonsmokers are killed annually as a result of exposure to secondhand smoke. Passive smoking has also been strongly associated with poor health outcomes such as COPD and cancers. 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. 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. 2014).

Significance of the study

According to the WHO Report on the Global Tobacco Epidemic 2011, tobacco use not only kills nearly 6 million people annually but also causes huge economic damage worldwide each year. In many south-Asian country more than 10,000 people die from smoking-related illnesses every year despite the fact that tobacco use is preventable. If no urgent action is taken to reduce tobacco consumption, it is estimated that tobacco use related mortality will exceed one billion worldwide in the 21st century (Kim et al, 2011).

Bangladesh is a low-income country and one of the largest tobacco consuming countries in the world. According to a previous study of Bangladesh, smoking causes about 25% of all deaths in Bangladeshi men aged 25 to 69 years and an average loss of seven years of life per smoker. Tobacco-use results in both health and economic costs that is large and growing ('The Daily Star'2015).

Due to its easy accessibility and social acceptability; there are now more young women and teenagers having access to cigarettes and hence getting addicted. Its losses are immeasurable or uncountable.

In recent times the situation is becoming worsened. As active smoking is increasing alarmingly without maintaining any law enforcement and restriction so the exposure of passive smoking is also taking a severe form. We know that students are the leading group of a country's population. These young generations are the future leader of our country and proper knowledge about harmful effect of passive smoking should provide them clearly for saving our country from the devastating effect of smoking. So, in this situation this survey will help us to know the knowledge, attitude regarding passive smoking, among undergraduate and graduate students and how they deal with the smokers and also their perception about smoking.

The information obtained from the survey will help us to know young generation's knowledge level regarding smoking so that we can make them aware of the fatal effect of it. This will also help us to reduce the alarming increasing rate of smoking in public places by analyzing the cause behind it. It will also make it easy to know what measures should be taken to increase awareness among students for reducing smoking.

Aims and Objectives

The aims and objectives of this study were -

- To know the knowledge, attitude regarding passive smoking among university students
- To learn how people deal with smoking exposure
- To assume the reasons behind smoking.

Chapter-3

Methodology

3.1 Type of the study

It was a survey based study.

3.2 Study population

Populations used for this survey were the undergraduate and graduate students of different departments in East West University in Aftabnagar, Dhaka. Students of seven different departments including Pharmacy, English, Law, BBA, CSE, EEE, GEB and also students of Information studies and library management were participated. In this study almost 500 respondents were found.

3.3 Inclusion Criteria

- Students of undergraduate and graduate classes of East West University.
- Both male and female were included.

3.4 Exclusion Criteria

- Unwilling to participate and unable to comply with the protocol requirements.
- Students from other universities except East West were not included.

3.5 Development of the questionnaire

The questionnaire was developed based on different findings available in different journals, articles and research paper. In this study purposive sampling technique was followed.

3.6 Data Collection Method

The data was collected through questionnaire that is formed in English. It consists of questions to find out the knowledge level regarding passive smoking and attitude towards it when exposed to passive smoking, the data was collected by face to face interview.

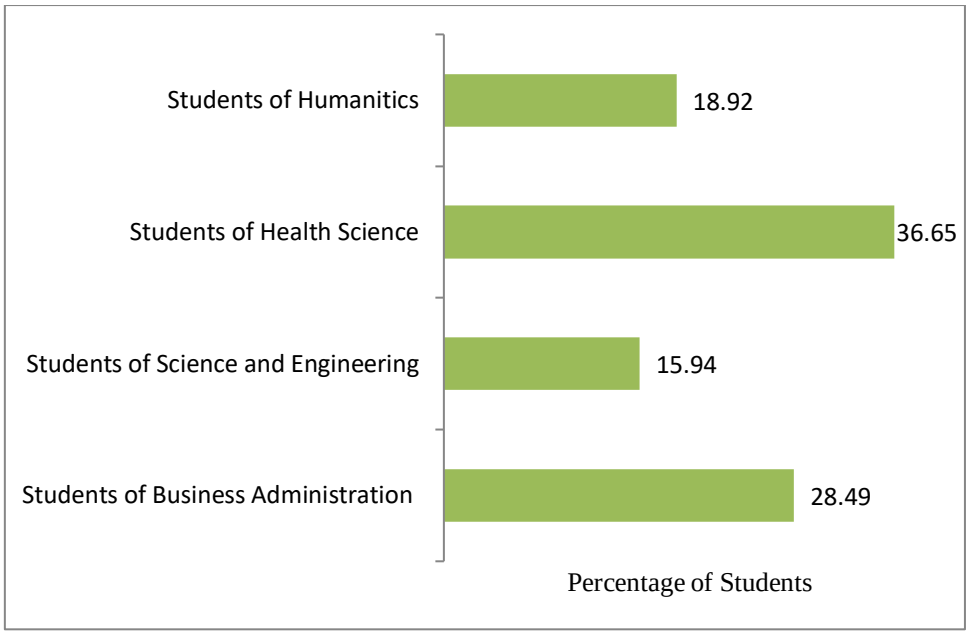
3.7 Data Analysis

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

Chapter-4

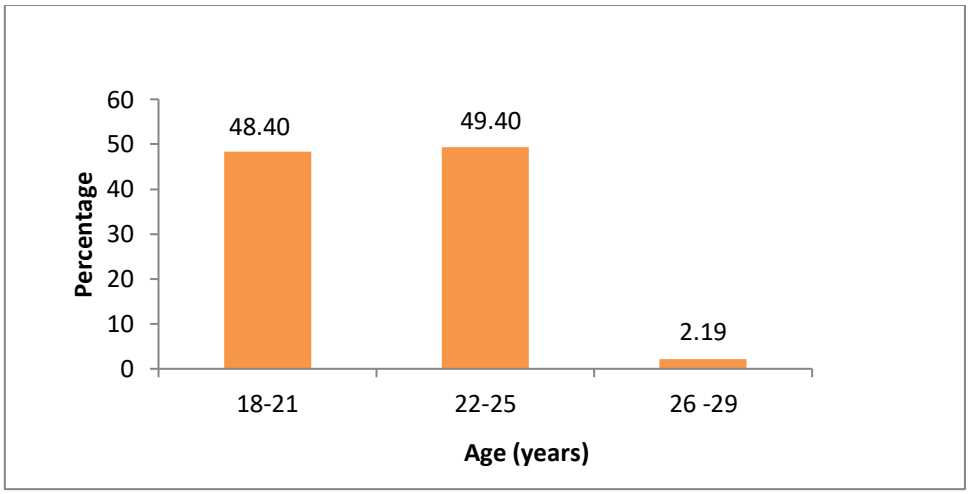
Results

4.1 Distribution of students per department



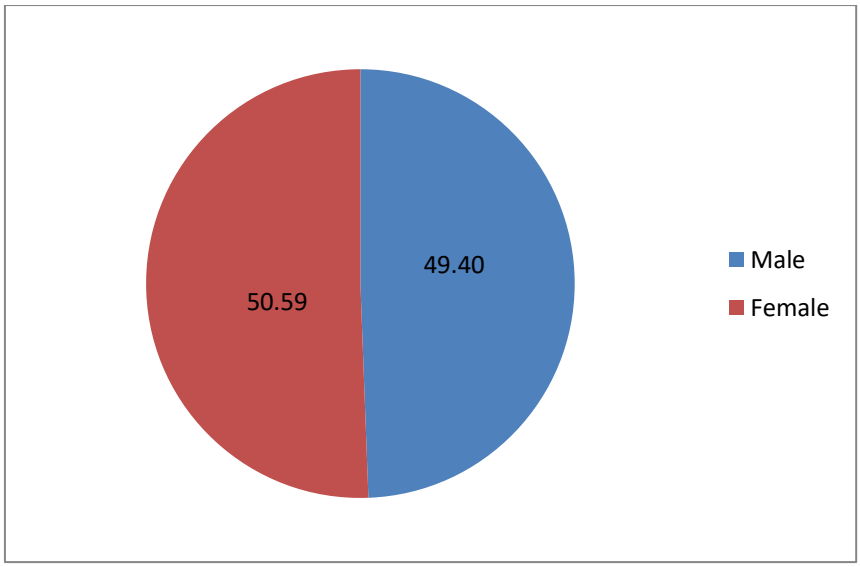
This study was conducted on various departments' students of East West University. Among the participants 36.5% are in the department of Health science, 28% were in the department of Business Administration, 18.5 % were in the department of Humanities and only 15.5% were in the Department of Science and Engineering.

4.2 Age Distribution



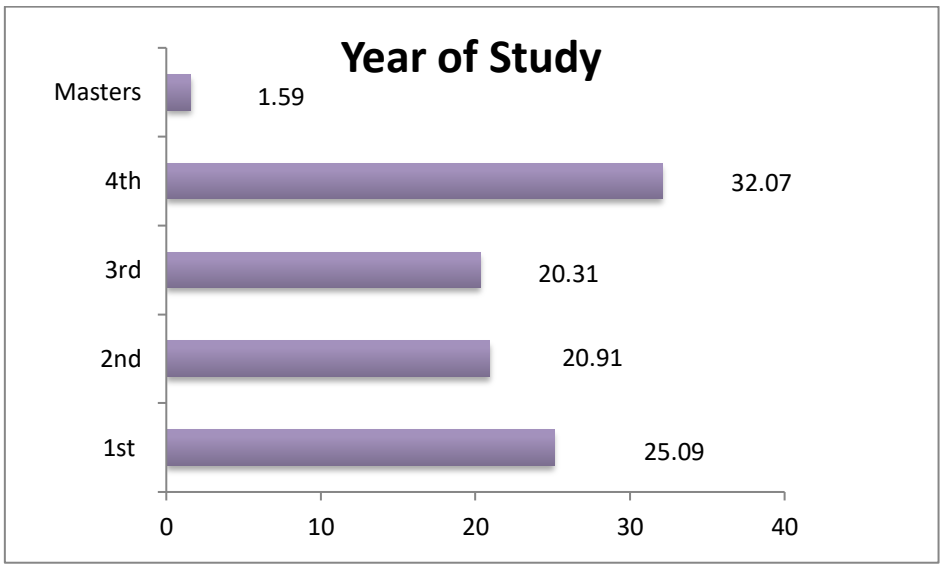
The above Chart is showing the age distribution of the participants. In this survey 48% participants were in the age range 18-21, 49% in the range 22-25 and only 2% in the age range 26-29. So the majority of participants were in the age range 22-25.

4.3. Gender distribution



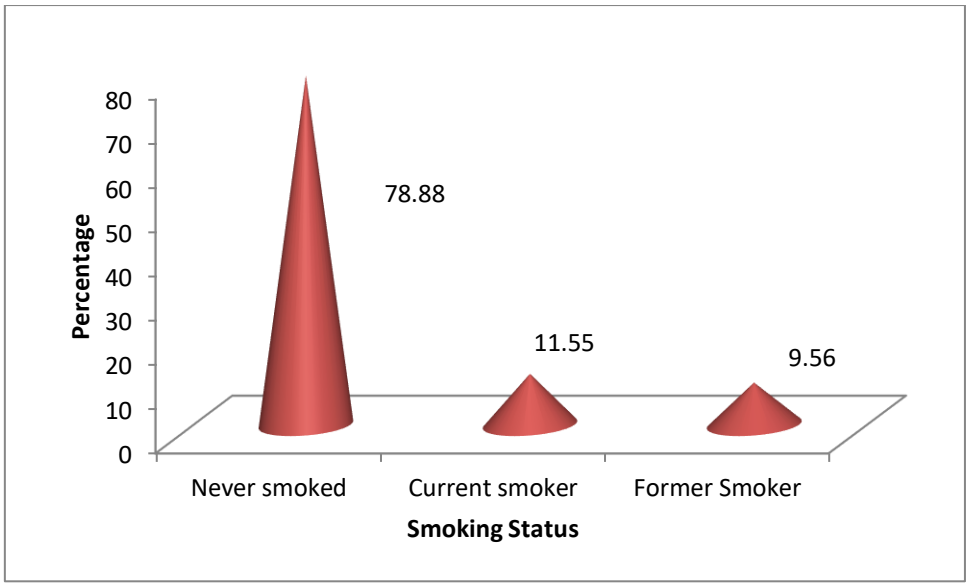
In this study, about 50.5% participants were female and 49% were male in the total number of 502 participants.

4.4 Year of Study



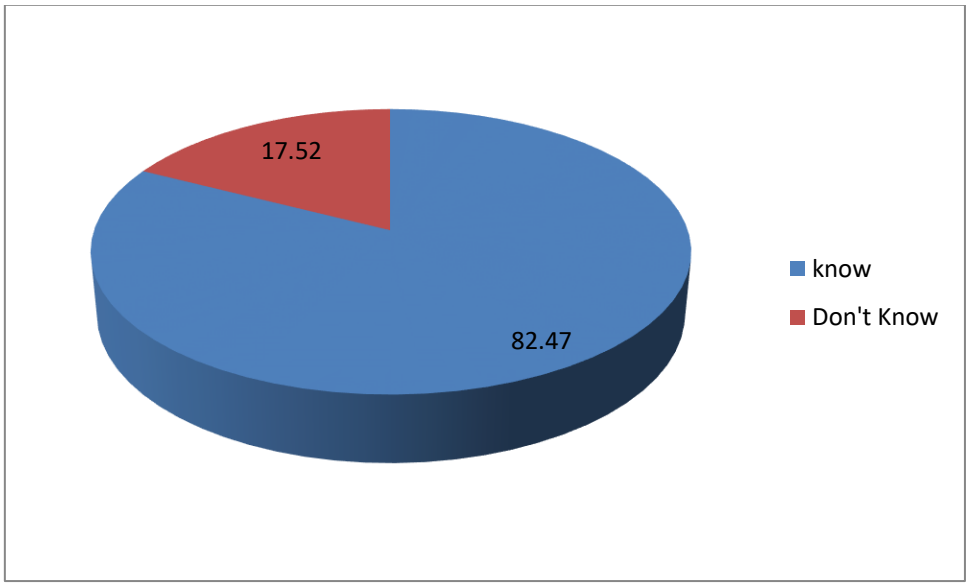
The chart is showing that almost 25% participants were in the 1st year of University study, 20.5% were in 2nd year, 20% were in 3rd year, 32% were in 4th year and only 1.5% was in Masters.

4.5 Smoking Status



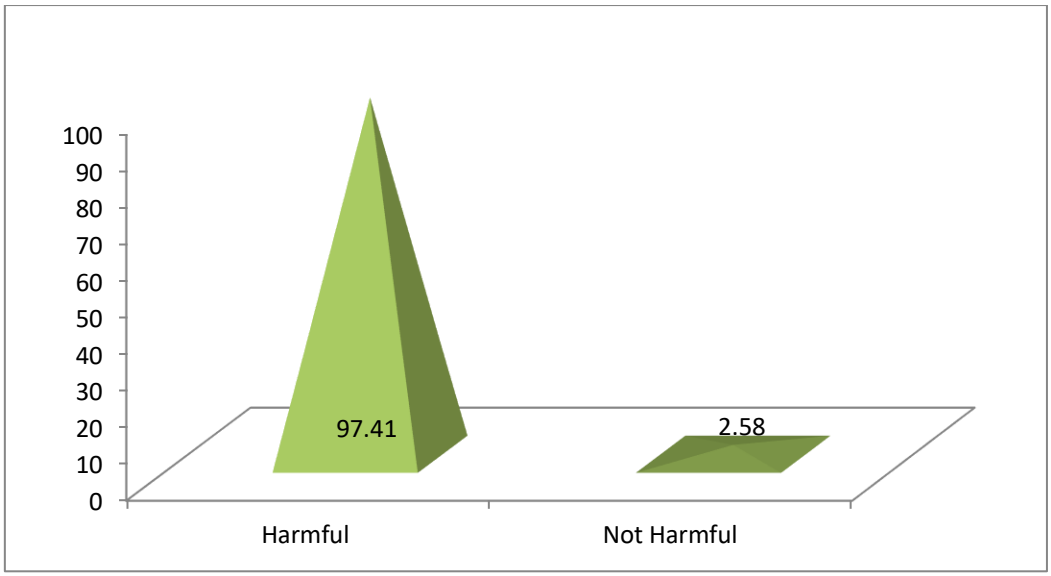
This study conducted with total 502 University students. Among the total respondents almost 78.5 were never smoked in their life, 11. 5% were current smoker and only 9.5 % were former smoker.

4.6. Knowledge about Passive smoking



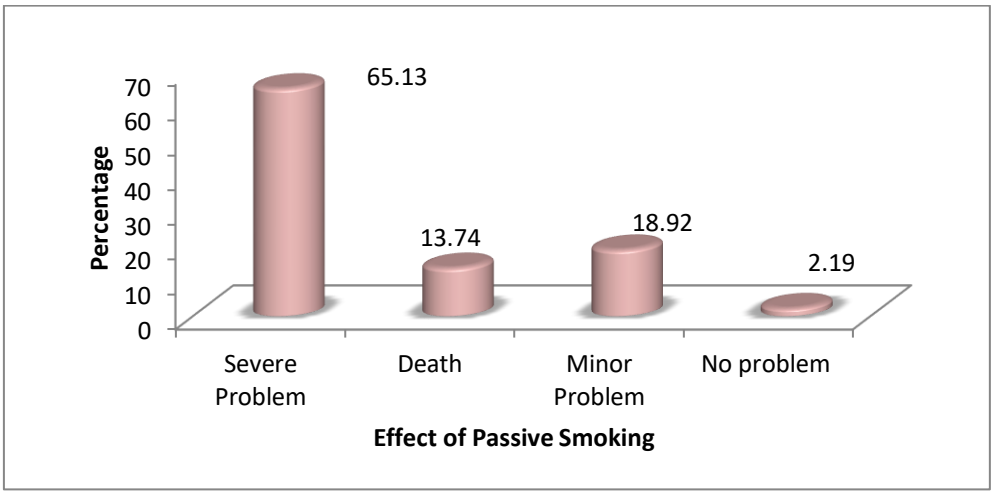
Majority of the participants 82.4% knew that breathing in other people's tobacco smoke is called passive smoking 17.5% did not know about this.

4.7. Harmfulness of Passive smoking



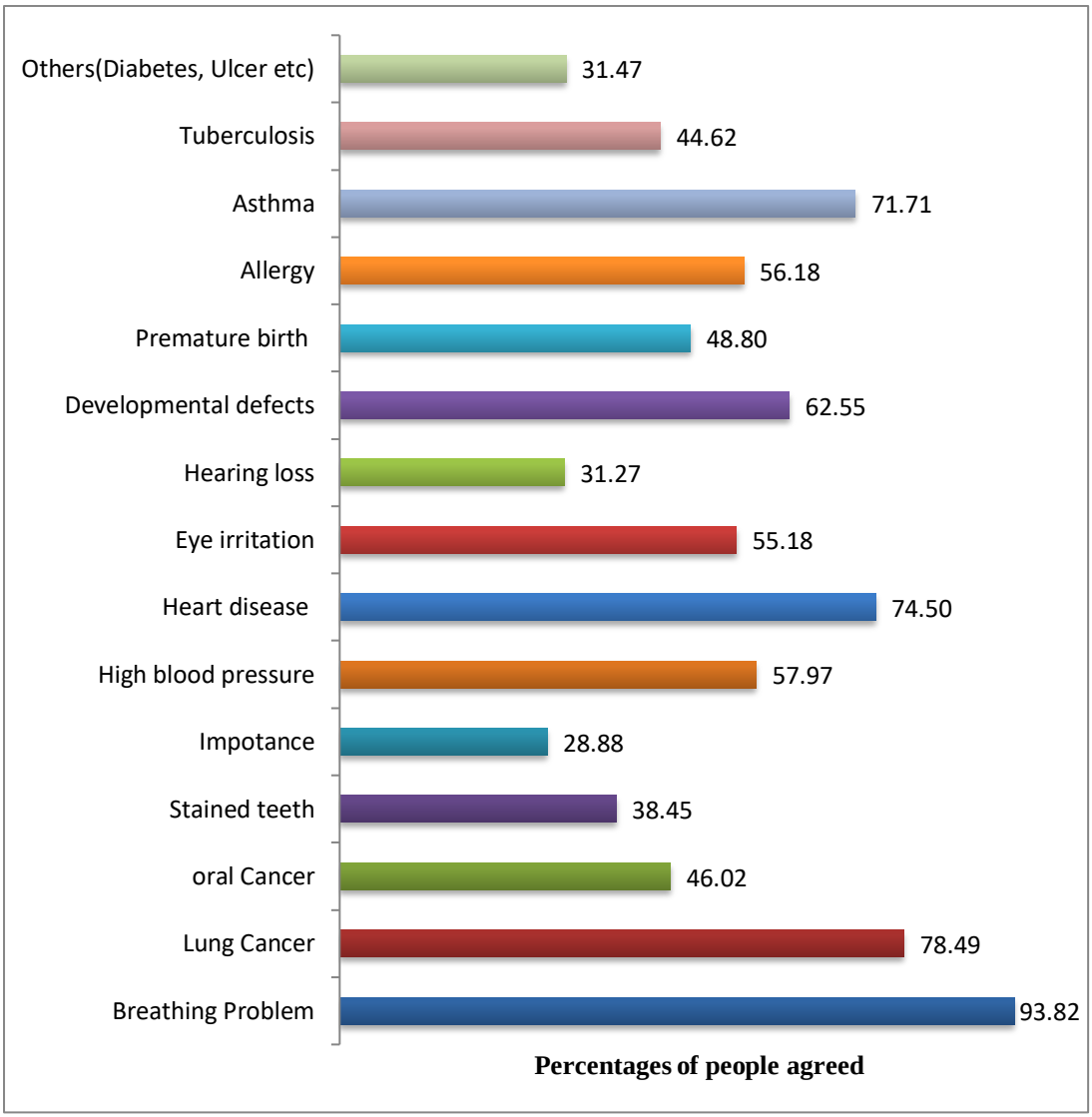
Among 502 participants majority 97% thought that passive smoking was harmful for their health and only 2.5% think that passive smoking was not harmful for their health.

4.8. Effect of passive smoking on health



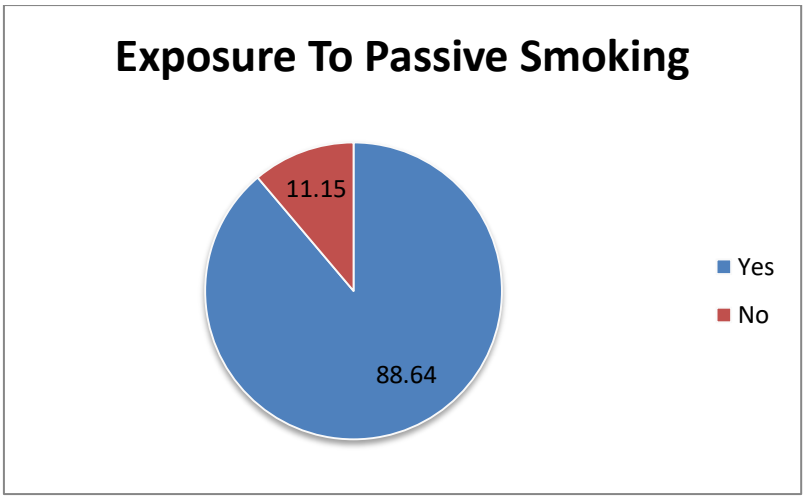
In the study 65% participants thought that Passive smoking can cause severe problem to their health, 13.5% think it can cause death, 18.9% think it can cause minor problem to their health and only 2.1% think it do not have any problem on the health.

4.9. Various Health problems related to Passive smoking



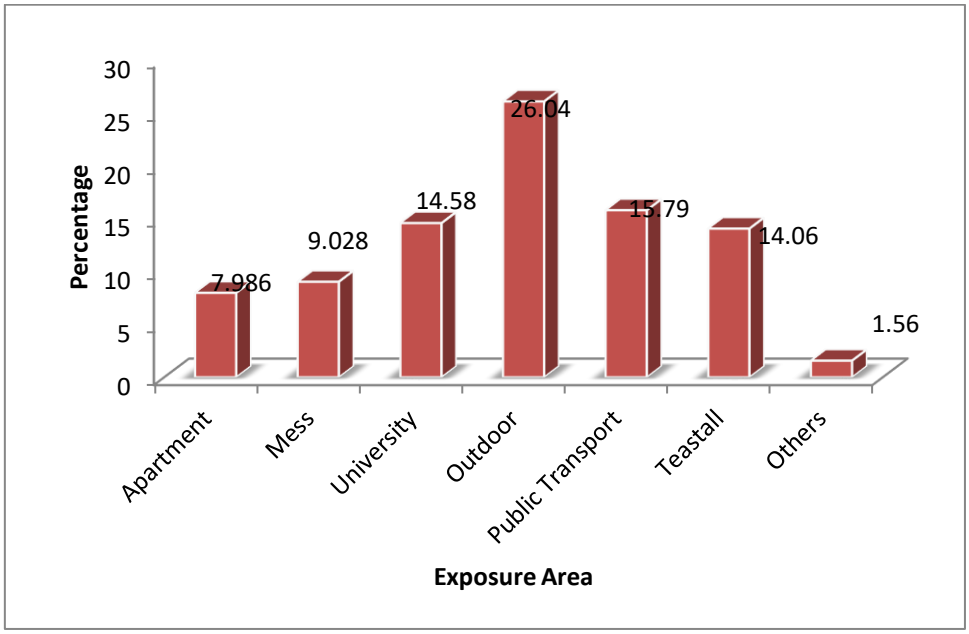
In the question of various health problem related to passive smoking we got multiple answers Above them almost 93% of all participants responded that breathing problem can arise due to passive smoking, 78% responded that lung cancer can occurred due to passive smoking , 46% agreed about oral cancer, 38% about stained teeth, 28% about impotence, 57.9% about high blood pressure , 74% about hearing loss, 55% about eye irritation, 31% about hearing loss, 62% about developmental defects in children, 48% about premature birth, 56% about allergy, 71% asthma, 44% tuberculosis and 31% agreed about other disease like Diabetes, ulcer etc can happen due to passive smoking exposure.

4.10. Exposure to Passive smoking



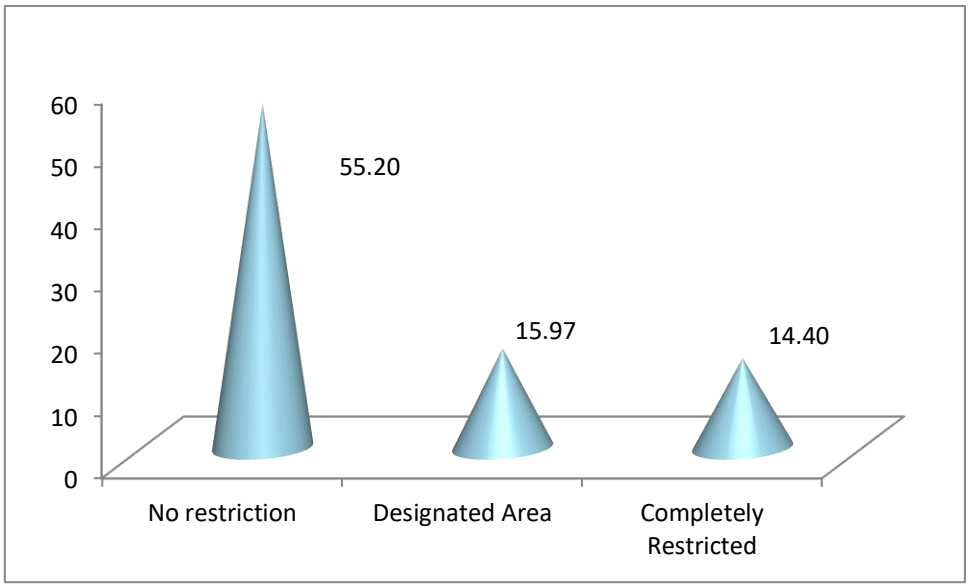
Almost 88.6% are exposed to passive smoking and only 11% do not exposed to passive smoking.

4.11. Area of exposure



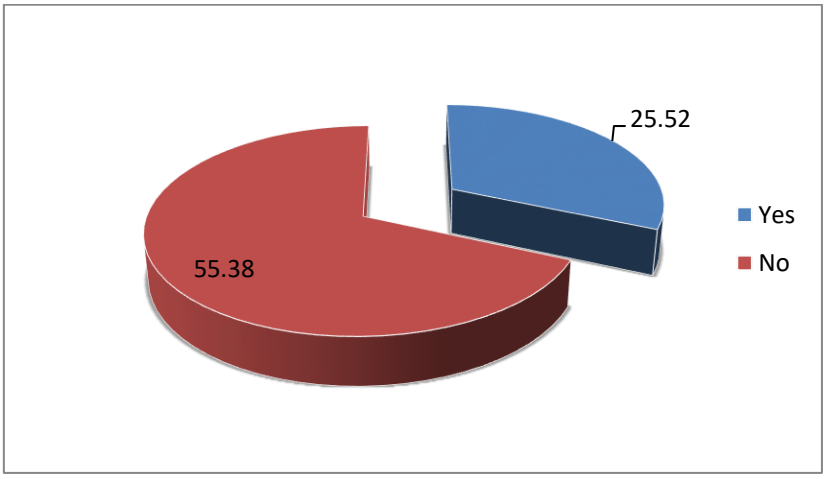
Various area of exposure of passive smoking were found from the study. Majority (26%) stated that they are exposed to passive smoking to the outdoor, 15.5% are exposed in the public transports, 14.5% are exposed in university areas, 14% exposed in the tea stall, 9% are exposed in mess, 7.9% are exposed in apartment and only 1.5% are exposed in others areas.

4.12. Restriction at the area of exposure



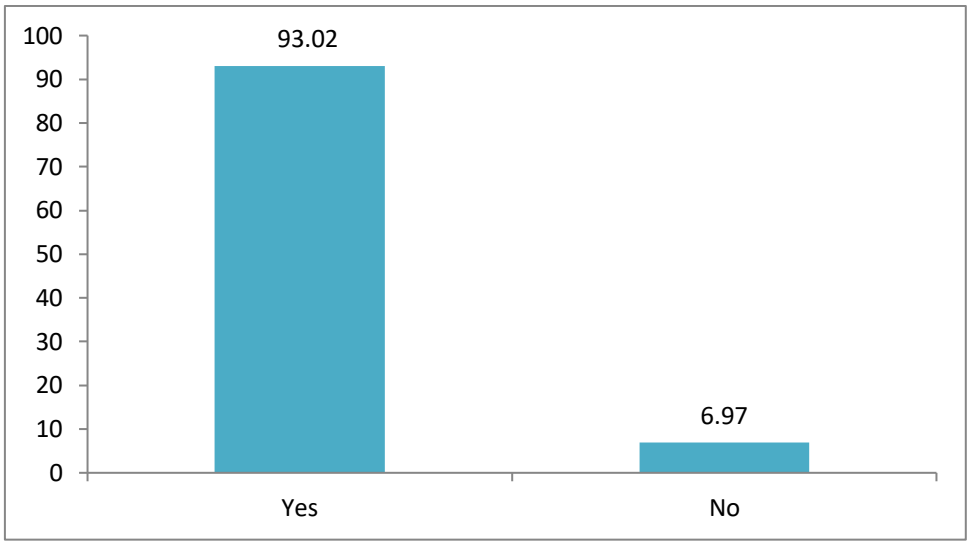
Almost 55.2% participants of this study think that there were no restriction to their area of exposure to passive smoking, 15.9% think it was the designated area for smoking and 14% think it was completely restricted area.

4.13. If complete or partial restriction to the area of Passive smoking exposure whether people comply or not



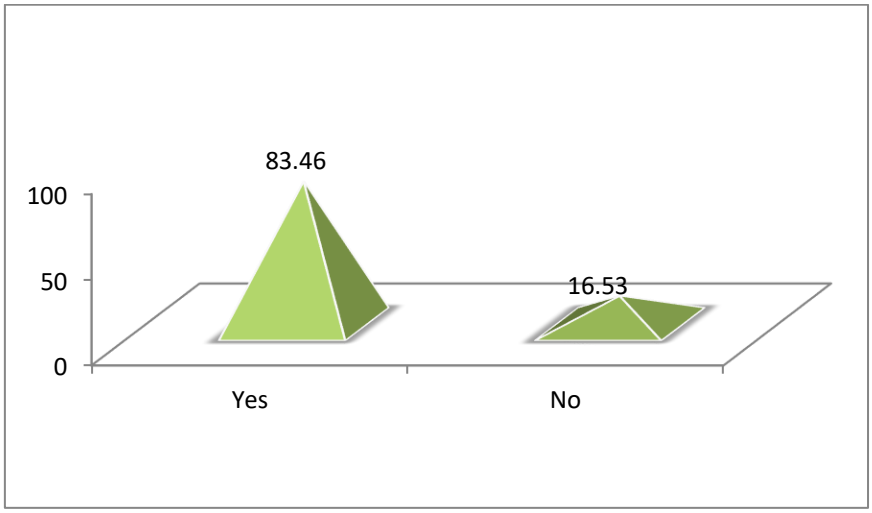
In response to the question 55% people out of 502 participants answered that people do not comply with the restriction and only 25% think people do comply to the restriction at the area of exposure.

4.14. Feeling comfortable in no-smoking zone



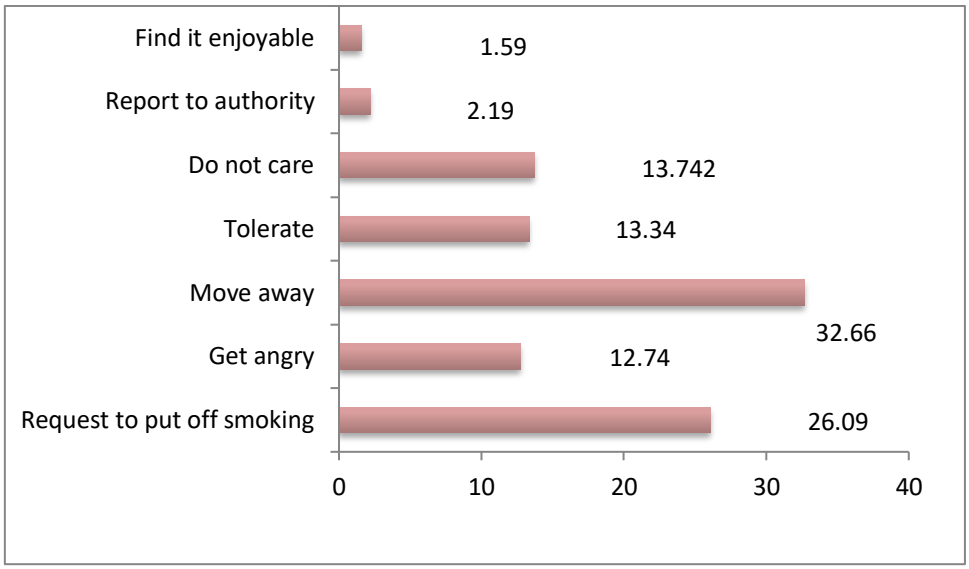
Almost 93% participants stated that they feel comfortable in no-smoking zone and only 6% think they don't comfortable in no-smoking zone.

4.15. Feeling bothered when exposed to passive smoking



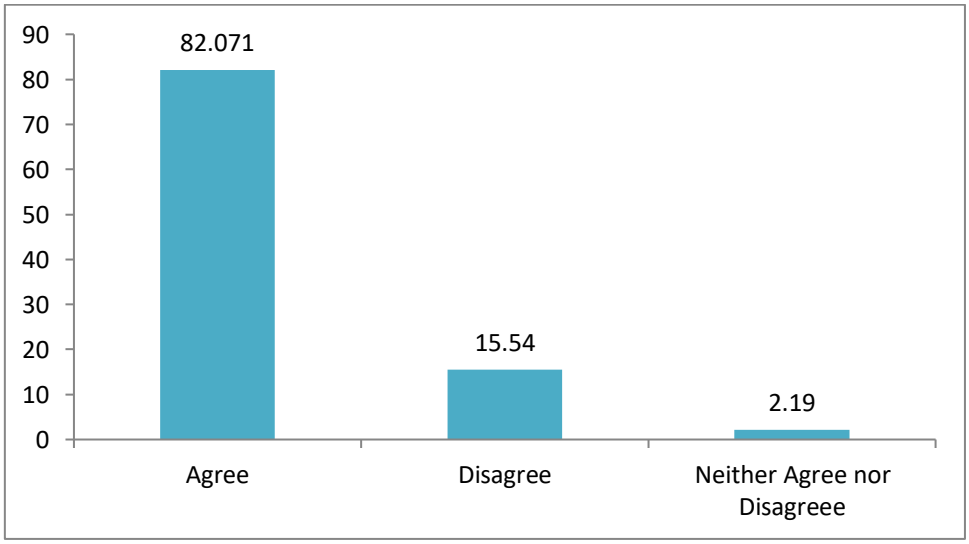
Majority 83.4% participants stated that they feel bothered when exposed to passive smoking and only 16% think they were not feel bothered if exposed to passive smoking.

4.16. Dealing with a person smoking around



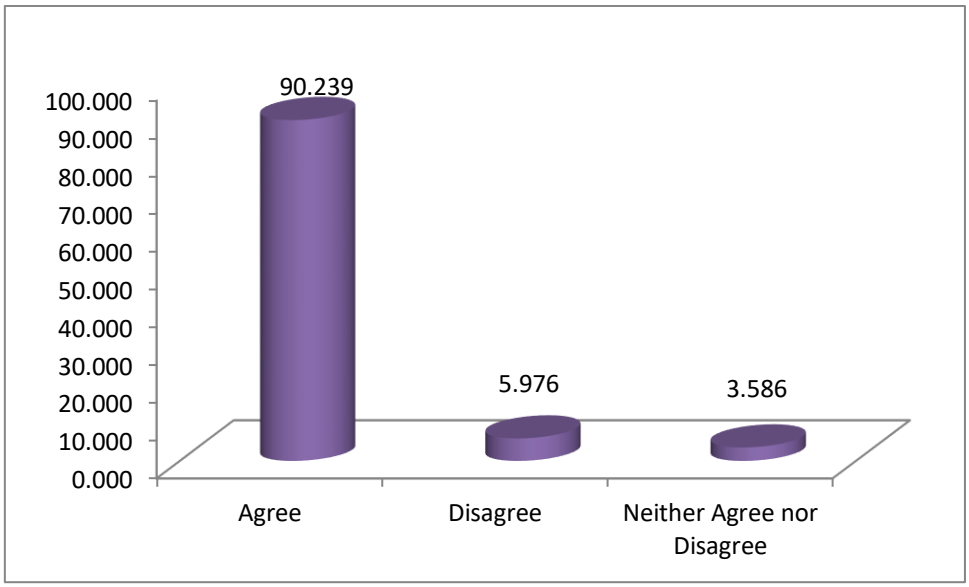
In this question majority (32.6%)of participants answered that they move away from the site of smoking exposure , 26% stated that they requested to put off smoking, 13.7% people did not care about the exposure , 13% of people tolerated that situation, 12% people got angry, 2% reported to the authority and only 1.5% found it enjoyable.

4.17.1. Children under age 16 should be unable to buy cigarette



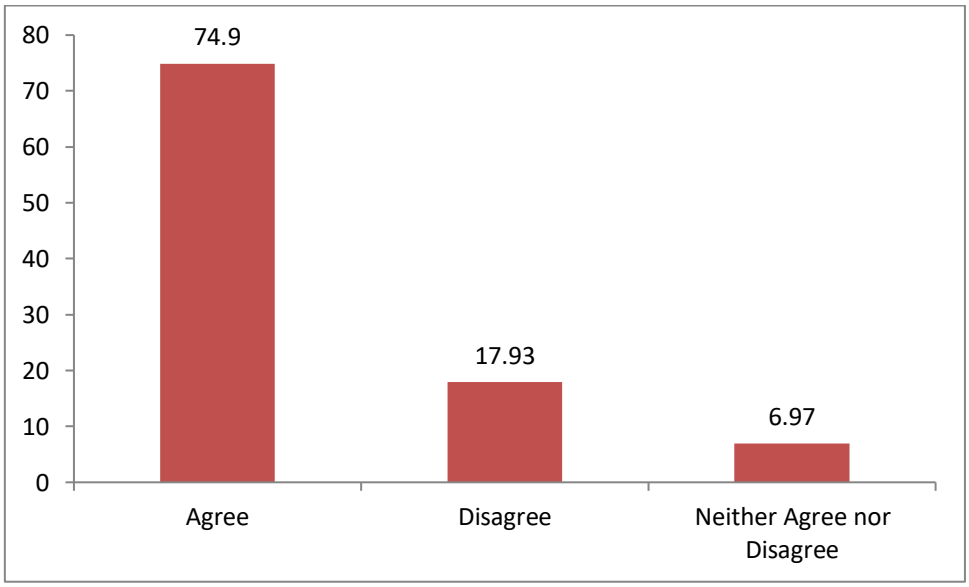
According to the study 82% participants did agree with the statement that children under age 16 should be unable to buy cigarette, 15% do not agree and 2% neither agreed nor disagreed with this statement.

4.17.2. There should be Strict Law Enforcement to stop public smoking



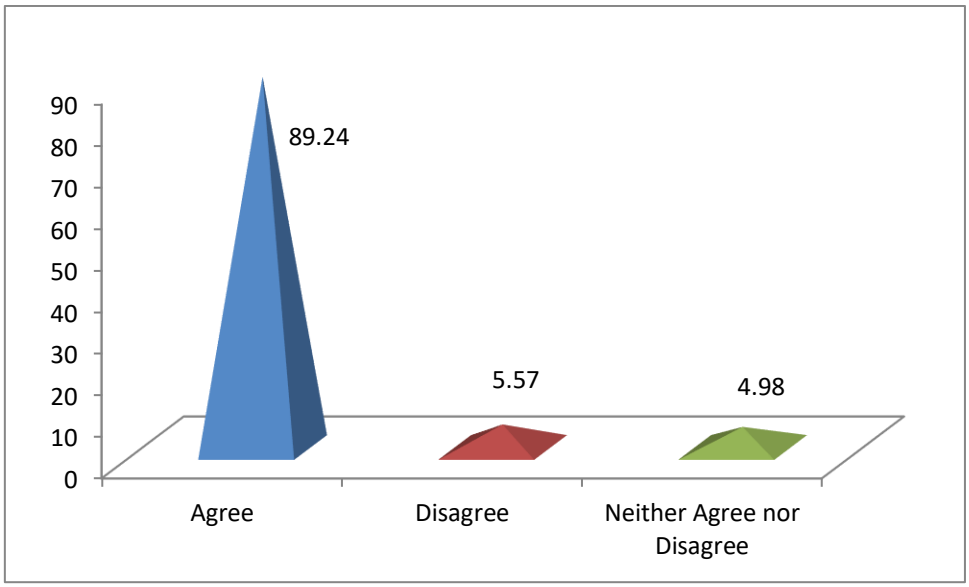
In our study 90% people agreed that there should be strict law enforcement to stop public smoking for decreasing passive smoking, 5.9% disagree and only 3.5% neither agreed nor disagreed.

4.17.3. Smoking advertisement should never be presented to the media



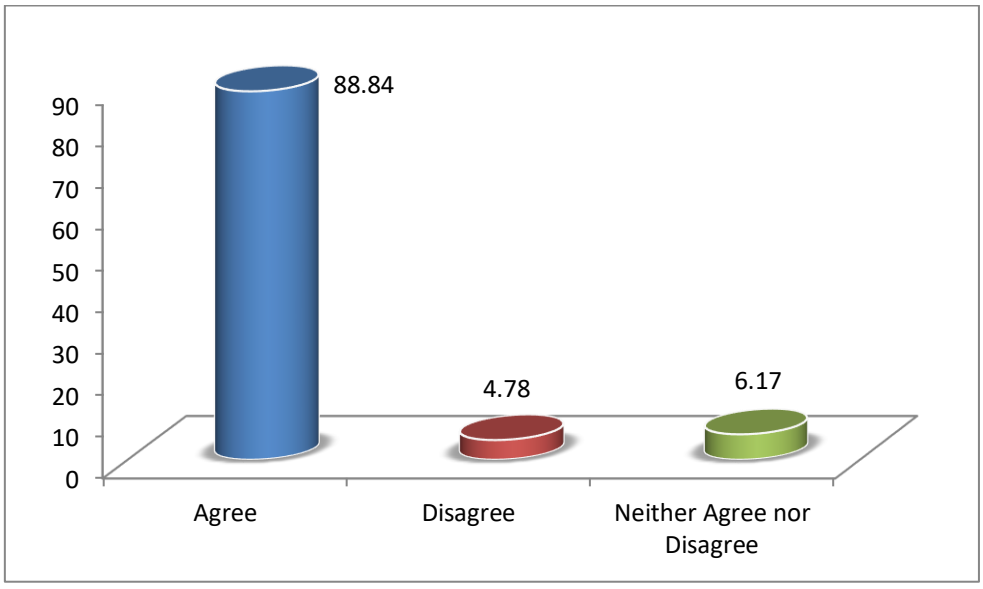
Almost 74.9% people agreed with this statement, 17.9% disagreed and 6.9% neither agreed nor disagreed with this statement.

4.17.4. Awareness program should be organized regarding smoking



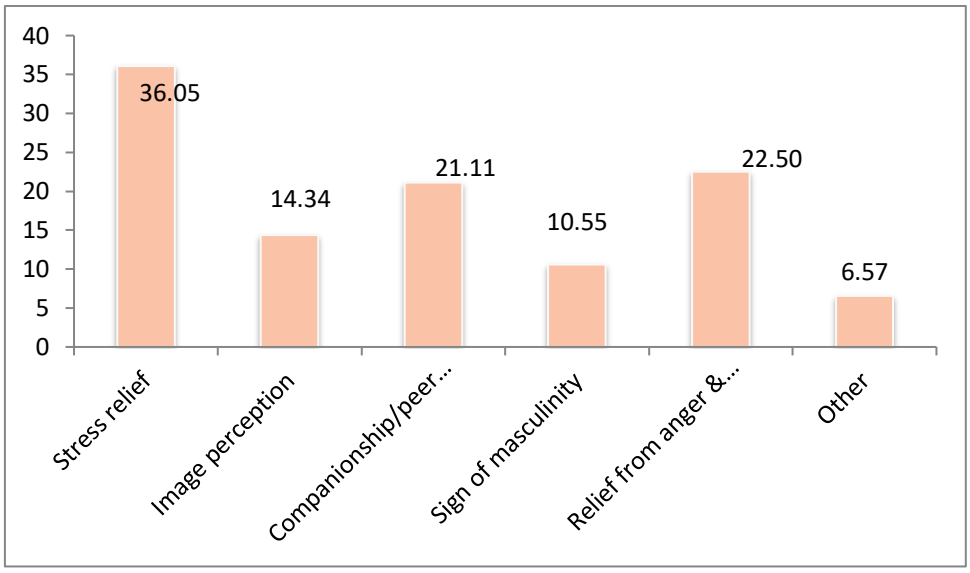
Almost 89.2% people were agreed with this statement, 5.5% do not agree with the statement and 4.9% neither agreed nor disagreed with the statement.

4.17.5. Academic curriculum should contain information on harmful effects of smoking to increase awareness of the impacts of active and passive smoking



88.8% people were agree with the statement , 4.7% did not agreed with the statement and 6% neither agreed nor disagreed with the statement.

4.18. Reasons behind someone's smoking



Among the 502 participants of this study 36% people think that people do smoking for stress relief, 21% think people smoke because of companionship/ peer pressure, 22.5% think people smoke due to relief from anger and frustration, 14.3% people think image perception is the reason behind smoking, 10.5% think sign of masculinity is the reason behind someone's smoking, and only 6.5% people go with other reasons including, curiosity, lack of knowledge etc.

Chapter-5

Discussion and Conclusion

5.1 Tobacco use is the leading cause of preventable death and disease worldwide and is estimated to kill more than 5 million people each year. According to the World Health Organization (WHO), if current trends continue, by 2030 tobacco use could cause 8 million deaths annually, with more than 80% of these deaths in low- and middle-income countries. Cigarette smoking is the most well-known form of tobacco use (Fen et al. 2013).

Our study was on the knowledge, attitude regarding passive smoking among students of different departments of East West University. Among the total 502 participants about 78% have never smoked. The knowledge regarding passive smoking is high in the students of science and engineering departments and majority of them (82%) had good knowledge about passive smoking. A survey was conducted among Jordanian employed women at two universities. Total 209 women were included in that study. The observation was likely to that there is large discrepancy between passive smoking exposure, knowledge, attitude and avoidance among highly educated Jordanian women (Gharaibeh et al.2011).

In our study among 502 participants, a good percentage (97%) said that smoking has severe effect on their health. Regarding another study was done by the Central University of Anapolis , Brazil. The study was conducted by 58 parent participants. When they were questioned about their children as second hand smoker, 52% did not consider them to be. However, the majority (52%) of them did not believe that their children could suffer any respiratory impairment or did not know about these impairments due to exposure to passive smoking (Ribeiro et. al 2014).

In our recent study almost 89% said they are exposed to passive smoking and about 83% participants said they feel bothered in smoking exposure. A postal survey of 1568 London casino workers had found that the majority of the casino workers who responded, consider themselves heavily exposed to passive smoking at work, are bothered by this exposure , and many felt that it had affected their health (Pilkington et al.2006). In the question of different health problems of passive smoking majority (93%) responded that breathing problems and different types of respiratory diseases may arise due to exposure to passive smoking about (78%) said it can cause lung cancer and about 74% of the respondents agreed that passive smoking can cause heart diseases. A cross sectional study conducted in Japan among 30 non smoker Japanese about the impact of passive smoking on health found that there are were direct evidence that passive smoking may cause endothelial dysfunction of the coronary circulation in non smoker (Ryo et al. 2001).

In the question of law enforcement about 90% of respondent said strict law enforcement can stop public smoking. Another study was done on the Iranian dental students to determine the knowledge attitude of them about the exposure of passive smoking. The response rate was 84% among 325 students. Exposure to passive smoking was reported by 74% of the participants. Most of the students agreed on queried tobacco control policies. The lowest agreement 72% was for banning smoking in coffee shops and teahouse (Keshavaraz et al. 2013). In our study almost 89% people suggested that awareness program should be organized regarding the harmful effect of both active and passive smoking which can a good approach to stop smoking exposure.

5.2 Conclusion

It can be concluded from the study that the knowledge level among the students of East West University was moderately satisfactory. Significant amount of participants thought severe health problem could happen due to exposure to passive smoking. Breathing problem and lung cancer are mostly common they stated. Knowledge level about other health problems was not satisfactorily seen on them. Varieties of responses also found regarding passive smoking exposure. As this survey was done only on one university students so the proper picture of knowledge and attitude level could not be demonstrated by this. To prevent the smoking exposure strict law enforcement and awareness level among the general people by organizing different programs, seminar should be done.

Chapter-6

Reference

Burns, D.M.(2003) Epidomiology of smoking induced cardiovascular disease. *Progress in Cardiovascular disease*. Vol.46, (11-29). [Online]

Curran, L., Arnold, Terry ,C., Davis H., J., Robertti., Jackson,M.B., Indrani, N.E. & Steve (2010), Smoking status , reading level and knowledge of tobacco effects among low income pregnant women. *American Health foundation* [online] vol:32,313-320,

Castles, A., E. Kathleen, A. , Cathy L. Melvin, , Christopher K., Matthew L. Boulton, (1999) Effects of smoking during pregnancy, American journal of preventive medicine Vol.16 [Online] Available at: doi S0749-3797(98)00089-037 [Accessed 22 August 2017]

Charlesworth, J., C., Curran, J., E., Johnson, P., M., Goring, H., H., Dyer, T., Diogo, V.,P., Kent, W., J., Mahaney, M., C., Almasy, L., MacClume, W., J., Mossesi, K., E., and Blangero, J., (2014) , Transcription epidemiology of smoking: the effect of smoking on gene expression in lymphocytes, Journal of BMC Medical Genomics, [Online], vol.3, 29

Fen, W.,Chen, Y., Parvez,F.,Segers,S., Argos, M., Islam, T., Ahmed, A., and Hasan, R., (2013) A prospective study of tobacco smoking and mortality in Bangladesh. Vol.10, 1371

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 21 August 2017].

Hecht, S.,S., (1999), Tobacco smoke carcinogens and lung cancer, Journal of National Cancer Institute, vol.91(14)

Kim, k. D, Craig, P. Hersh, George R., Washko, John, E. , Hokanson, David , A, lynch, John, D. Newell, James R., Murphy, James D., Capro, 2011, Epidemiology, radiology and genetics of nicotine dependence in COPD , vol.12

Huangfu,X., Zhu, Z., Zhong, C., Bu, X., Zhou, Y.,Batu, B., Xu, T., Wang, A., Li, H., Zhang, M. & Zhung, Y., (2017) , Smoking, Hypertension and Their Combined Effect on Ischemic Stroke Incidence: A Prospective Study among Inner Mongolians in China, *Journal of National Stroke Associlation*.

Jason,D.,C., Susan, Jarvis, D.,M., Zock, P.,J., Toren, K., and Burney,P., (2002), Effects of Passive smoking on respiratory syndrome, bronchial responsivenss, lung function and total serum Ig E in the European community respiratory health survey: a cross sectional study, vo.359, 9303, 359-360.

Jarvis, J. (2004). *Nicotine Addiction 101*. [online] Whyquit.com. Available at:

http://whyquit.com/whyquit/LinksAAddiction.html

Keshavaraz, H., Jafari, A., Khami, M., R., Ilamarij, J., V., (2013), Passive Tobacco Control Programs among Iranian Dental Students, Asian Pacific Journal of Cancer Prevention [online], vol.14, Available at: *DOI:http://dx.doi.org/10.7314/APJCP.2013.14.6.*3635 [Assessed 22 August 2017]

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 22 August. 2017].

Mishra, S., Thind , H., K., Gokarkonda, B., S., Lartay, G., (2011) Second hand smoke in university campus: Attitudes and perceptions of faculty , staff and students , Journal of Public Health, vol.4(1), 21-27

Marrow, J., D., Frei,B., Largmire, A., w., Gazian, M., Lynchi, S., Willium(1995), Increase in Circulating Products of Lipid Peroxidation (F_2-Isoprostanes) in Smokers — Smoking as a Cause of Oxidative Damage, *Journal of Medical science*, Vol.232

National Cancer Institute. (2017). *Harms of Cigarette Smoking and Health Benefits of Quitting*. [online] Available at: http://www.cancer.gov/about-cancer/causesprevention/ risk/tobacco/cessation-fact-sheet [Accessed 6 August 2017].

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.

New Zeeland Health, 2015.viewed on: 21 August 2015. Available on: www.health.gov.nz.

Onigbogi, O., O., Odukoya, O., Onigbogi, M., & Sekoni, O., (2015) Knowledge and attitude toward smoke-free legislation and second-hand smoking exposure among workers in indoor bars, beer parlors and discotheques in Osun State of Nigeria, International Journal of Health policy and management [online], vol. 4, 224-239 ,

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.

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.

Ribeiro, F., A. , Micaele. K.R. , Moraes, Joyce. C.M. Caixetra, Jullietn, N. Silvia, Amand, S. Lima, Samara L. Puri. P(2014) *perception of parents about second hand smoking on health of their children : an enthnography study* . vol.33, pp.294-299

Ryo, O.,W, H., Hirata, K., Tokoi., Muro, T., Yoshiyama, M., Takeuchi, K., & Yoshikawa, J., (2001), Acute effect of passive smoking of coronary circulation in the health of young adult, *Journal of American Medical Association* [Online] vol.286,

Sandeed, M., Herpreek, .k. T., Srivinasa, B., Grace, L.,2011, Second hand smoking in university campus Attitudes and perception of Faculty , stall and students. Journal of Public health [online]

Sibu, J., Loomis, D. and Yeatts, K. (2007). Effects of Tobacco Smoke Exposure on AsthmaPrevalence and Medical Care Use in North Carolina Middle School Children. *American Journal of Public Health*, [online] 94(2), p.308.

'Smoking Kills 2.5 lakh a year in Bangladesh.'2015, The Daily Star, 13 January 2015.

Sultana, P.,Akter, S., Rahman, M., and Alam, M., (2015), Prevalence and Predictors of current Tobacco smoking in Bangladesh , Journal of Biostatics and Biometric Application [online] vol.1,1. Available at: www.annexpublishers.com [Accessed 22 August 2017]

Hecth, S., S., (1999) Tobacco smoke Carcinogens and Lung cancer , Journal of National cancer Institute, vol.91, 14

Tobaccoin Australia (TIA) http://www.tobaccoinaustralia.org.au/chapter-6-addiction/6-3psychoactive-effects-of-nicotine [Assessed 23 August 2017]

Ugai, T., Matsuo, K., Sawada, N., Iwasaki, M., Yamaji, T., Shimazu, T., Sasazuki, S., Inude, M., Tsugune, S. (2017) Smoking and subsequent risk of leukemia in Japan, Journal of Epidemiology [Online], vol.27, 305-310.