

**EXAMINING THE ASSOCIATION BETWEEN PERENTAL  
SMOKING AND ADOLESCENT  
SMOKING**

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**THE MALDIVES NATIONAL UNIVERSITY  
MAY, 2013**

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A Project submitted in partial fulfillment of the requirements for the  
degree of Bachelors in Primary Health Care

**Faculty of Health Sciences  
The Maldives National University**

**MAY, 2013**

## **DECLARATION**

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I hereby declare that this Project is the result of my own work, except for questions and summaries which have been duly acknowledged.

Signature:

Date: 27 May 2013

## ABSTRACT

Smoking is the leading preventable cause of morbidity and mortality in the World. The vast majority of smokers initiates smoking before the age of 18. Several researches suggest that parental smoking is a significant predictor of adolescent smoking. This study examines the association between parental smoking and adolescent smoking and adolescent attitudes toward smoking.

Data was collected from an adolescent population of L. Gan, L. Maamendhoo and L. Maavah by using self-administered anonymous questionnaire. The questionnaire was piloted and a sample of 100 was selected. The result of research showed that 38% of participants had tried smoking and from this 55.3% were known as current smokers. 14 years old was the most frequent age of initiation. And furthermore, it was shown that 37% of adolescent's father's smoked, 1% of mother's smoke, both parents smoke 15%, and 47% of adolescent's parents were not smoking. From ever tried category, 73.7% were become a current smokers and 26.3% were quitted smoking. It was found that more than 50% of the adolescent began to smoke as an experience.

Among current smokers. 57.1% could not quit smoking because of the addictive feeling; remaining 42.9% were due to habit. Most of the adolescents quitted smoking by knowing the health impact of smoking. Parent was known as second cause.

The result of the research concluded that Parental smoking had ( $p < 0.001$ ) association between adolescent smoking. It was found that single parental smoking increases the risk of adolescent smoking by 11 times and both parents by 150 times as it compared to neither parents smoke. And adolescents with both parents smoking have highest proportion of positive attitudes toward smoking. In the meantime participants without smoking parents have less positive attitude and highest negative attitudes toward smoking.

**Keywords:** smoking, parental, adolescents, initiation, Maldives

## **ACKNOWLEDGEMENTS**

I hope that I do not fail to recognize those who were most crucial, in enabling me to complete this dissertation; Under-going this project has helped me immensely in my development, especially in the area of undertaking a small research project. I would like to begin by thanking Almighty Allah for enabling me to complete this project. I would like to thank my supervisor Aishath Shaheen Ismail for her encouragement, guidance and valuable supervision.

I am also indebted to Mr. Mohamed Zaid for his assistance to analyze data. I would not have completed the project without his assistance. I also want to thank the staff of Health Protection Agency for giving their valuable time and effort to fulfill our requirement. In addition I am grateful to Public Health staff of L. Gan Regional hospital, L. Maamendhoo Health Centre and L. Maavashu Health Centre for assisting me to collect Data from those islands. My gratitude goes to the participants of this study without whose support I could complete this project. In addition, I would like to thank all the lecturers and my colleagues for their helpful cooperation, support and participation to get to the final result.

Finally, the last but not the least, I would like to give profound gratitude to my family members for their moral support and encouragement throughout this process.

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## LIST OF ABBREVIATION

CI	Confidential Interval
FCTC	Framework Convention on Tobacco Control
GYTS	Global Youth Tobacco Survey
HHS	Health and Human Services
OR	Odd Ratio
WHO	World Health Organization

# CHAPTER 1

## INTRODUCTION

### 1.1 Background to the study

The tobacco epidemic is one of the biggest public health threats the world has ever faced. There are more than 4000 compounds that were found in tobacco smoke. Most of these are harmful for our health in the sense that they are toxic, mutagenic, or carcinogenic. From this, nicotine was labeled as the most harmful substance. A dosage of 40-60mg is enough to kill an adult human. nicotine is a drug that causes addiction(Tobaco in Australia, 2012).

Tobacco use is widely recognized as the most preventable cause of death in the world. Nevertheless, approximately 1.25 billion people continue to smoke tobacco and nearly 5.4 million people die each year from tobacco-related illnesses (Mackay, Eriksen, & Shafey, 2006; World Health Organization, 2008). The World Health Organization (WHO) estimates that if current tobacco use trends continue, as many as one billion people could die in the 21<sup>st</sup> century (WHO, 2008). Cigarette smoking is one type of tobacco use and is a major cause of lung, pharynx and esophageal cancer (American Cancer Society, 2008). Smoking causes heart disease, emphysema, and stroke; it also causes reproductive problems in women (American Cancer Society, 2008). Young smokers have significantly higher odds of developing coronary atherosclerosis, or heart disease (Zieske , A., McMahan, C., McGill, H., Homma, S., Takei, H., Malcom., 2005).

Many factors appear to be associated with young people becoming smokers. They include parental and peer smoking status, parenting style, genetics, and exposure to advertising, in addition to others. Parental smoking is of particular interest, as it presents a unique opportunity for public health intervention – helping parents quit and preventing adolescents from start smoking.

The government of Maldives has taken steps to control the tobacco use in the country, mainly through awareness creation and encouraging community participation. Any form of tobacco use promotion and advertising of tobacco products have been banned in the local media. The government of Maldives ratified the World Health Organization Framework Convention on Tobacco Control (WHO FCTC) in the year 2006. Maldives conducted the Global Youth Tobacco Survey (GYTS) in the years 2003 and 2007 in an effort to track tobacco use among adolescents. In Maldives, the primary method of using tobacco is through inhaling tobacco smoke from burnt cigarettes. Maldives global youth tobacco survey in 2003 shows that 29% of students had ever smoked (GYTS, 2003). And from these 38.5% are boys, 11.9% usually smoked at home, 69.5% of students buy cigarettes in a store, 50.2% students are exposed to smoke in their home and 45.0% have one or more parent who smokes. (GYTS, 2003).

## **1.2 Problem Statement**

The relationship between parental smoking and adolescent smoking initiation has been recognized. Few studies to date, have examined whether parental smoking is associated with a younger age of smoking initiation. A result that parents not only influence their children's smoking, but also the age of trying, would illustrate a greater need to focus on

parent smokers and supporting their cessation efforts. Much of what is currently understood about the interaction between parents and adolescent behavior originates in developed countries. More research is needed to understand predictors of adolescent tobacco use in the different social and political environments of developing countries, and how it may differ from the evidence in developed countries.

### **1.3 Objective of the Study**

The following five key areas were of particular interest for this research project:

- To identify the impact of parents' smoking attitudes and behaviors on initiation of smoking by adolescents and any potential this creates for interventions designed to target adolescents through their parents.
- To assess the knowledge and understanding of the role of parents' influence in adolescent smoking.

### **1.4 Research Questions and Hypothesis**

#### **1.4.1 Hypothesis:**

“Adolescents with one or more parent who smokes are more likely to smoke than those with no smoking parents”.

#### **1.4.2 Research Questions:**

The purpose of this study is to conclude the relationship between parental smoking and adolescent smoking by answering the following questions:

- are adolescents more likely to be smokers if one or both of their parents smoke compared to if neither parent smokes?
- Identify adolescents' attitudes towards smoking with one or both of their parents smoke compared to if neither parent smokes?
- Of those who have tried smoking, are adolescents more likely to become regular smoker if one or both of their parents smoke compared to if neither parent smokes?

## **1.5 Significance of the Study**

Several Researches suggest that parental smoking status is a significant predictor of adolescent smoking. Furthermore, parental smoking status may also be associated with a younger age of smoking initiation, which increases a person's risk of nicotine dependence, cancer, and death. The tobacco industry is increasingly targeting the developing countries to market products to women and adolescents, among whom smoking prevalence is currently low. More rigorous examinations of the association between parent and adolescent smoking in developing countries are needed. Immediate and compelling interventions in the areas of education for parents and adolescents on the health consequences of smoking, access to cessation benefits, and policies to reduce the visibility of smoking are critical steps in preventing tobacco-related death and disease.

Much is yet to be learned about adolescent smoking and the effects of nicotine on young people. Current evidence shows that adolescents are highly susceptible to developing symptoms of tobacco dependence sooner and with less frequent use than adults. Additionally, the younger an adolescent begins smoking, the greater his odds are of developing lung cancer and other health problems (give ref). By understanding the

individual and contextual factors that lead adolescents to initiate tobacco use, better public health programs and policies can be designed. There is a great need to identify the impact of the influence of parental smoking on adolescence smoking in the Maldives.

## **1.6 Scope of the Study**

There are several factors that may affect adolescent smoking. But this study mainly focused to evaluate the impact of parental smoking compares to than those with no smoking parents, in the means of initiating smoking, age of initiation, convert a regular smoker and attitudes towards smoking.

## **1.7 Definitions of Terms**

- Smoking prevalence refers to the proportion of who are current smokers.
- Cigarette is ready to smoke small paper tube filled with pieces of tobacco.
- Smoking behavior refers to peoples' past and present smoking habit including regular and occasional smokers and those who have been smoking by the time.
- Non- smoking behavior refers to individuals who have yet to smoke cigarettes.
- Influential factors towards smoking behavior refers to elements or stimulants which can increase the possibility of behavior or desire to smoke.
- Attitudes refers to feelings and preference.
- Positive attitudes means feeling good or high preference.
- Negative attitude means feeling bad or low preference.



human behavior is learned observationally through modeling: from observing others one forms an idea of how new behaviors are performed, and on later occasions this coded information serves as a guide for action." (p22).

According to the Social Learning Theory (Bandura, 1986), parents are vital role models for their children. Therefore, if children and adolescents are exposed to healthy parent role models, they are expected to be less likely to engage in unhealthy or risky behaviors themselves. From a similar literature, Social Control Theory (Thornberry, 1987) asserts that the adolescent is inclined toward deviance unless there are positive social bonds to prevent this and encourage conventional behavior (Hirschi, 1969). This theory suggests that close relationships with parents are protective because they are a mechanism for the transmission and teaching of positive social values. Both Social Learning Theory and Social Control Theory assert that parents have a strong influence on their children's tendency for risk behaviors, though they differ in the mechanisms of this influence.

## **2.2 Previous Studies**

Tobacco use has reached a plateau in many developed countries, allowing for a decline in tobacco-related mortality over the next several decades (Mathers & Loncar, 2006). In contrast, developing nations are increasing tobacco use and approximately 80% of tobacco-related mortality is projected to impact these countries by the year 2030 (WHO, 2008). Furthermore, smoking-attributable mortality among individuals between 30 and 69 years of age is of a greater proportion in developing countries than in higher income countries (Ezzati & Lopez, 2003). The loss of individuals in this age group translates into a

substantial loss to the workforce, further perpetuating poverty and economic hardship in lower-income countries (WHO, 2004).

Prevalence of tobacco use varies widely among developing nations and even more so among men and women. About 50% of men and fewer than 10% of women smoke in developing countries (Mackay et al., 2006). Thus, the tobacco industry has already identified these countries as new markets, targeting women and young people with aggressive marketing strategies and a variety of tactics to repeal advertising restrictions and suppress tax increases (WHO, 2008; Sebrie & Glantz, 2006; Samet, Wipfli, Perez-Padilla, & Yach, 2006). Prevalence of smoking among youth also varies across regions of the world, ranging from 4.3% in Southeast Asia to almost 18% in the European region (Warren, Jones, Eriksen, & Asma, 2006). Throughout the world, more than half of youth are exposed to secondhand smoke in their home (Warren et al., 2006).

In an effort to prevent individuals from initiating tobacco use, much research has been conducted to determine who is at risk for smoking and how to focus prevention efforts. Research shows that while tobacco use is often perceived as an adult activity, most people begin smoking prior to age 18 (U.S. Department of Health and Human Services [HHS], 1994). Moreover, people who have not started smoking by age 21 are unlikely to ever start (HHS, 1994). The decision to begin smoking is usually made prior to adulthood.

Parental smoking provides a means by which adolescents may perceive smoking in a positive context, the modeling of an acceptable and beneficial behavior (US Department of Health and Human Services, 1994). Exposure to positive smoking models may increase the probability that an adolescent accepts a cigarette when one is offered (Darling & Cumsille, 2003). This seems a highly plausible relationship. However, a variety of outcomes have

been reported by the large number of studies investigating the relationship between parental smoking and adolescent smoking. In a summary of 27 prospective studies, Conrad, Flay and Hill (1992) found that, of the 15 that included parental smoking as a variable, parental smoking was predictive of adolescent smoking in seven, predictive only for females in two and a poor predictor of adolescent smoking in the six remaining studies.

Parental behavior is a key determinant of smoking by New Zealand adolescents. Association between parental and child smoking persisted strong and mainly similar effects over time (Otten, 2007). Parental smoking status was not only predictive of transitions from never smoking to trying smoking, monthly smoking, or daily smoking, but also of the progression from trying smoking to daily smoking. Further, although parental former smoking was associated with much weaker progressive adolescent smoking transitions than current parental smoking. However absence of parental smoking history was most preventive (Rudatsikira, 2008).

Parental smoking leads adolescents to vulnerable peer influence and choose their friends according to how their parents select theirs. (Rutger C.M.E. Engels, 2004). In a study of seven European countries, Griesbach et al (2003) found that smoking rates in four countries were more than double in young people who had at least one smoking parent. Similarly, Kodl & Mermelstein (2004) found that children with at least one parent as a smoker were two times more likely to have experimented with smoking and two and a half times more likely to go beyond initial experimentation. It was found that teens with at least one smoking parent are at greater risk of smoking than teens whose parents had never smoked or had quit smoking. Even those whose parents did not currently smoke, but had in the past, were found to have an elevated risk of smoking. However, in a longitudinal study

across six European countries, de Vries et al (2003) found that only 2% of the variance in smoking uptake from T1 to T2 was predicted by parental or peer smoking.

Gender differences may be responsible for the diverse findings on the effect of paternal and maternal smoking. Tyas and Pederson (1998) suggests that parental smoking may be more influential for girls, because a greater number of the studies they reviewed found an effect for girls than for boys.

It is possible that the influence of parental smoking is greater if both parents smoke. Sasco and Kleihues (1999) found that the estimated risk of both parents smoking was greater than if only one parent was a smoker, with a slightly greater influence on daughters than on sons. It is unclear whether any parental influence is stronger if smoking occurs in a same gender parent: some studies support this, while others do not. Sasco and Kleihues (1999) found that daughters were more affected by maternal than by paternal smoking, and that girls were more influenced in general by parental smoking. De Vries et al (2003) found that across six European countries, maternal smoking was more influential for both boys and girls than was paternal smoking. The influence of maternal smoking was also substantiated in a longitudinal study by Griffin, Botvin, Doyle, Diaz and Epstein (1999). They found that adolescents whose mothers smoked when measured in the 7th grade were more likely to be heavy smokers in the 12th grade than were those whose mothers did not smoke (Griffin, 1999).

It is possible that parental smoking is differently influential at certain points in the youth smoking development. In one study, parental smoking significantly predicted trial, experimentation and regular use, with the strongest effect for regular use (Flay, & Richardson, 1998). It also predicted the transition from experimental to regular smoking but

not from the trial to experimentation. An age/gender effect was present in a study by Scal, Ireland, & Borowski, (2003). They found that paternal smoking was a risk factor for all youth studied except for older girls and that maternal smoking was also a significant risk factor for younger girls.

A longitudinal study has shown that having smoking parents predicts continued smoking into adulthood, with cessation less common among adults whose parents smoked (Chassin, Presson, Rose, & Sherman, 1996).

Parental modelling of smoking and drinking was found by Ennett, Bauman, Foshee, Pemberton, and Hicks (2001) to be more influential than parent-child communication about smoking and drinking. In fact, parental smoking predicted the initiation of adolescent smoking and drinking and parental drinking predicted the escalation of adolescent tobacco use (Ennett, 2001).

A five years cohort study done among 5863 students from 36 schools in South London, showed that 48.5% of students living in step-families smoked, and there is not much difference in those whose parents smoke in non-step-families. (Jennifer A. Fidler, 2007).

According to statistics on smoking: England, 2009, men who smoke have a higher prevalence than women. (22% compared with 19%). A WHO report published in 2012 revealed that men have four times higher prevalence than women globally (48% verses 12%). “Recent findings of the Global Youth Tobacco Survey, however, show that young girls are smoking almost as much as young boys and that girls and boys are using non-cigarette tobacco products such as spit tobacco, bidis, and hooker at similar rates. Nearly 24% of all young smokers started by the age of ten, when they are far too young to

understand the risks of tobacco use and addiction or to resist social expectations.” (WHO, 2012) But the survey conducted among the employees of the City of Helsinki in 2000 and 2001 found that prevalence of smoking has decreased among men, whereas among women smoking has remained at the same level or even increased ( Mikko Laaksonen, 2005).

Social cognitive or social learning theory is often used when explaining adolescent smoking (White, Hopper, Wearing, & Hill, 2003). This theoretical model developed by Albert Bandura maintains that adolescents learn behavior by observing others; adolescents then model or adopt the behavior (Bandura, 1986). Accordingly, parents serve as role models for their children; adolescents observe their smoking behavior, and perceive positive attitude toward smoking, ultimately trying it themselves (Bandura, 1986). If adolescents perceive smoking to be socially normative, they may use the behavior to seem older or more adult-like (Tucker et al., 2003; Milton, Dugdill, Porcellato, & Springett, 2008). In a British qualitative study conducted by Milton and colleagues, 11 year old adolescents expressed that smoking represented adult status (Milton et al., 2008). This finding is supported by social learning theory, in that an adolescent’s parents are likely his most immediate adult role models. The authors also suggest that smoking initiation is tied to the complex transition from the feelings of dependence associated with childhood to the responsibility of adulthood; and therefore, smoking behavior serves as a projection to others that this transition has occurred. Notably, the transition from childhood to adulthood likely differs widely among cultures and regions throughout the world.

A recent prospective study examined the transition from experimenting with smoking to established-smoking among American youth living in towns with differing restaurant smoking laws (Siegel, Albers, Cheng, Hamilton, & Biener, 2008). In the towns

with strong regulations, children were significantly less likely to make the transition from trying to establish-smoking than those lacking strong regulations (Siegel, Albers, Cheng, Hamilton, & Biener, 2008). Researchers hypothesized that the young people perceived a lower prevalence of smoking and a lower social acceptability of smoking when their exposure in public places was reduced. Both prospective and cross-sectional studies link parental smoking with the smoking of their children (Bricker et al., 2006; Fleming, Kim, Harachi, & Catalano, 2002; Peterson et al., 2006). Fleming et al. (2002) found that parental smoking to be significantly associated with adolescent smoking with an odds ratio twice that of children whose parents did not smoke. Bricker et al. (2006) found similar results by surveying children in 3<sup>rd</sup> grade and again in 12<sup>th</sup> grade; children whose parents smoked at 3<sup>rd</sup> were almost twice as likely to be smokers at 12<sup>th</sup> grade than those children whose parents did not smoke. This association between parental smoking status and adolescent smoking initiation was relevant for non-biological parents, such as step-parents, a finding that is supported by behavior modeling and the social learning theory (Fidler, West, van Jaarsveld, Jarvis, & Wardle, 2007). More specifically, parental smoking status has been found to predict the transition from never smoking to trying smoking, as well as from trying smoking to daily smoking (Otten, Engels, Van de Ven, & Bricker, 2007). There also appears to be a “dose-response” effect, as moving from neither parents smoking, to one, to both parents smoking increases the odds that an adolescent will smoke (Peterson et al., 2006; Otten et al., 2007; Jackson & Henriksen, 1997).

It is important to note that some studies show an association between parental smoking and both adolescent and subsequent adult smoking, while others may support one and not the other. For instance, Paul et al. (2008) found that parental smoking during

childhood was a significant predictor of current adult smoking, but not of experimentation during childhood. This finding is supported by the aforementioned hypothesis that both individual and contextual factors influence adolescent smoking transitions. It is also supported by the notion that the effects of parental modeling may be a delayed phenomenon. Furthermore, the influence exerted by these factors can differ depending on the age of the adolescent or the smoking stages within which they are transitioning (Bricker et al., 2006).

Much of the current research examining the influence of parental smoking status on adolescent smoking behavior analyzes the impact of one or both parents compared to neither parent smoking. Few specify or test the gender of the parent smoking with presence of adolescent smoking. Paterson et al. (2006) found that parental smoking was significantly associated with adolescent smoking, but that neither parent exerted more influence than the other. The risk of smoking has also been found to be significantly higher for girls when a mother smoked, but not when the father smoked (Vink, Willemsen & Boomsma, 2003). A more recent study found a significant interaction between male smoking and maternal smoking status (Paul et al., 2008). The relative risk of becoming a smoker as an adult was higher among males whose mothers smoked; this risk was higher than when fathers only or both parents smoked.

Adolescent smoking has been characterized as a series of transitions or trajectories, not necessarily linear, through distinct stages of smoking (Bricker et al., 2006; Tucker, Ellickson, & Klein, 2003; Colder, Balanda, & Mayhew, 2001). The transitions have been described as a level of never trying, trying smoking, monthly smoking, and daily smoking (Bricker et al., 2007). Others have characterized the stages as abstinent, sporadic, occasional, daily, escalating, and intermittent; where escalating refers to an increasing

number of cigarettes smoked per day and intermittent refers to those who were making quit-attempts, but were not abstinent (Wellman et al., 2004). The latter model is a more concise description of the movement an adolescent may experience within an ever-changing framework of smoking behaviors. Mayhew and colleagues (Mayhew, Flay, & Mott, 2000) also identified distinct stages of adolescent smoking in which the nonsmoking stage is subdivided into two stages differentiated by whether the adolescent has no intention to smoke or is contemplating smoking. In addition to transitions or levels of smoking, levels of influence have also been used to explain the factors that may impact an adolescent trying or progressing in his/her smoking behavior (Turner, Mermelstein, & Flay, 2004). The first level of influence includes individual variables, such as genetics and biological factors. The second level consists of the adolescent's immediate social surroundings, which can include his family and peers and the influence exerted by their behavior, attitudes, and beliefs. The final level of influence is comprised of the environmental and cultural surroundings, such as media and public policy that contribute to an adolescent's exposure to smoking. Each level of influence interacts in complex ways with the others, which ultimately affect intentions to smoke or abstain (Turner et al., 2004).

Several reviews have examined the social and behavioral theories that have been used to explain adolescent smoking (Turner et al., 2004; Carvajal, Hanson, Downing, Coyle, & Pederson, 2004; Collins & Ellickson, 2004). Collins and Ellickson (2004) considered four theories in their review of adolescent smoking literature: Theory of Planned Behavior, Social Learning and Social Cognitive theories, Social Control and Social Development theories, and finally, Problem Behavior Theory. As in other reviews, the authors found that by integrating the four theories, they were able to more accurately explain adolescent

smoking behavior and that differing characteristics of the theories were more applicable at different periods of childhood and adolescence.

The central theme in the Theory of Planned Behavior is that the intention or willingness to smoke determines the actual behavior (Ajzen & Fishbein, 1980). Social learning theories, suggest that behavior is learned from role models, as well as past experience, with the perception of positive results for the behavior (Collins & Ellickson, 2004). Social control and development theories maintain the hypothesis that bonds to social institutions such as family, school, and etc, prevent deviant behavior, such as smoking. Several studies support this theory, finding that adolescents with weak bonds are more likely to initiate smoking (Tilson, McBride, Lipkus, & Catalano, 2004; Battistich & Hom, 1997). Finally, Problem Behavior Theory is described as a “constellation” of deviant behaviors that influence each other in a reciprocal manner (Jessor, Donovan, & Widmer, 1980). As such, smoking has been found to predict deviant behaviors (e.g., risk-taking and substance use), while other studies have noted that the behaviors mentioned previously are predictive of cigarette smoking (Ellickson, 2001).

Maldives global youth tobacco survey in 2004 shows that 29% of students had ever smoked. And from these 38.5% are boys, 11.9% usually smoked at home. 69.5% of students buy cigarettes in a store. 50.2% students are exposed to smoke in their home. 45.0% have one or more parent who smokes (GYTS, 2004).

Cancer trends progress report -2009/2010 publish by U.S. National Institute of Health said that, most of the teenagers experience smoking before the age of 18 and become addicted in adolescent age. And the risk of addiction increase, if the person starts smoking in younger age.

According to statistics on smoking, in England, 2009, men have high prevalence than women. (22% compared with 19%). WHO report published in 2012 revealed that men have four times higher prevalence than women globally (48% versus 12%). Recent findings of the Global Youth Tobacco Survey, however, show that young girls are smoking almost as much as young boys and that girls and boys are using non-cigarette tobacco products such as spit tobacco, bidis, and water pipes at similar rates. Nearly 24% of all young smokers started by the age of ten, when they are far too young to understand the risks of tobacco use and addiction or to resist social expectations (WHO, 2012). But the survey conducted among the employees of the City of Helsinki in 2000 and 2001 found that prevalence of smoking has decreased among men, whereas among women smoking has remained at the same level or even increased (Mikko Laaksonen, 2005).

Students who perform well in school are having less possibility to smoke. (Alexandre J. S. Morin<sup>1</sup>, 2012). Smoking and GPA analysis done in California State University San Marcos found that the grade point average for smoking students is lower than the non-smoking students.

A five years cohort study done among 5863 students from 36 schools in South London, shown that 48.5% of students living in step-families smoked, and there is no much difference in parents who smoke in non-step-families. (Jennifer A. Fidler, 2007) Children of smokers were more likely to smoke and reported more positive attitudes toward smoking compared to children of non-smokers. Parental smoking not only directly influences behavior; it also moderates their children's attitudes towards smoking and thereby impacts their children's behavior. (Anna V Wilkinson<sup>1\*</sup>, Sanjay Shete<sup>1</sup> and Alexander V

Prokhorov2, 2008). Students, who have at least one smoking parent have more likely chance to be smokers themselves, compare to students whose parents were not smoking (J.Brown, 2008).

### **2.3 Methodological Issues**

Interventions aimed at preventing youth smoking need to address the general factors that compel young people to smoke cigarettes for the first time. Parental smoking provides a means by which adolescents may perceive smoking in a positive context, the modeling of an acceptable and beneficial behavior. Exposure to positive smoking models may increase the probability that an adolescent accepts a cigarette when one is offered or available. Large numbers of studies shown parental smoking have strong relation with adolescent smoking initiation and become a regular smoker. But there is no such study in Maldives contest. The present study seeks to expand examining the effect and strength of parental smoking to initiate smoking among adolescents.

## CHAPTER 3

### METHODOLOGY

#### 3.1 Research Design

A Cross sectional study was carried out.

#### 3.2 Population and Sample

Target population was adolescents' age from 13 to 24 year's population of L. Maavah, Maamendhoo and Gan. From each island 5% of target populations were selected as a sample size. Simple random sampling was used to select participants. Laamu atoll was taken because it was convenient and due to lack of time and budget.

##### **Maavah:**

Adolescent population Age between 13 to 24 = 470

5% of the target population = 23.5

Sample size was adjusted to 25

##### **Gan:**

Adolescent population Age between 13 to 24 = 1087

5% of the target population = 54.35

Sample size was adjusted to 56

**Maamendhoo:**

Adolascet population Age between 13 to 24 = 352

5% of the target population = 17.6

Sample size was adjusted to 19

Total Sample size = 100

**3.3 Instrumentation**

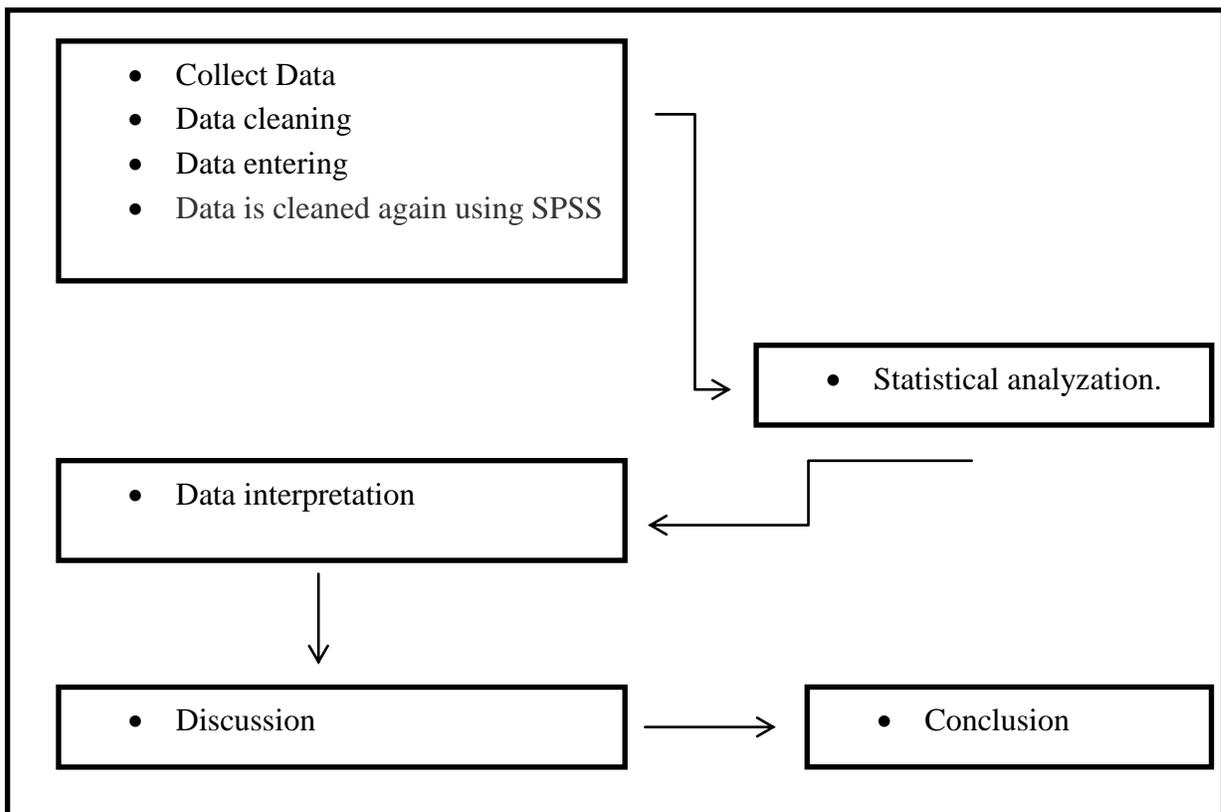
Self-administered anonymous questionnaire was designed to collect data from the participants. Pre-testing and necessary changes was completed before starting the actual data collection. Total 10 questioner was filled among the target population of Maavah. Questioner contains 2 parts. Part one contains demographic information, social characteristics, and environmental characteristics. Part two contains questions on attitudes and views. This section included 8 questions. Multiple choices were given in this part. There were 5 options in each given statement. Participants have to select only one choice in each question. All questions were positive attitudes towards smoking. Questionnaire is attached in the annex

**3.4 Data collection Procedures**

To collect data, discussed and submitted supporting documents to relevant authorities in selected islands. After this, arrangements were made with health facilities to have health center staff to conduct data collection. This person was explained the nature of the study and administration procedures. After completing this process a pretested Self-

administered anonymous questionnaire was provided to each participant. Participants were explained the purpose, benefits and their privileges of the study. All participants were provided a thorough explanation that their responses were completely anonymous and confidential. After obtaining verbal consent from the participants and their parents, (if Participant is below 18 years old) participants were advised to fill the form themselves and hand it over to the health worker who is collecting data.

### 3.5 Framework for Data Analysis



**Figure 3.1:** Framework for Data Analysis

Data were analyzed by SPSS 14 and Microsoft Excel 2010 and presented in the mean of frequency tables, graph etc.

## CHAPTER 4

### DATA ANALYSIS AND RESULTS

The aim of this research was to conclude the associations between parental smoking and adolescent smoking, age of initiation, become a regular smoker and attitudes toward smoking.

The study result was collected from 100 questioners that were analyzed by SPSS 14 and Microsoft Excel 2010. The frequencies, prevalence and the percentage distribution were described.

**Table 1: Distribution of Participants by gender.**

<b>Variable</b>	<b>Frequency N=100</b>	<b>Percent</b>
Male	62	62.0
Female	38	38.0

According to table 1, (N =100), 62% of the participants were male and 38% were female.

**Table 2:** Distribution of Participants by Age.

<b>Variable</b>	<b>Frequency N=100</b>	<b>Percent</b>
15years	2	2.0
16years	5	5.0
17years	9	9.0
18years	14	14.0
19years	11	11.0
20years	23	23.0
21years	12	12.0
22years	9	9.0
23years	14	14.0
24years	1	1.0
Mean	19.80	
Median	20.00	

Looking to the age of participants, 2% were age of 15 years old, 5% were 16 years old, 9% were 17 years old, 14% were 18 years old, 11% were 19 years old, 23% were 20 years old, 12% were 21 years old, 9% were 22 years old 14% were 23 years old and 1% was 24 years old. The mean age of participants was 19.80, medium age was 20.

**Table 3:** Parent's Marital status and Immediate Parents

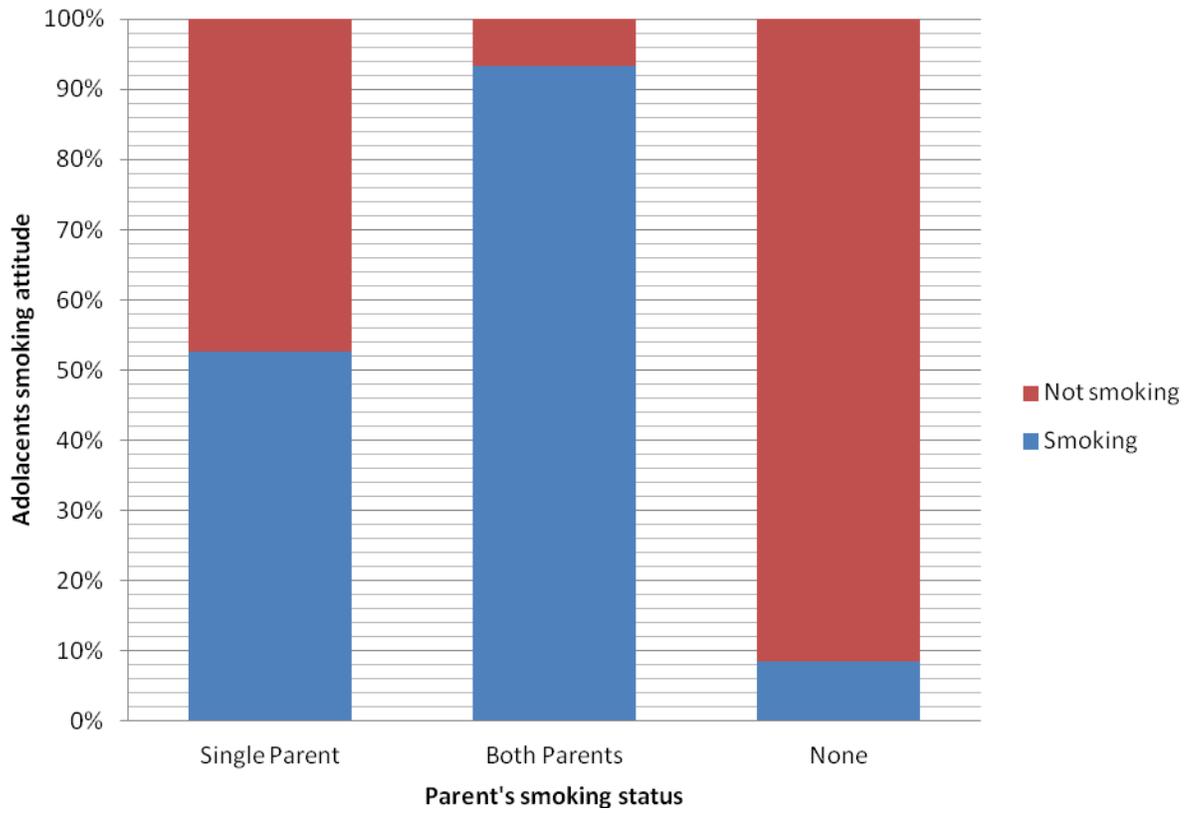
<b>Variable</b>	<b>Frequency N=100</b>	<b>Percent</b>
<b>Parent's Marital status</b>		
Living together	78	78.0
Separated	9	9.0
Mother was died	1	1.0
Father was died	10	10.0
Both parents were died	2	2.0
<b>Immediate guardians</b>		
Parents	95	95.0
Cousin	3	3.0
Friend	2	2.0

According to table 3, it was found 78% of participant's parents were living together, 9% separated, 1% mother was died, 10% father was died and 2% of participant's both parents were died. Focusing the accommodation, 95% participants were staying with their parents, 3% were staying with cousin and 2% were staying with friend.

**Table 4:** Distribution of smoking behavior among participants and their parents

<b>Variable</b>	<b>Frequency N=100</b>	<b>Percent</b>
<b>Participants ever smoked</b>		
Yes	38	38
No	62	62
<b>Age of initiation (N=38)</b>		
9	4	10.5
10	3	7.9
11	2	5.3
12	5	13.2
13	5	13.2
14	8	21.1
15	5	13.2
16	1	2.6
17	1	2.6
18	2	5.3
19	2	5.3
<b>Parents smoking patterns.</b>		
Father	37	37.0
Mother	1	1.0
Both parents	15	15.0
None of above	47	47.0

According to table 4, 38% of participants tried smoking and from this 55.3% were known as current smoker. From those who had tried smoking, age 14 was the most frequent age of initiation. Regarding the parent's smoking, it was shown 37% of adolescent's fathers only smoke, mothers only smoke 1%, both parents smoke 15%, and 47% of adolescent's parents did not smoke at all.



**Figure 4.1:** Relationship between adolescent’s smoking habits and parents smoking.

Figure 3 concluded that number of smoking parent’s affect adolescent smoking. More than 90% adolescents smoked if both of their parents were smoking. And adolescent smoking reduced less than 10% , if there no parent smoked.

**Table 5:** Crosstabulation of current smoking habit and age of initiation

Age of initiation	Current smoking habit		Total
	Yes N (%)	No N (%)	
9	2 (50.0)	2 (50.0)	4
10	3 (100.0)	0 (0.0)	3
11	2 (100.0)	0 (0.0)	2
12	2 (40.0)	3 (60.0)	5
13	5 (100.0)	0 (0.0)	5
14	6 (75.0)	2 (25.0)	8
15	0 (0.0)	5 (100.0)	5
16	0 (0.0)	1 (100.0)	1
17	1 (100.0)	0 (0.0)	1
18	0 (0.0)	2 (100.0)	2
19	0 (0.0)	2 (100.0)	2

According to table 5, the highest number of current smokers initiates smoking before the age of 14 years old, among this group 73.7% were current smokers. 26.3% quit smoking among this group. Looking at 14 years and above, 63.2% quit smoking, and only 36.8% were current smoker among this group.

**Table 6:** Causes to initiate smoking

Variable	Frequency N=38	Percent
Imitating Parents	2	5.3
Stress	5	13.2
Family Problem	1	2.6
For experience	21	55.3
Persuasion of Friends	1	2.6
Bored	4	10.5
Others	4	10.5

According to table 6, adolescents began to smoke, because they wanted to get experience smoking (55.3%); they started smoking due to stress (13.2%); bored (10.5%); imitating parents (5.3%); due to family problem (2.6%); persuasion of friends (2.6%) and due to other reason (10.5%).

**Table 7:** Distribution of participants toward current smoking

<b>Variable</b>	<b>Frequency N=21</b>	<b>Percent</b>
Addiction Feeling	12	57.1
Habitual	9	42.9

According to table 7, most participants, however, could not quit smoking because of the addictive feeling (57.1%); remaining 42.9% smoked out of habit.

**Table 8:** Reasons to quit smoking

<b>Variable</b>	<b>Frequency N=17</b>	<b>Percent</b>
Parents	5	29.4
Relatives	2	11.8
Difficult of buying	2	11.8
Knowing health impact	6	35.3
Others	2	11.8

According to table 8, most of the adolescent quitted smoking (35.5%) due to knowing the health impact of smoking. 29.4% quitted smoking due to parents, 11.8% quitted due to relatives, difficulties of buying and other reasons.

**Table 9:** Number of years the participants has quitted smoking

Variable	Frequency N=17	Percent
1year	6	35.3
2years	7	41.2
6years	2	11.8
10years	2	11.8

According to table 9 and 10; 35.3% were quite smoking by knowing the health impact, due to parents (29.4%); due to relative (11.8%); difficulty of buying (11.8%). Most participants had quitted smoking 2 years back (41.2%), one year ago (35.3%), 6 years and 10 years (11.8%).

**Table 10:** Crosstabulation of gender and age of initiation

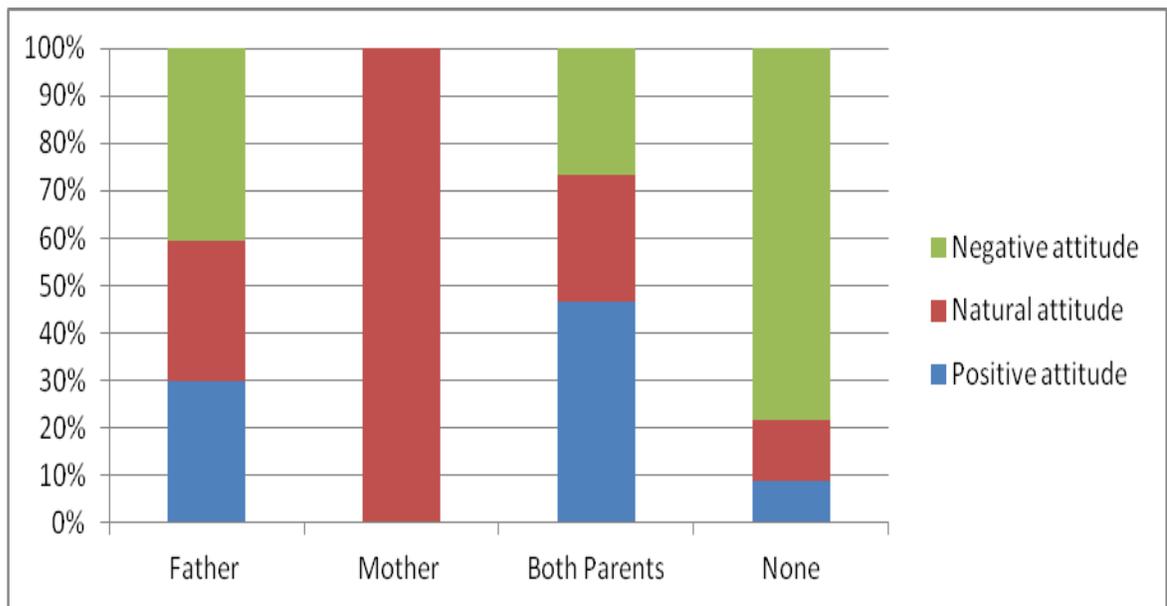
Gender	Age of initiation											Total
	9	10	11	12	13	14	15	16	17	18	19	
Male	4	2	2	4	3	6	5	1	1	2	2	32
Femal e	0	1	0	1	2	2	0	0	0	0	0	6
Total	4	3	2	5	5	8	5	1	1	2	2	38

Table 10 revealed male initiation was higher than female in observed age groups. And males were initiating smoking earlier than women. At the same time smoking prevalence of female adolescents are very much low compare to male. Most frequently female initiation were between 13 and 14 years old. Also with males too the majority of males started initiation of smoking at the age of 14.

**Table 11:** Cross tabulation of adolescents' attitudes according to parent's smoking history.

Parent's smoking history	Current smoking habit			Total
	Positive N (%)	Natural N (%)	Negative N (%)	
Father	11 (29.7)	11 (29.7)	15 (40.6)	37
Mother	0 (0.0)	1 (100.0)	0 (0.0)	1
Both Parents	7 (46.7)	4 (26.7)	4 (26.7)	15
None	4 (8.5)	6 (12.8)	36 (76.6)	47

**title**



**Figur 4.2:** Adolescents' attitudes toward smoking according to parent's smoking history.

Table 11 and figure 4.2 shows the participant's attitudes toward smoking according to their parent's smoking history. Adolescents with both parents smoking have highest proportion of positive attitudes toward smoking. Meanwhile participants without smoking parents have less positive attitude and highest negative attitudes toward smoking.

**Table 12:** Association between Parental smoking and Adolescent smoking.

Variable	Adolescent Smoking			Crude OR	95% CI	X <sup>2</sup>	p-value
	N	No (%)	Yes (%)				
Single Parent Smoking						5.569	0.018*
Yes	38	47.4	52.6	2.716	1.172-6.294		
No	62	71.0	29.0	1			
Both Parents smoke						22.934	<0.001*
Yes	15	6.7	93.3	11.296	4.432-285.681		
No	85	71.8	28.2	1			
Neither parent smokes						32.732	<0.001*
Yes	47	91.5	8.5	1	0.16-0.167		
No	53	35.8	64.2	206.796			

**Table 13:** Multiple logistic regression model of parental smoking

Independent variable	Adjusted OR	95 % CI		P-value
		Lower	Upper	
Single Parent	11.944	3.575	39.908	<0.001*
Both Parent	150.500	15.505	1460.182	<0.001*
Neither parent	1			

According to table 12 and 13, regression shown that presence of parental smoking is significantly associated with adolescent smoking. The positive estimates indicate that

adolescent smoking is higher when both parents smoke if it is compared to single parent or neither parent smoke.

Using neither parent smoking as the reference category both, single parents smoking and both parents smoking were significant. It was shown that single parent smoking has 11.944 times higher chances if compared to neither parents smoke. And if both parents are smoking, the chances increases to 150. 500 was when compared to when neither parents smoked.

## CHAPTER 5

### DISCUSSION AND CONCLUSION

#### 5.1 Summary of Main Findings

The objectives of this study were to identify relationship between parental smoking and adolescent smoking in the means of attitudes toward smoking, initiation, become a regular smoker and prevalence. This research revealed that smoking attitudes of parents affect the attitudes, prevalence and there perception.

The result of research showed 38% of participants were tried smoking and from this 55.3% were known as current smokers. 14 years old was the most frequent age of initiation. And furthermore it was shown 37% of adolescent's farther only smoke, mother only smoke 1%, both parents smoke 15%, and 47% of adolescent's parents were not smoking. From ever tried category, 73.7% were become a current smokers and 26.3% were quitted smoking. It was found that more than 50% of the adolescent began to smoke as an experience.

Among current smokers, 57.1 could not quit smoking because of the addictive feeling; remaining 42.9% were due to the habitual. Most of the adolescent quitted smoking by knowing the health impact of smoking and perent was known as second cause.

The result of the research concluded that Parental smoking had ( $p < 0.001$ ) association between adolescent smoking. It was found that single parental smoking increases the risk of adolescent smoking by 11 times and both parents by 150 times as it compared to neither parents smoke. And adolescents with both parents smoking have highest proportion of

positive attitudes toward smoking. In the meantime participants without smoking parents have less positive attitude and highest negative attitudes toward smoking.

## **5.2 Discussion**

The research result revealed male smoked more than the female. Result shown 15.9% were female and 84.1% were male. Similar result was documented in Maldives global youth tobacco surveys, carried out in 2004(GYTS, 2004). it was also found that male initiation was higher than female in observed age groups. And also males were initiating smoking earlier than women. However,, Tyas and Pederson (1998) found out that parental smoking may be more influential for girls, because a greater number of the studies they reviewed found an effect for girls than for boys. The difference in finding could be that in Maldives only recently women had started smoking publicly.

The study result revealed adolescents are more likely to smoke, if one or both parents smoke compare to if neither parents smoke. More than 90% adolescents smoked if both parents were smoking. The results show that adolescent smoking reduced less than 10%, if there were no smoking parent. This finding was similar to results identified by Tyas and Pederson,(1998), (Buller et al., 2003), Kodl & Mermelstein (2004), Sasco and Kleihues (1999), Bricker et al., (2006) Fleming, Kim, Harachi, & Catalano, (2002) Peterson et al.,(2006).

Meanwhile parental smoking showed a tendency to develop positive attitudes toward smoking. Adolescents with both parents smoking have highest proportion of positive attitudes toward smoking. Meanwhile participants without smoking parents have less positive attitude and highest negative attitudes toward smoking.

Most of current adolescent's smokers' initiates smoking before the age of 14 years old, And among this group 73.7% were current smokers. 26.3% were quitted smoking. If it compare to above 14years, 63.2% quitted smoking, and only 36.8% were current smoker among this group. It revealed that if a child start smoking earlier, increase the probability of become regular smoker. Flay and Richardson found out that parental smoking is differently influential at certain points in the youth smoking trajectory. In one study, parental smoking significantly predicted trial, experimentation and regular use, with the strongest effect for regular use (Flay, & Richardson, 1998). It is also predicted that the transition happens from experimental to regular smoking but not from the trial to experimentation.

Regarding the relationship between parental smoking and current smoking, results revealed that current adolescent smokers are more likely to have one or two smoking parent compared to non-smoking adolescent. This finding confirmed similar results found in the U.S. by Fleming et al., Farkas et al.,(2002) and Peterson et al,(2006). These authors found that parental smoking significantly predicted current adolescent smoking, and that the odds of being smoker increased with the number of parents smoked.

### **5.3 Implications**

- Non- smoking family concept should be promoted.
- Increase the knowledge and awareness regarding social learning theory.
- Develop and advocate good example of role model for adolescents.
- Increase the health impact of smoking among adolescents.
- Ban smoking in all the public areas.

## **5.4 Limitations of the Study**

Studies of this nature present several limitations itself. At the beginning cross-sectional analysis permits conclusion to drawn association between parental smoking and adolescent smoking.

The survey relies on self-administered anonymous questioner; participants might not give real information regarding smoking attitudes of them or their parents. They may hide or over act.

If we consider how the study was conducted and how the sample was selected for this study, due to lack of time, a convenient location was selected as a study area (but from this area samples were selected randomly). For the same reason limited number of sample were also selected. This may show the magnitude of the result larger than the actual size. To have a more reliable and valid result, a larger sample is necessary.

## **5.5 Directions for Future Research**

More research is needed to determine if parental smoking status status is indeed a predictor for adolescent smoking initiation. Rigorous analysis, such as prospective examinations, that takes into account the predictive factors of peer smoking, exposure to advertisements, and easily accessible are essential to strengthen the hypothesis that parental smoking is significant. Sample population should cover the whole country, for the generalization of result for the total and sample size need to be increased to get more reliable

and valid results. Furthermore choosing case control or cohort study can go more depth of understanding about the situation as these are more reliable study types.

## **5.6 Conclusions**

Parental smoking status significantly influences the adolescent smoking; this conclusion has been reached with support of several researches conducted in different countries. Although, this study cannot be generalized, this study also found an association between parental smoking and adolescent smoking status. It appears that parental smoking influence adolescent experimentation with cigarettes, as well as likelihood that an adolescent will become a smoker. And it is recommended that public health organizations should provide education and promote cessation among adults, especially parents and educate the parents on the impact they are having on their children.

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## APPENDICES

### APPENDICE A

#### QUESTIONEAR

Questions		Responses	
Q1	Sex	Male	1
		Female	2
Q2	Date of birth?		
Q3	Whom do you stay with?	Parents	1
		Cousin	2
		Friend	3
		Others (specify)	4
Q4	Parent's marital status	Living together	1
		Separated	2
		Mother was died	3
		Father was died	4
		Parents were died	5
		Others (specify)	6
Q5	Who is smoking among your close persons?	Father	1
		Mother	2
		Both	3
		Niether	4
Q6	Did you ever smoke?	Yes	1
		No	2 (if no go to



		It is expensive	4
		Knowing health impact	5
		Others (specify)	6

Part 2: Please give your opinion for the following statements. Tick the answer.

No	Statement	Strongly agree	Agree	Neutral	<i>Disagree</i>	Strongly disagree
1	Smoking reduce stress & anxiety					
2	Smoking gives fresh mind					
3	Smoking gain confidence					
4	Smoking is fun					
5	Smoking can encourage the creativeness					
6	Smoking makes me feel an adult					
7	Smoking helps to lose weight					
8	Smoking helps people get a rapport with friends					

## APPENDIX B

### SCORING PROCEDURE FOR 2<sup>ND</sup> PART OF THE QUESTIONNAIRE

Choices	points
Strongly agreed	5
Agreed	4
Natural	3
Disagree	2
Strongly disagree	1

Total points were between 8-40 points and divided by number of questions, it results was true score range which was 1-5 points. These points were divided in to 3 levels as follows:

- Points between 3.51 to 5: a high level score defines as Positive attitudes towards smoking.
- Points between 2.51 to 3.5: a medium level score defines as natural attitudes towards smoking.
- Points between 1 to 2.5: a low level score defines as Negative attitudes towards smoking.

## **APPENDIIX C**

### **COVER LETTER**

Date:

Dear Participant:

My name is Abdul Hameed Ali, and I am a student at Faculty of Health Sciences. For my final project, I am doing a research on “Association between parental smoking and adolescent smoking”.

For the study I was selected adolescent population of L.Maavah, L.Maamendhoo, and L.Gan as a study population. Because you have been selected as a participant, I am inviting you to participate in this research by completing questioner attached with this letter. The questioner will require approximately 15 minute to complete. Participation is strictly voluntary and you may refuse to participate at any time. If you choose to participate, do not write your name on the questionnaire. I do not need to know who you are and your responses will not be identified with you personally. And please answer all the questions as honestly as possible. Anything you say in questioner will not influence you. Finding of research will only use study purpose.

Thank you for taking the time to assist me in my educational activities. The data collected will provide useful information regarding association between parental smoking and adolescent smoking.

Sincerely.

## **APPENDIIX D**

### **CONSENT FORM**

I have read and understood the information about this research and all my questions have been answered to my satisfaction. I understand that I am free to ask further information at any time and I am free to withdraw from the research at any time without any disadvantage.

Therefore I agreed to participate (Myself/ My child) in this research

Signature:

Name:

National Identity Card No:

Date: