SMOKING BEHAVIOURS, SELF-APPRECIATIONS AND THE ROLE OF MILIEU IN PREDICTING CIGARETTE USE AMONG SAU STUDENTS

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JUNE, 2020

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BY

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REGISTRATION NO. 13-05638

A Thesis

Submitted to the, Dept. of Agricultural Statistics
Sher-e-Bangla Agricultural University, Dhaka,
In partial fulfillment of the requirements
for the degree of

MASTER OF SCIENCE

IN

AGRICULTURAL STATISTICS

SEMESTER: JANUARY- JUNE, 2020

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CERTIFICATE

This is to certify that the thesis entitled, **"SMOKING BEHAVIOURS, SELF-APPRECIATIONS AND THE ROLE OF MILIEU IN PREDICTING CIGARETTE USE AMONG SAU STUDENTS"** submitted to the Department of Agricultural Statistics, Sher-e-Bangla Agricultural University, Dhaka in partial fulfillment of the requirements for the degree of **Master of Science in Agricultural Statistics,** embodies the result of a piece of bona fide research work carried out by **MD. ABDUL AWAL** Registration No. **13-05638** under my supervision and guidance. No part of the thesis has been submitted for any other degree or diploma.

I further certify that such help or source of information, received during the course of this investigation has duly been acknowledged.

Dated: June,2020

Place: Dhaka, Bangladesh

Prof. Zulfikar Ahmed Reza
Supervisor

&

Chairman
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Dedicated
To
My Beloved Parents

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ABSTRACT

Smoking is the most widely recognized method for expanding tobacco and tobacco is the most commonly known substance smoked. In Bangladesh, the number of tobacco smokers are increasing rapidly because of the availability of cheap tobacco products, lack of strong tobacco control regulations, and weak enforcement of existing regulations. University students constitute a high risk group for engaging in risky behaviors, such as smoking and illicit substance use. These students are at high risk of initiating and continuing smoking as they are likely to be exposed to peers who smoke. At the same time, they face social, emotional, and educational challenges when they enter the university settings. This thesis is based on the premise that a broader understanding of the behaviors and self- perceptions of university students with respect to tobacco use. It is also based on the premise that investigation into the role of social connectedness in predicting student smoking behaviors. Development of the Sher-e-Bangla Agricultural University Tobacco Use Survey was guided by a comprehensive review of previous empirical and theoretical work in this area as well as by previously developed instruments. All analysis for this study were conducted using SPSS Version 26. The findings of our study reveal that tobacco smoking is initiated by students during the early adolescent years and continues throughout the university years. The demographic analysis of the study shows there only 17.55% nonsmoker exists the rest of them are smoker, of which 69.78% students were daily smokers, 9.97% students were occasional smokers and 2.7% students were experimental smokers. The study results also found that an estimated 9.91% made a negative change in their self-perceived smoking status, and 4.33% made a positive change in their self-perceived smoking status. The results urge policy makers to initiate anti-smoking programs to prevent the smoking habit and also necessary to create a help line for smokers to quit smoking. It is also recommended to conduct anti-smoking campaign among the parents and increase their awareness level.

ACKNOWLEDGEMENT

First of all, I would like to thank Almighty Allah, the most merciful and kindhearted, the most gracious and beneficent to Whom every praise is due and to His prophet Mohammad (SM) Who is forever a torch of knowledge and guidance for humanity as a whole with who's delighting the present and endeavour beautiful. All praises are due to the omnipotent, omnipresent and omniscient Allah, who enabled me to pursue my higher studies in Agricultural Statistics and to complete the research work and this thesis successfully for the degree of Master of Science in Agricultural Statistics.

Now, I would like to pay ineffable gratitude to my **Supervisor Professor Zulfikar Ahmed Reza**, Chairman, Department of Agricultural Statistics, Sher-e-Bangla Agricultural University, Dhaka-1207, for his ever inspiring guidance, scholarly comments and constructive suggestions throughout the research work and preparation of thesis. Without his valuable intellectual advice, precise constructive comments and help this work would never have come to life.

I am especially grateful to my respected **Co-supervisor, Hasan Mahammad Sammy,** Assistant Professor, Department of Agricultural Statistics, Sher-e-Bangla Agricultural University, Dhaka-1207, for his proper guidance, inspiring co-operation and encouragement during the research work and preparation of thesis.

I am highly grateful to all of my honorable teachers, for their valuable teaching, direct and indirect advice, encouragement and co-operation during the whole study period.

I would like to express my gratitude to 327 students who actively participate in this survey and most importantly help me to understand their initiatives and activities related to Tobacco use in general and in particular. They provided important data upon which different models were employed to evaluate the stint of smoking activities. Their invaluable cooperation during my data collection process is highly acknowledged.

I would like to express my sincere appreciation to my dear friends, seniors and juniors for their help during data collection process.

I found no words to thank my parents and family members for their never-ending affection and continuous support, their sacrifice and untiring efforts to fulfill my dream of higher education. They were constant source of inspiration in the critical moments of my studies.

November 2020

Md. Abdul Awal

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CHAPTER 1
INTRODUCTION

1.1 Introduction

As the absolute most preventable reason for death around the world, tobacco use brings about the death of almost 6 million individuals for every year. If current trends continue, tobacco will slaughter in excess of 8 million individuals for each year by 2030 with the vast majority of the tobacco-related dreariness and mortality happening disproportionately in low and middle income countries (WHO, 2011).

Smoking is the most widely recognized method for expanding tobacco and tobacco is the most commonly known substance smoked. Tobacco utilization in Bangladesh is expanding quickly, particularly among the adolescent and poor people. It has been calculated that nearly a third of the world's population, aged 15 years above, are smokers (Fawibe and Shittu, 2011) and smoking prevalence is on the rise, especially in the developing countries (CDCP, 2011). Huge number of youngsters are starting smoking at prior ages, which is a significant general wellbeing concern (Koushki and Bustan, 2006).

University students constitute a high risk group for engaging in risky behaviors, such as smoking and illicit substance use (Farajat*et al.*, 2011 and Poscia*et al.*, 2015). These students are at high risk of initiating and continuing smoking as they are likely to be exposed to peers who smoke. At the same time, they face social, emotional, and educational challenges when they enter the university settings (Wangeri*et al.*, 2012; Nassar, 2003; Mandil, 2007 and Almutairi, 2010). This predilection toward risk taking behaviors has been associated with the underdevelopment of the orbital-frontal cortex (Farajat*et al.*, 2011). Moreover, identity development is a major concern for the youth, and young people are more susceptible to peer pressure (Mandil, 2007). The Global Youth Tobacco Survey (GYTS), conducted in 131 countries surveyed 750,000 college students, demonstrated that smoking starts as early as at 13–15 years of age. This survey found that approximately 9% of students were current cigarette smokers, while 11% currently used tobacco products other than cigarettes (Warren *et al.*, 2006). Another survey among undergraduate medical students at Addis Ababa University reported a lifetime smoking prevalence of 9% and a current smoking prevalence of

1.8% (Deressa and Azazh, 2011). A survey conducted among university students in southwest Nigeria showed that the prevalence of ever smokers was 22.0%, while the prevalence of current smokers was 13.7% (Babatunde *et al.*, 2012). Similarly, a study conducted among university students in Cameroon reported an ever smoking prevalence of 30.1% and with a current smoking prevalence of 6.3% (Mbatchou*et al.*, 2013). Another study among young adults in Nepal showed that 84.3% of smokers believed that tobacco use is harmful to their health (Aryal and Bhatta, 2015).

In Bangladesh, the numbers of tobacco smokers are increasing rapidly because of the availability of cheap tobacco products, lack of strong tobacco control regulations, and weak enforcement of existing regulations. The Global Adult Tobacco Survey conducted by WHO reported that Bangladesh is one of the top ten countries in the world with high tobacco use (both smoking and smokeless forms) with a prevalence of 43.3% among adults (41.3 million), with 44.7% of men and 1.5% of women engaging in tobacco smoking (WHO, 2009). The Global Adult Tobacco Survey conducted by WHO reported that Bangladesh is one of the top countries in the world with high tobacco use (both smoking and smokeless forms) with a prevalence of 35.3% among adults (37.8 million), with 46.0% of men and 25.2% of women engaging in tobacco smoking (WHO, 2017). A study based on demographic and health survey data reported that the prevalence of tobacco smoking among men in Bangladesh is 60% (Sreeramareddy *et al.*, 2014). Another study among male university students in 2009 stated that 36.1% students smoked tobacco (Kamal *et al.*, 2011). Among fourth-year dental students, the prevalence of cigarette smoking was reported to be 49.5% and 1.7% in males and females, respectively (Chowdhury and Croucher, 2008).

An increasing trend of tobacco smoking is anticipated to occur among university students and this could be related to perceived alleviation of stress, life problems, peer pressure, social acceptance, class history of smoking, lower educational level of parents, and the desire to attain higher societal class. Smoking among students in Bangladesh has been poorly investigated and our initial hypothesis was that it is possible that university students may be lacking knowledge on the link between smoking and adverse health effects.

1.2 Aims and Objectives

This thesis is based on the premise that a broader understanding of the behaviors and self- perceptions of university students with respect to tobacco use. It is also based on the premise that investigation into the role of social connectedness in predicting student smoking behaviors. Finally, this thesis is based on the argument that conventional measures of smoking status may not be appropriate for the emerging adult population and alternative measures need to be explored.

Therefore, the primary objectives of this study were to:

(1) Identify the prevalence of smoking and patterns of cigarette use among the students of the Sher-e-Bangla Agricultural University (SAU).

(2) Investigate the role of social connectedness in predicting student's smoking behaviors and

(3) Explore the relation of student smoking status as determined by a behavioral measure and self-reported smoking status.

1.3 Significance of the study

The tobacco epidemic is one of the biggest public health threats the world is facing today. It kills nearly seven million people a year. Tobacco kills up to half of its users and causes premature mortality and morbidity, contributes to health inequalities and exacerbates poverty. Tobacco products remain, however, very affordable in Bangladesh. To increase the price of and reduce demand for tobacco products, WHO along with partners is working closely with the National Board of Revenue (NBR) to strengthen the tobacco tax system in Bangladesh.

However, the Tobacco Control law prohibits smoking in selected public places and on public transport. The law also imposes a ban on advertisement and promotion of tobacco products, and sponsorship of events by the tobacco industry. As part of the legislation, tobacco sale to and by minors is banned. With technical support from WHO, printing of pictorial health warnings on 50% on both the front and back of tobacco packaging came into effect in 2016.

WHO works closely with the National Tobacco Control Cell (NTCC) of the Ministry of Health and Family Welfare (MOHFW) to train authorized officers to enforce

tobacco control legislation, and to organize mobile courts. In 2017, WHO supported NTCC to train 128 Sanitary Inspectors (SI) working at Upazila level, on enforcement of tobacco control law. Sanitary inspectors, as one of the authorized officers, are prosecuting officers and play an important role to enforce the tobacco control law, especially through 'mobile courts'. Moreover, the law empowers authorized officers to enforce some sections of the tobacco control law themselves.

Civil administration regularly operates mobile court to enforce the law. In October 2017, WHO also supported NTCC to facilitate the operation of mobile courts, one in each of 64 districts. The courts fined violators of the tobacco control law and confiscated and destroyed illicit tobacco products worth BDT 1500000. The initiative engaged government officials, tobacco control taskforce committee members, the community, and NGOs, and received wide coverage in the media.

Though there is existing law, but the awareness among the people face a great lacking. Other than that, the adolescents and the university students are frequently becoming tobacco addicts, which is an alarming situation for the generation yet to come. So the study of tobacco use among the university students is a very significant topic to work on.

1.4 Limitations of the study

There were many limitations of the present study. First, this study, like many others mentioned in the literature review, was cross-sectional in nature and, as such, captures only a snapshot of the study population at a given point in time. Although the data set did allow for the exploration of self-reported smoking status over time, this was done in a retrospective manner. Therefore, the results may have been influenced by recall bias, particularly among respondents in the later years of study.

Other limitations of concern are related to constraints due to the use of a secondary instrument and data set. A clear constraint of performing secondary analysis is not having control over what questions are asked, or, how they are posed. For example, in the current study it was not possible to determine when (i.e. age and year of study) students started to smoke other reasons/motivations for taking up the habit. Such data would be helpful in clarifying the results concerning social connectedness.

Finally, some of the analyses in the present research did not produce large enough sample sizes typically required for data disclosure (e.g. cell sizes greater than 5). For many of the chi- square analyses the data was aggregated as much as possible to avoid this. Still, in some cases, small cell sizes remained. As such, Type II error is a possibility whereby an effect may exist, but was too modest to detect with the sample sizes available. These results may not be statistically meaningful, but were important to include in the report because they contributed to the exploratory purposes of the study.

CHAPTER 2

REVIEW OF LITERATURE

The aim of current review of the literature to throw light on the studies related to the smoking and its effects.

Nasser and Zhang (2019) carried out a study about Knowledge and factors related to smoking among university students at Hodeidah University in Yemen and found that, The smoking prevalence among university students was 33.1% (cigarettes 13.6%, waterpipe 9.3%, and 10.2% for dual cigarettes and waterpipe use), with a higher rate of smoking among males than females (36.3% vs 28.0%, $p<0.001$). The percentage of individuals participating in the three types of smoking among males and females, respectively, were 18.9% vs 5.0% for cigarettes, 1.9% vs 21.1% for waterpipe, and 15.4% vs 1.9% for dual cigarettes and waterpipe use, with a student mean age of 21.93 ± 2.55 years.According to this study, most of the male students were cigarette users, while female students were waterpipe users. The prevalence of waterpipe use among females, as opposed to males, is an issue of concern.

Ataeiasl *et al.,* (2018) conducted a study on Relationship between happiness and tobacco smoking among high school students and found that, 5.9 and 5.0% of students were regular cigarette smokers and regular hookah smokers, respectively. After controlling for potential confounders, higher happiness scores were found to protect students against more advanced stages of cigarette smoking (odds ratio [OR], 0.98; 95% confidence interval [CI], 0.97 to 0.99; p=0.013). However, no significant relationship was found between happiness scores and hookah smoking status (OR, 1.01; 95% CI, 0.97 to 1.02; p=0.523).They concluded that, happiness scores were associated with less advanced stages of habitual cigarette smoking among high school students.

Idris *et al.,* (2018) conducted a studysmoking behaviour and patterns among university students and found that, the overall prevalence of tobacco smoking was 24.73% for cigarettes and 30.4% for waterpipe. Prevalence of cigarette smoking was significantly higher in men, non-health profession students, and in students living away from their families. There was no significant difference in prevalence of smoking cigarettes when comparing students according to their origin (urban vs

rural), year of study, and change of residence due to war. War was associated with a significant increase in mean number of cigarettes smoked daily, and 53.1% of smokers reported that the number of cigarettes consumed per day had increased since the beginning of the war.

Ali *et al.,* (2017) conducted a study on knowledge and attitude towards smoking among University Students in Lahore among 222 students and found that Out of 222 students 32% were current smokers while 68% were nonsmokers, 70% students believed that Nicotine in Cigarette is not addictive to human, 83% of the respondents believed that smoking is a disgusting behavior and 85% of the respondents believed that smoking should be banned in Universities significant amount of students. They concluded that, there is strong link between the students' attitude and smoking behavior and it is important for parents and teachers to supervise their student's behavior.

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

Al-Kaabba *et al.,* (2017) conducted a studyamong medical students and found that, Overall 39.8 % of the investigated students (153) had smoked before, and 17.6% were current smokers. The mean age of initiating smoking was 15.8 (±3.3). There were significantly more males than females. The most important reasons for smoking were leisure, imitation of other people and a means of relieving psychological pressure.

Reasons for not smoking were mostly health and religion-based. Smokers tended to have friends who smoked. They conclude that, Cigarettes smoking is highly prevalent among medicalstudents in the Faculty of Medicine, King Fahad Medical City.

Tamí *et al.*, (2017) conducted a study on Latin American countries and found that, Of 5605 respondents, 33% smoked and 45% had been exposed to secondhand smoke during the previous month, 34% smoked in school buildings during the past year, and 85% had never received formal training in smoking cessation. Smoking was significantly associated with male sex; Bolivian, Chilean, or Mexican nationality; exposure to secondhand smoke; lacking self-perception of being a "role model" for patients; and not believing that health professionals who smoke are less likely to advise patients to quit smoking.

Jenkins(2014) studied the impact of healthy lifestyle choices on smoking behavior among college students who smoke cigarettes. The study consisted of 14,515 college students who identified themselves as having smokedwithin the last 30 days. Fruit and vegetable intake per day, days per week of vigorous exercise,Body Mass Index, and exercisers trying to lose weight were the healthy lifestyle choices thisstudy related to smoking behavior. It was found that 1) college students who ate zero fruits andvegetables per day were likely to smoke 2.31 more days per month than those who ate five ormore per day, 2) for every day per week a smoker partook in vigorous exercise, they smoked0.76 days fewer per month, 3) for every one unit increase in participants Body Mass Index, anincrease of 0.06 in days smoked per month can be expected, 4) College students who are notcurrently exercising to lose weight smoke 2.11 more days per month than those students who arecurrently exercising to lose weight. Overall, the majority of healthy lifestyle choices consideredin this study significantly impacted the amount of days per month a college smoker, smokedcigarettes.

Farajat *et al.*, (2011) conducted a study and showed that, the prevalence rates of cigarette use and water pipe smoking were 25.9% and 23.3%, respectively. Cigarette smokers differed significantly from non-smokers on almost all of the assessed determinants. The I-Change model explained 85% of the total variance of cigarette-smoking behavior. Cigarette smoking was determined by being male and older, having more depressive symptoms, having less Muslim identity, being more

emancipated, perceiving more pros of smoking, having more modeling from peers and having lower self-efficacy. The popularity of cigarette use and water pipe smoking among Jordanian students necessitates health promotion interventions that motivate students not to engage in smoking behaviors by clearly outlining the outcomes of smoking and the healthier alternatives, how to cope with social influences and difficult situations in order to increase self-efficacy.

Rahman *et al.,* (2011) conducted a studyamong secondary school students in Bangladesh and showed that, the prevalence of smoking was 12.3% among boys and 4.5% among girls, respectively. The mean age at initiation of smoking was 10.8 years with standard deviation of 2.7 years. Logistic regression analysis revealed that boys are 2.282 times likely to smoke than girls and it was 1.786 times higher among the students aged 16 years and above than their younger counterparts. Smoking by teachers appeared to be the strong predictor for students smoking behavior (OR 2.206, 95% CI: 1.576, 3.088) followed bypeer influence (OR 1.988, 95% CI: 1.178, 3.356). Effectivesmoking prevention program should be taken to reduce smoking behavior. The school curriculum had less impact in preventing smoking except teacher's smoking behavior.

Stramari *et al.,* (2009) conducted a studyamong medical students at a university and found that 16.5% of the students were active smokers (daily smokers, 5.4%; occasional smokers, 11.1%) and that 3.5% were former smokers. The mean age was 22.2 ± 2.4 years. Factors significantly associated with the smoking habit ($p < 0.05$) were male gender, paternal smoking, regular alcohol consumption and use of antidepressants or anxiolytics. For the majority (69.2%) of the smokers, the age at smoking onset was 15-19 years of age, and the main motivations to start smoking were selfinitiative and influence of friends. The conceptualization of smoking as an illness was significantly higher among the nonsmokers. In 70.6% of the smokers, tobacco intake was 1-10 cigarettes a day. Among the smokers, 92.3% agreed that smoking is harmful to health, 67.3% had tried to quit smoking, 96.0% believed themselves able to do so, and 87.2% intended to quit smoking.They also suggested that, it is fundamental that we develop more effective strategies for smoking prevention and cessation in order to reduce the number of smokers among future doctors.

Costa *et al.,* (2007) conducted a study on College student involvement in cigarette smoking and found that, for the most part, for both genders and across three separate waves of data. Key predictors of smoking involvement included controls protection, models risk, vulnerability risk, behavioral protection, and behavioral risk. Antecedent protective and risk factors were associated with the initiation of smoking in the college setting. A model of protective and risk factors can be useful in understanding college smoking behavior and suggesting targets for intervention.

Perry *et al.,* (1980) studied the smoking behavior of teenagers and stated that, Tenth grade health classes in three highschools received a special program focusing on the immediate physiological effects of cigarette smoking and the social cues influencing adoption of the smoking habit, and classes in two control schools received standard information on the long-term effects of smoking. Only subjects in the special program reported a decrease in smoking from pre to post-test; they also scored higher than controls on a knowledge test. Carbon monoxide levels were significantly lower for subjects in the special group at post-test.

CHAPTER 3

METHODOLOGY

3.1 Study Design

The study consisted of a primary analysis of data from the Sher-e-Bangla Agricultural University (SAU) Tobacco Use Survey (2020), a cross-sectional, self-report questionnaire. This survey was guided by a comprehensive review of previous empirical and theoretical work in this area as well as by previously developed instruments (Health Canada, 2000; Health Canada, 1999; and Sadava & DeCourville, 2003). The primary objectives of this survey were to explore the relations of tobacco initiation, maintenance and cessation with developmental transitions and the socio-cultural milieu of university life. The 65-item questionnaire assessed many variables including socio-demographics (i.e. age, gender, ethnicity, marital status and living arrangement), student status (i.e. faculty, year of study and full or part-time), overall university experience, social smoking influences (i.e. friends, family and roommates), personal smoking behaviors (amount and frequency), perception of smoking as a norm at university, perceptions of self as a smoker, intentions to quit and past quit attempts.

Ideally, a longitudinal analysis would have allowed for the greatest understanding of the university student smoking behaviors. Although the potential existed to use the longitudinal data set associated with the instrument to perform such analyses. The data from the preliminary survey was more appropriate for the current study for a number of reasons. First, there was a large reduction in the sample size at follow-up that may have limited the ability to explore some of the variables of interest. Second, using the preliminary data set allowed for the analysis of smoking behaviors among students at the Sher-e-Bangla Agricultural University before the introduction of a campus-wide smoking intervention. Finally, the aim of the current research was not to investigate changes in many of the study variables over time; rather this study intended to explore nuances in cigarette use among the university population in order to fuel and guide subsequent longitudinal research. As such, the preliminary tobacco use of SAU student's survey was the best available data for the research objectives at hand.

3.2 Data Collection

The students of different level/semester of the SAU constituted the population of this study. The sample of students invited to participate in the research were drawn from randomly selected classes stratified to be representative of the four major faculties at the SAU by year. Interviewing the sample students if they were between the ages of 18- 24 at the time of the survey on the basis of a pre-tested questionnaire containing information on the smoking status of the respondents collected data. The collection of data was started in March 2020 and was completed in September 2020. The 18-24-year age range was selected because it would allow for a more representative sample of SAU. The data was also screened for 'unreliable respondents' by examining the following two items: (1) among your closest friends what percentage would be smokers? (2) How often do they smoke? (Never, rarely, occasionally, fairly often, very often). Those who reported having no closest friends who smoked (0%), but reported a frequency of smoking other than 'never,' or those who reported having a percentage of closest friends who smoked, but reported their smoking frequency as 'never' were deemed to have inconsistent data and excluded from the study.

SAU is located in the heart of the capital city, Dhaka and its campus stands on 86.97 acres of land. It has 4 Faculties; 35 Departments; 3600 Students (Undergraduate: 2843, Graduate: 1525, Ph. D: 106); 5 Residential Student Hall (Male: 3, Female: 2).

A total of 358 undergraduate student respondents were sampled in the preliminary the SAU Tobacco Use Survey. Of the original sample, 31 respondents were seemed ineligible for inclusion in the current study and excluded from the analysis. Of these respondents, some were outside the age range of 18-24 years at the time of the survey, some respondents had missing data on the items used to ascertain smoking status, and some respondents were seemed to have unreliable reports. Thus, the resulting sample for analysis included 327 respondents.

3.3 Measures

3.3.1 Demographics

Demographic information included sex, age, ethnicity, marital status, living arrangement, year of study, current faculty, and enrollment status (full or part-time). Because the survey did not ask students to report their current age, this variable was

assessed by subtracting ‘year of birth’ from year of the study (2020). Although this method produced only an approximation of the respondent’s ages, this was not a large concern for the present study because the variable ‘age’ was not used for any further analyses.

3.3.2 Smoking Status

According to Delnevo and colleagues (2005), studies of populations in which late initiation is suspected should incorporate all three measures of current cigarette smoking (e.g. lifetime use, 30-day use, and “now”). The SAU Tobacco Use Survey contains the necessary questions used to calculate both lifetime and past 30-day use, and as such, both these items were used in the present study. Specifically, students were asked: (a) Have you smoked 100 or more cigarettes in your life? (*Response options*: yes, no, don’t know); and (b) Think of the past month. How often did you smoke a cigarette, even a puff? (*Response options*: I did not smoke at all, once or twice all together, on some days each week, almost every day, every day). For the purposes of this research, the following behavioral definitions of smoking status were used to categorize the participants:

- ***Current smokers*** were defined as respondents who reported that during the past month they had smoked either every day, almost every day, on some days each week, or once or twice all together. This definition encompasses both those who had or had not smoked a lifetime minimum of 100 or more cigarettes.

For the purposes of some analyses, current smokers were further sub-divided into the following categories:

- ***Daily smokers*** were defined as respondents who reported smoking a lifetime minimum of 100 or more cigarettes and reported smoking every day over the past month.
- ***Occasional smokers*** were defined as respondents who reported smoking a lifetime minimum of 100 or more cigarettes and reported smoking almost every day, on some days each week, or once or twice all together over the past month.

- ***Experimental smokers*** were defined as respondents who reported not smoking a lifetime minimum of 100 or more cigarettes and reported that during the past month they had smoked either every day, almost every day, on some days each week, or once or twice all together.

- ***Nonsmokers*** were defined as respondents who reported not smoking a lifetime minimum of 100 or more cigarettes and reported not smoking at all over the past month.

- ***Ex-smokers*** were defined as respondents who reported smoking a lifetime minimum of 100 or more cigarettes and reported not smoking at all over the past month.

These behavioral definitions are a hybrid of both the standard adult and adolescent measures typically used in tobacco control research. These behavioral definitions were also more finely drawn than those typically used in tobacco use literature in order to allow an exploration of the relations of increasingly frequent tobacco use with the other variables of interest.

3.3.3 Smoking Frequency and Frequency Patterns

Weekly frequency of cigarette use among non-daily smokers was assessed by the item: In the past week how many cigarettes did you smoke? (*Response options*: A few puffs or less, OR # of whole cigarettes_____, OR # of packs_____of____cigarettes).

Among daily smokers, frequency of cigarette use each work day and leisure day was assessed by the items: How many cigarettes do you usually smoke: Each work day? Each leisure day? Response options were the same as those listed above for non-daily smokers.

3.3.4 Self-Perceived Smoking Status

Students' were asked to report on their self-perceived smoking status at university entrance and also at this time (study date). Response options for both university entrance and study date included: nonsmoker who never smokes, nonsmoker who smokes sometimes, light smoker, regular smoker, or ex-smoker who has totally quit smoking. According to WHO's Smoking and Tobacco Use Policy, a smoker is someone who smokes any tobacco product, either daily or occasionally.

3.4 Analysis

All analysis for this study were conducted using SPSS Version 26.

3.4.1 Descriptive Statistics

Descriptive statistics in this study were calculated for variables in research questions 1, 2, 3, and 5. Summary statistics for the distribution of the socio-demographic characteristics of the sample were also calculated.

3.4.2 Chi-square

Chi-square is a non-parametric test of statistical significance for bivariate tabular analysis. It measures the strength of association between variables and provides a probability value of the likelihood that the association occurred by chance. The statistic tests the null hypothesis that there is no association between variables (Kleinbaum*et al*., 1982; Motulsky, 1995).

In the present study, chi-square analysis was used to determine the significance of the relationship between smoking status (i.e. current smokers vs. nonsmokers) and key socio- demographic variables (i.e. gender, year of study, faculty, ethnicity and living arrangement). This statistic was also used to assess the relationship between work-day and leisure-day frequency of cigarette use among daily smokers (research question #2), as well as to assess the relationship between smoking status (i.e. current smokers vs. nonsmokers) and various smoking- related behaviors and self-perceptions among a particular sub-group of experimental and occasional smokers (research question #5). A probability of error threshold for these analyses was set at $p<0.05$.

The formula for the chi-square statistic test is:

$$\chi_c^2 = \sum \frac{(O_i - E_i)^2}{E_i}$$

Where,

X_c^2 = Chi Square Value

The subscript "c" = degrees of freedom.

"O" = Observed value and

"E" = Expected value.

It's very rare that you'll want to actually use this formula to find a critical chi-square value by hand.

3.4.3 Cohen's kappa

Originally devised as a measure of inter-rater agreement for assessments using psychometric scales (Bakeman & Gottman, 1986), this statistic served well for the exploratory purposes of this study as it established a starting point for further data exploration. Generally, this chance-corrected, non-parametric statistic is used to assess the extent to which two measures agree with each other (Bakeman & Gottman, 1986). The output produced is a cross-tabs matrix in which agreements between the two measures are placed in the diagonal cells and disagreements between the measures are placed in the off-diagonal cells.

The Kappa statistic is calculated using the following formula:

$$\kappa = \frac{p_o - p_e}{1 - p_e} = 1 - \frac{1 - p_o}{1 - p_e}$$

Where,

K= Kappa Value

Po = the relative observed agreement among raters.

Pe = the hypothetical probability of chance agreement.

The Cohen's kappa statistic has a range from 0-1.00, with larger values indicating better agreement. Generally, a kappa of 0.00-0.39 is considered weak, 0.40 to 0.59 is considered moderate, 0.60 to 0.75 is considered good, and over 0.75 is considered

excellent (Bakeman & Gottman, 1986). These guidelines were used in the current research.

It is important to note that in order to run the kappa analysis in research question 5, it was first necessary to match the two different rating scales of smoking status (i.e. the behavioral measure and the self-perception measure). These definitions were matched using the investigator's intuitively derived interpretations of the response options for students' self- perceived smoking status (see Table 3.1).

Table 3.1. Mapping of smoking status rating scales.

Self-Perception		Behavioral Measure
Nonsmoker, who never smokes	→	Nonsmoker
Nonsmoker, who smokes sometimes	→	Experimenter
Light smoker	→	Occasional
Regular smoker	→	Daily
Ex-smoker, who has totally quit smoking	→	Ex-smoker

CHAPTER 4

RESULTS AND DISCUSSION

4.1 Socio-demographic Characteristics

Table 4.1 contains details on all socio-demographic descriptors of the sample. Due to the varying probabilities of selection and response rate, these percentages did not parallel estimates of the larger Sher-e-Bangla Agricultural University student population. As such, the data was weighted to reflect the Sher-e-Bangla Agricultural University's actual distribution of gender and year of study.

Table 4.1. Characteristics of the sample (n= 327).

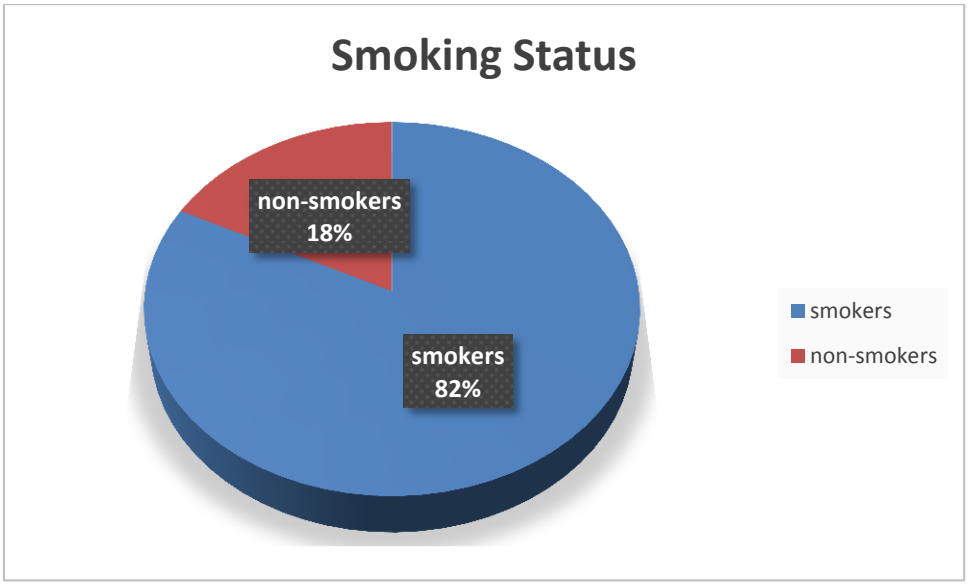
Characteristics	N	%
Sex (1 missing)		
Male	273	83.74
Female	53	16.26
Age (2 missing)		
18-19	77	23.69
20-24	248	76.30
Ethnicity (6 missing)		
Islam	261	81.31
Hinduism	47	14.64
Others	13	4.05
Marital status (17 missing)		
Single	296	95.48
Married	6	1.94
Cohabiting	2	0.65
Engaged	6	1.94
Living Arrangement		
Campus residence	249	76.15
Family home	51	15.60
Relative's home	8	2.45
Off campus – with other students	15	4.59
Off campus – with romantic partner or spouse	4	1.22
Year of Study (1 missing)		
1st	139	42.64
2nd	68	20.86
3rd	74	22.70
4th	45	13.80
Enrollment status (8 missing)		
Regular	313	98.12
Irregular	6	1.88

Note: Percentages within categories may not total 100 because of missing data.
* Also includes 5 respondents who reported being in their 5th year of study.

4.2 Smoking Status

According to the behavioral measure, an estimated 82.45% students were current smokers and the nonsmoker is 17.55 % (Figure 4.1).

Figure 4.1. Estimated percentage of students at the SAU who are current smokers versus nonsmokers/ex-smokers.



When divided into distinct smoking groups, the data revealed that among the total sample, 69.78% students were daily smokers, 9.97% students were occasional smokers and 2.7% students were experimental smokers (Figure 4.2).

Figure 4.2. Estimated Percentage of students who smoke daily, occasionally and experimentally.

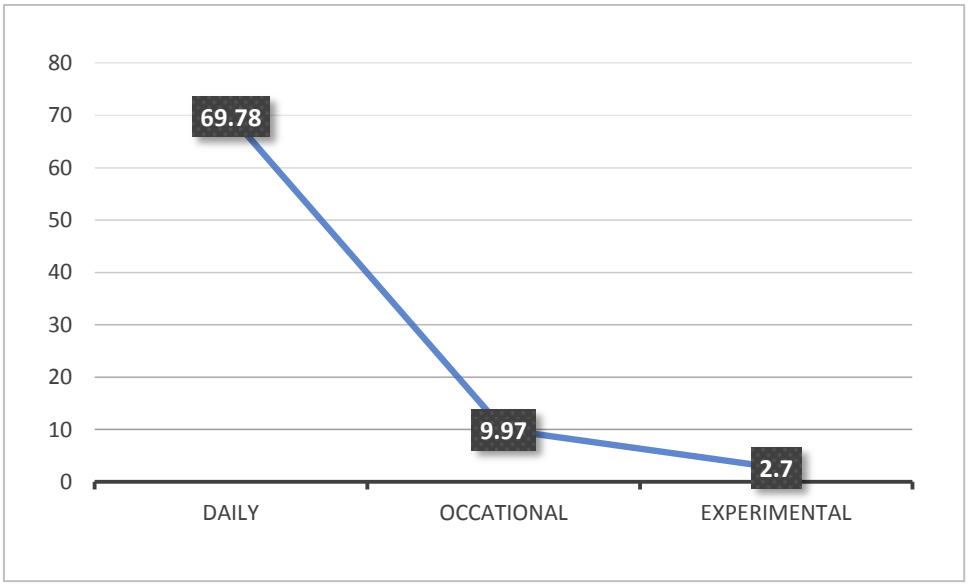
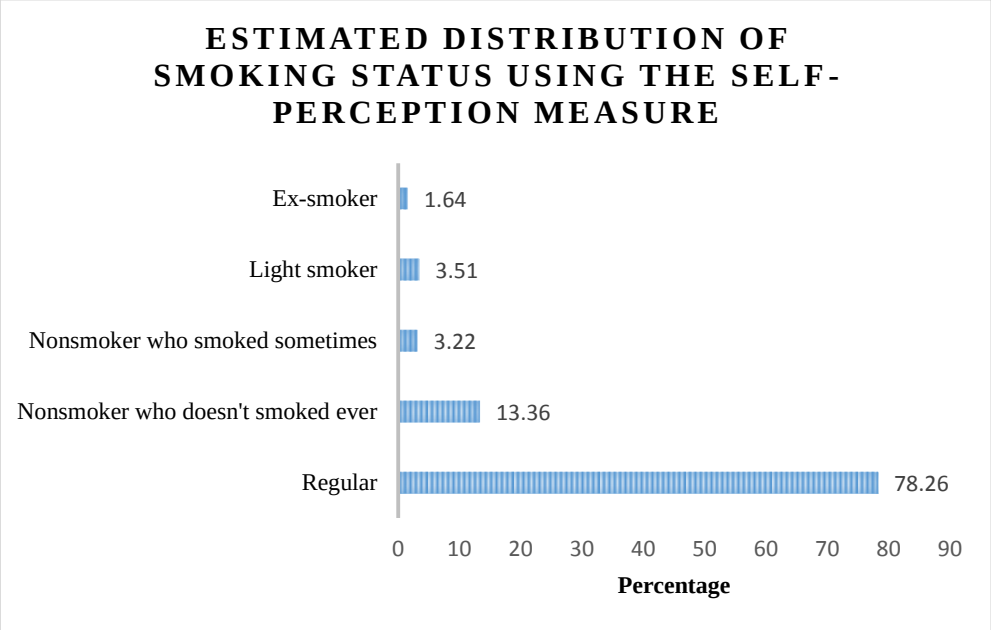


Figure 4.3 present a comparison of the distribution of smoking status using the behavioral measure and the self-perception measure. From these charts we can observed that 78.26% of students see themselves as regular smoker, 13.36% Nonsmoker who doesn't smoke ever, 3.22% of them are nonsmoker who smoked sometimes, 3.51% of them are light or occasional smoker and 1.64% of them are ex-smokers.

Figure 4.3. Estimated distribution of smoking status using the self-perception measure.



4.3 Smoking Frequency and Frequency Patterns

All respondents prompted to answer questions regarding frequency of cigarette use reported in number of whole cigarettes. According to the data, the average number of cigarettes smoked per week among non-daily smokers (i.e. occasional and experimental; n= 42) mean=0.40 and S.D= 0.496 (Table 4.2). Among daily smokers (the average number of cigarettes smoked per work day and the average number of cigarettes smoked per leisure day; n=210) mean=0.53 and S.D. = 0.50 (Table 4.3).

Table 4.2. Smoking Frequency of non-daily smokers (i.e. occasional and experimental; n= 42).

Non-daily Smokers	Frequency	Percent (%)	Mean	Std. Deviation
Occasional Smokers	25	59.5	0.4048	0.4968
Experimental Smokers	17	40.5		

Figure 4.4. Smoking Frequency of non-daily smokers (i.e. occasional and experimental; n= 42).

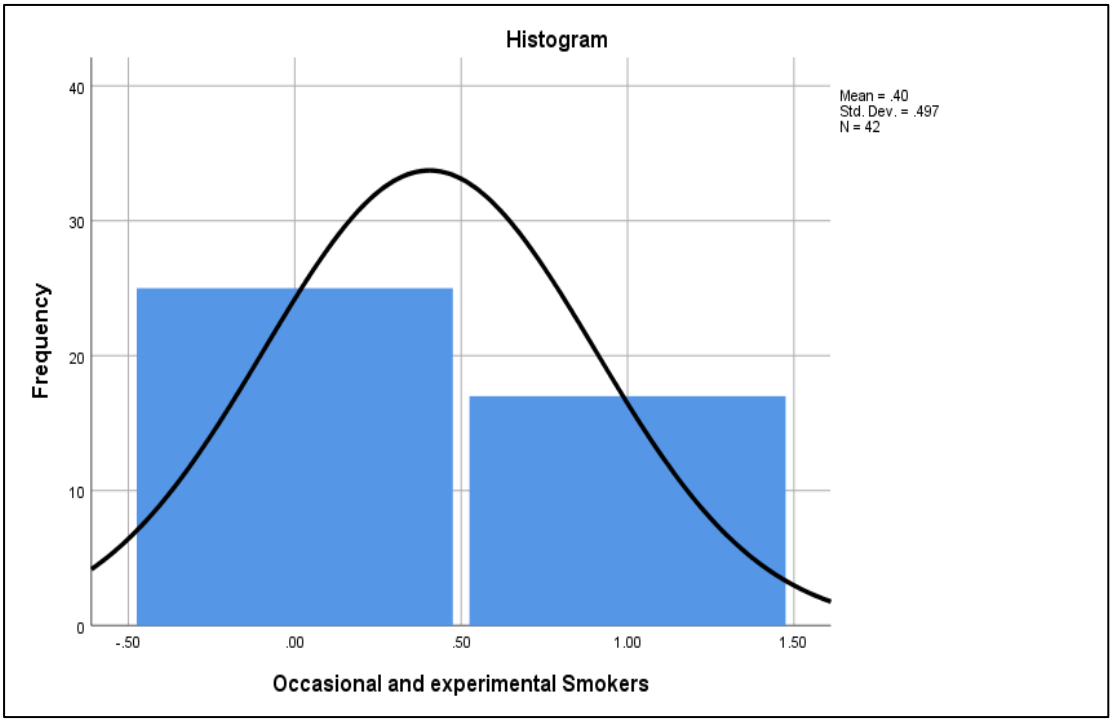
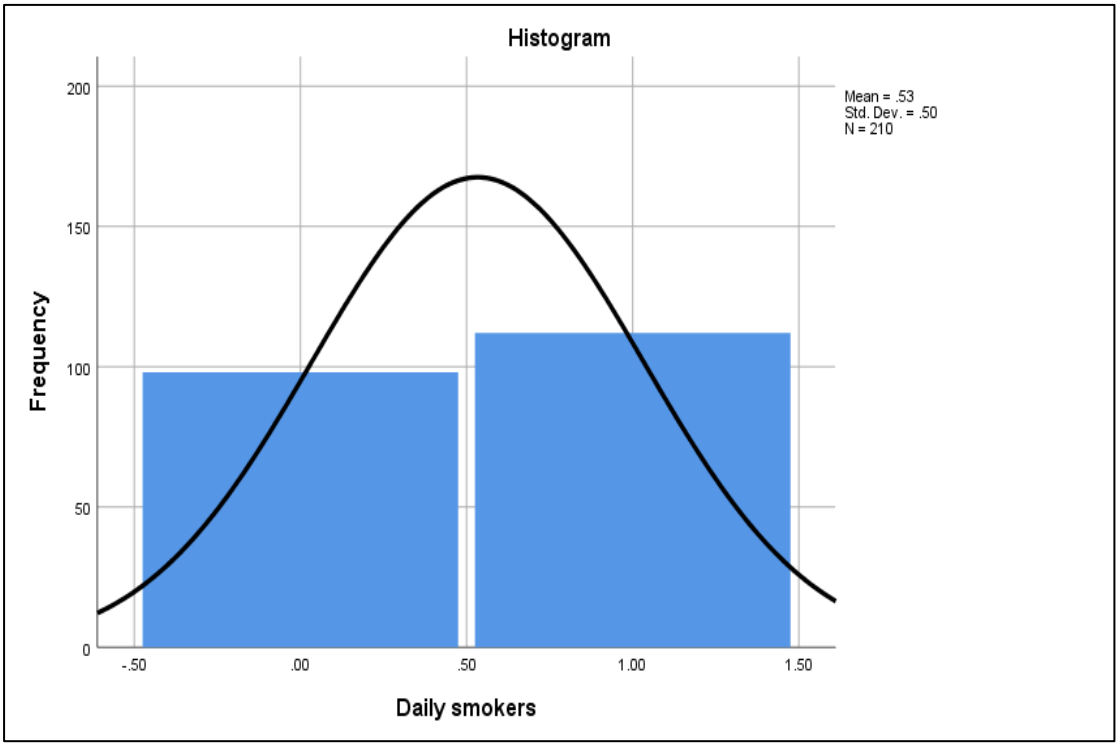


Table 4.3. Smoking Frequency of daily smokers (n=210).

Daily Smokers	Frequency	Percent (%)	Mean	Std. Deviation
Work day	98	46.7	0.5333	0.5000
Leisure day	112	53.3		

Figure 4.5. Smoking Frequency of daily smokers (n=210).



4.4 Changes in Self-Perceived Smoking Status

The kappa coefficient statistic was used to determine agreement between self-perceived smoking status at university entrance and the study date. The total adjusted sample size for this analysis was 323 respondents. Appendix B displays the results of this cross-tabulation. Overall, the kappa statistic was 0.613 (CI_{95}= 0.5386 -0.6875) suggesting a good agreement between the two measures.

Table 4.4. Frequencies of students whose self-perceived smoking status remained the same from university entrance to the study date.

University Entrance	Study Date	Adjusted N
Regular smoker	Regular smoker	249
Light smoker	Light smoker	15
Nonsmoker, who smokes sometimes	Nonsmoker, who smokes sometimes	4
Nonsmoker, who never smokes	Nonsmoker, who never smokes	7
Ex-smoker, who has totally quit	Ex-smoker, who has totally quit	2
Overall		**277** (85.76% total sample)

Among all cases, an estimated 85.76% were concordant (Table 4.4). This suggests that most respondents did not change their self-perceived smoking status during their time on campus. The largest group whose self-perceptions did not change were those students who remained as 'Regular smoker' from university entrance to the study date.

Table 4.5. Frequencies of students whose self-perceived smoking status made a negative change from university entrance to the study date.

University Entrance	Study Date	Adjusted N
Nonsmoker, who never smokes	Nonsmoker, who smokes sometimes	17
	Light smoker	4
Nonsmoker, who smokes sometimes	Light smoker	2
	Regular smoker	2
Light smoker	Regular smoker	3
Ex-smoker, who has totally quit	Nonsmoker, who smokes sometimes	4
Overall		**32** (9.91% of total sample)

In contrast there were an estimated total of 14.24% discordant cases. Among these discordant cases, an estimated 9.91% made a negative change in their self-perceived smoking status (Table 4.5), and 4.33% made a positive change in their self-perceived smoking status (Table 4.6). The largest group of students whose self-perceptions made a negative change were those who reported 'nonsmoker who never smokes' at university entrance, and 'nonsmoker who smokes sometimes' at the study date.

When only students in their first year of study were examined, a moderate agreement between students' self-perceived smoking status at university entrance and the study date was also found (kappa= 0.542; CI95= 0.4107-0.6733). Appendix C displays the results of the cross- tabulation.

Table 4.6. Frequencies of students whose self-perceived smoking status made a positive change from university entrance to the study date.

University Entrance	Study Date	Adjusted N
Nonsmoker, who smokes sometimes	Nonsmoker, who never smokes	2
Light smoker	Nonsmoker, who smokes sometimes	4
	Ex-smoker, who has totally quit	1
Regular smoker	Nonsmoker, who smokes sometimes	3
	Ex-smoker, who has totally quit	3
Ex-smoker, who has totally quit	Nonsmoker, who never smokes	1
Overall		**14** (4.33% of total sample)

Table 4.7. Frequencies of first year students whose self-perceived smoking status remained the same from university entrance to the study date.

University Entrance	Study Date	Adjusted N
Regular smoker	Regular smoker	73
Nonsmoker, who smokes sometimes	Nonsmoker, who smokes sometimes	3
Light smoker	Light smoker	1
Overall		**77** (85.56% of total 1st year sample)

Among all cases, an estimated 85.56% were concordant (Table 4.7). This suggests that most respondents did not change their self-perceived smoking status during their first semester on campus.

Table 4.8. Frequencies of first year students whose self-perceived smoking status made a negative change from university entrance to the study date.

University Entrance	Study Date	Adjusted N
Nonsmoker, who never smokes	Nonsmoker, who smokes sometimes	6
Nonsmoker, who smokes sometimes	Light smoker	1
Light smoker	Regular smoker	1
Overall		**8** (8.89% of total 1st year sample)

In contrast there were an estimated total of 14.45% discordant cases. Among these discordant cases, an estimated 8.89% made a negative change in their self-perceived smoking status (Table 4.8), and 5.56% made a positive change in their self-perceived smoking status (Table 4.9). The largest group of students whose self-perceptions made a negative change were those who reported 'nonsmoker who never smokes' at university entrance, and 'nonsmoker who smokes sometimes' at the study date.

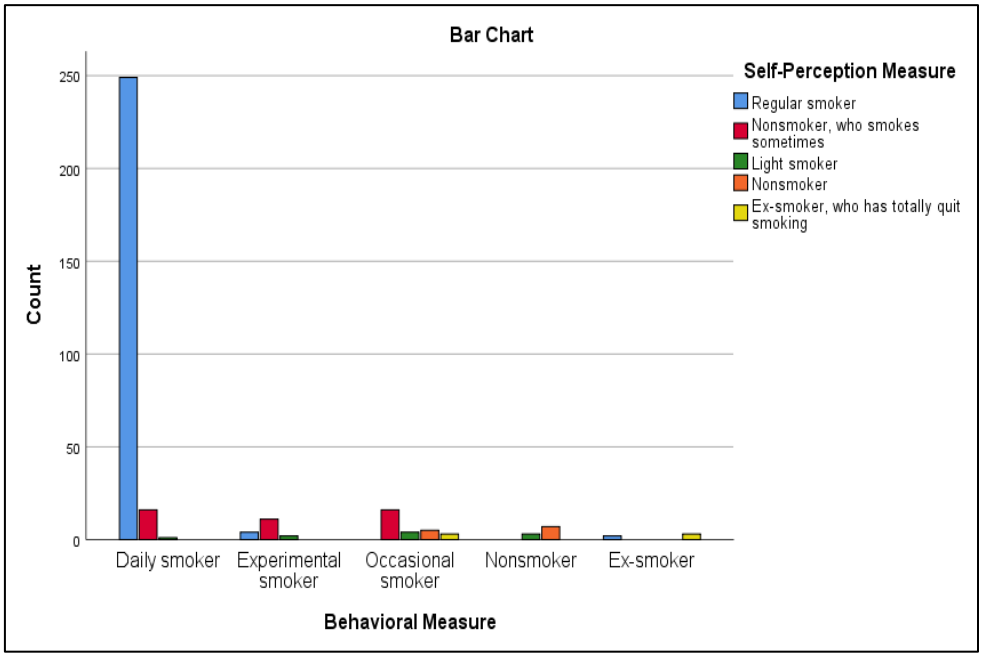
Table 4.9. Frequencies of first year students whose self-perceived smoking status made a positive change from university entrance to the study date.

University Entrance	Study Date	Adjusted N
Nonsmoker, who smokes sometimes	Nonsmoker, who never smokes	1
Light smoker	Nonsmoker, who smokes sometimes	1
	Ex-smoker, who has totally quit	1
Regular smoker	Ex-smoker, who has totally quit	1
Ex-smoker, who has totally quit	Nonsmoker, who never smokes	1
Overall		**5** (5.56% of total 1st year sample)

4.5 Agreement between Measures of Smoking Status

The kappa coefficient statistic was used to determine agreement between student smoking status as determined by our behavioral measure for this research and students' self-perceived smoking status. The total adjusted sample size for this analysis was 326 respondents. The findings of this analysis are presented in Figure 4.6. Overall, the kappa statistic was 0.545(CI_{95} = 0.4608 -0.6292) suggesting a moderate agreement between the two measures.

Figure 4.6. Agreement between measures of smoking status.

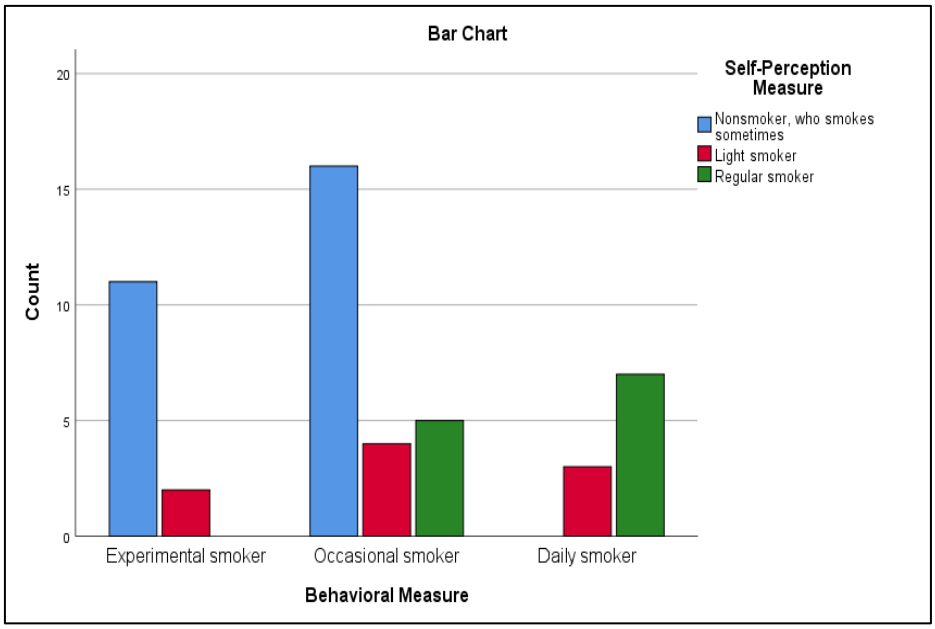


Kappa Statistics

Kappa Value	95% Confidence Limits
0.545	0.4608 -0.6292

Among all cases, an estimated 84.05% were concordant, and 15.95% were discordant. Among the concordant cases, an estimated 93.60% were classified as 'Daily smoker' according to the behavioral measure, and 'Regular smoker' according to the self-perception measure. Clearly this cell had the greatest influence on the resulting kappa statistic.

Figure 4.7. Agreement between measures of smoking status – current smokers only (by behavioral measure).



Kappa Statistics

Kappa Value	95% Confidence Limits
0.224	0.0378 -0.4102

A second analysis was performed that included only those respondents who were defined as current smokers according to the behavioral measure and who considered themselves to be either nonsmokers who smoke sometimes, light smokers and regular smokers (Figure 4.7). The total adjusted sample size for this analysis was 48 respondents. When the analysis was limited to these specific categories the kappa coefficient dropped to 0.224 (CI_{95} = 0.0378 -0.4102) suggesting a weak agreement between the two measures. Among all cases, an estimated 45.83% were concordant, and 54.17% were discordant. The largest discordant group was respondents who were classified as 'occasional smokers' using the behavioral measure, but who perceived themselves as 'nonsmokers who smoke sometimes', instead of the expected 'light smoker'.

Table 4.10. A comparison of smoking-related behaviors and perceptions among experimental & occasional smokers who report a 'nonsmoker, who smokes sometimes' smoking status.

Variable	Experimental Smokers (n= 10)		Occasional Smokers (n= 16)		Chi-square	
	N	%	N	%	value	p
Cigarettes per week						
1	6	37.50	10	62.50	0.043	0.835
2	3	33.30	6	66.70		
Plan to quit in next 6 months						
No	1	14.30	6	85.70	8.965	0.011/ <0.01
Yes	0	0.00	5	100		
I don't smoke	8	66.70	4	33.30		
Tried to quit smoking						
Never	8	88.90	1	11.10	15.002	0.001
Ever	2	14.30	12	85.70		
I don't smoke	0	0.00	3	100		
Pressure from friends to smoke						
Never	3	15	17	85	3.185	0.074
Rarely/Occasionally	3	50	3	50		
Resist urge during past month						
Yes	4	22.20	14	77..80	6.518	0.011/ <0.01
No	6	75	2	25		
Perception of norm on campus						
Minority	0	0.00	4	100	4.523	0.104
About half	6	37.50	10	62.50		
Don't know	4	66.70	2	33.30		
In what situations do you smoke?						
With friends who smoke						
Yes	7	43.80	9	56.30	0.492	0.483
No	3	30	7	70		
In times of stress						
Yes	2	20	8	80	2.340	0.126
No	8	50	8	50		
Alone						
Yes	2	40	3	60	0.006	0.937
No	8	38.10	13	61.90		
At a party						
Yes	3	20	12	80	5.105	0.024/ <0.05
No	7	63.60	4	36.40		
At a bar						
Yes	4	23.50	13	76.50	4.626	0.031/ <0.05
No	6	66.70	3	33.30		

Note: Frequencies may not total N because of missing data.

Subsequent analyses were performed in order to further explore the subset of students in the largest discordant group (occasional smokers who perceived themselves to be nonsmoker who smoke sometimes). Specifically, this group of students was compared on a variety of smoking-related psychological and behavioral measures to those students who also perceived themselves as 'nonsmokers who smoke sometimes', but were classified as 'experimental smokers' using the behavioral measure. An examination of Table 4.10 indicates that no statistically significant differences were found among these two groups in regards to the number of cigarettes smoked per week (χ^2 = 0.043, *df*= 1, p= 0.835), pressure from friends to smoke (χ^2 = 3.185, *df*= 1, p= 0.074), perception of smoking as a norm on campus (χ^2 = 4.523, *df*= 2, p= 0.104), and certain situations when they smoke (i.e. with friends, χ^2 = 0.492, *df*= 1, p= 0.483; in times of stress, χ^2 = 2.340, *df*= 1, p= 0.126; and alone, χ^2 = 0.006, *df*= 1, p= 0.937).

There were however, significant differences between these two groups in their plans to quit in the next 6 months (χ^2 = 8.965, df= 2, p 0.011/<0.01). Among the experimental smokers, none reported that they planned to quit and most (n= 8) reported that they did not smoke. In comparison, 5 occasional smokers planned to quit, 6 did not plan to quit, and only 4 reported that they did not smoke. Significant differences between these two groups were also found in regards to ever having intentionally tried to quit (χ^2 = 15.002, df= 2, p 0.001/<0.001). The data shows that 12 occasional smokers reported that they had tried to quit whereas only 2 experimenters had tried to quit. These two groups also differed significantly when asked if there was ever an occasion during the past month when they were about to smoke but resisted the urge. In total, 14 occasional smokers compared to 4 experimental smokers reported that they had resisted an urge to smoke during the past month. Finally, smoking status varied significantly according to certain situations where students smoke. More occasional smokers than experimental smokers reported that they smoke at parties (12 vs. 3, respectively; χ^2= 5.105, df= 1, p=.024/ p<0.05) and at the bar (13 occasional smokers vs. 4 experimental smokers;χ^2 = 4.626, df = 1, p= .031/p<0.05).

CHAPTER 5

CONCLUSION AND RECOMMENDATION

5.1 Conclusion

The findings of our study reveal that tobacco smoking is initiated by students during the early adolescent years and continues throughout the university years. Smoking was more prevalent among males, possibly due to fewer opportunities to smoke due to cultural and social restrictions among females. Curiosity, peer pressure, and psychological stress were the main causes of initiating tobacco smoking, with family members of the tobacco smokers playing a vital role indirectly to initiate tobacco use. The demographic analysis of the study shows there only 17.55% nonsmoker exists the rest of them are smoker, of which 69.78% students were daily smokers, 9.97% students were occasional smokers and 2.7% students were experimental smokers. This study also that the prevalence of smoking increases significantly with years of study; thus, senior students in their third and fourth years had a higher prevalence of smoking than did junior students. This may be due to the longer exposure of senior students to older smokers within the university environment (friends) who could strongly influence their attitudes. The study results also found that an estimated 9.91% made a negative change in their self-perceived smoking status, and 4.33% made a positive change in their self-perceived smoking status. The results urge policy makers to initiate anti-smoking programs to prevent the smoking habit and also necessary to create a help line for smokers to quit smoking. It is also recommended to conduct anti-smoking campaign among the parents and increase their awareness level. There is a need for further research to explore other predisposing factors that increases the prevalence of smoking among the University students.

5.2 Recommendations

The recommendations for reducing tobacco use among university students are given below as per the study are –

- A smoke free campus policy will encourage other universities to create a healthy environment for education in future.

- The government of Bangladesh should take steps to eradicate tobacco smoking, and smoking control laws and policies should be strongly enforced by the tobacco control agencies.
- Tobacco education should start at the grade school (primary and high school) level to educate children about harmful effects of tobacco smoking.
- Finally, if we can establish a holistic approach for tobacco control in university level, the overall tobacco control movement in Bangladesh will be accelerated.

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APPENDIX A: SHER-E-BANGLA AGRICULTURAL UNIVERSITY
TOBACCO USE SURVEY QUESTIONNAIRE

Place a ✓in the box next to the answer that comes closest to describing you.

Gender ☐*1. female* ☐*2.male*

Dateof birth __ __ __ __ __ __ __ __ / __ __ / __ __ __ __
day month year

Which of the following categories best describes your ethnic/racial background? Check all applicable:

☐ *1.Muslim*
☐ *2.Hindu*
☐ *3. Others*
☐ _____

Marital status:

☐ *1.Single*
☐ *2.Married*

Partner's primary occupation:

☐ *1. universitystudent*
☐ *2. student otherthan university*
☐ *3. employedfull-time*
☐ *4. employedpart-time*
☐ *5.homemaker*
☐ *6.unemployed*

Do you consider yourself to have moved out permanently from the home of your parent(s) or guardian(s)?

☐ *1.Yes*
☐ *2.No*
☐ *3. Don't know*

What option *best* describes where you live?

☐ *1. in campusresidence*
☐ *2. at my familyhome*
☐ *3. at a relative'shome*
☐ *4. with another family(boarding)*
☐ *5. off campus –alone*
☐ *6. off campus – with otherstudents*
☐ *7. off campus – with nonstudents*
☐ *8. off campus – with students and non students*
☐ *9. off campus – with romantic partner ospouse*

Is your living arrangement smoke-free?

☐ *1.Yes* ☐*2. No* ☐*3. Don't know*

How many people besides you smoke in yourhome every day or almostevery day? ____ (*fill innumber*)

How many children do you have?

☐0 ☐1 ☐2 ☐3 ☐4 ☐5 ormore

Do your children live with you?

☐ *1.Yes* ☐*2. No* ☐*3. Nochildren*

How many sisters and brothers do you have (or would have, if any are deceased)?

☐0 ☐1 ☐2 ☐3 ☐4 ☐5 ormore

In general, *compared to other people your age*, would you say your health is:

☐ *5.Excellent* ☐*2.Fair*
☐ *4.Very good* ☐*1.Poor*
☐ *3.Good*

Do you consider yourself to be (choose one)?

Veryoverweight	*somewhat overweight*	*normalweight*	*somewhatunderweight*	*very underweight*
5.	4.	3.	2.	1.

What is yourpresent weight?_____kg. **OR**_____lbs.

How tallare you?_____cm**OR**_____ft._____in.

Education:

- 1. *1st year*
- 2. *2nd*
- 3. *3rd*
- 4. *4th*
- 5. *MS 1st*
- 6. *MS 2nd*
- 7. *Completed specialized training (e.g. hairdressing, welding, massage therapy, trade apprenticeship, etc.)*
- 8. *Other(specify)* _____

When did you finish secondary school? (e.g. high school)_____/ __
month year

My secondary (e.g. high school) was located in:
_____/_____
town or cityorcounty province

Did you take time off school before beginning your current program? 1.*Yes* 2.*No*
If yes,howlong?_____months /years
CurrentFaculty: _____

1.*Part-time* 2.*Full-time*
DegreeAnticipated: _____

Indicate how well each of these statements describes your *overall* secondary (e.g. high school) experience.

	Never	Rarely	Some of thetime	Most of the time	All of the time	Don't know
I got along well with my teachers.	1.	2.	3.	4.	5.	6.
I did as little as possible; I just wanted to get by.	1.	2.	3.	4.	5.	6.
I paid attention to the teachers.	1.	2.	3.	4.	5.	6.
I was interested in what I was learning in class.	1.	2.	3.	4.	5.	6.
I felt like an outsider or like I was left out of things at school.	1.	2.	3.	4.	5.	6.

	Stronglydisagree	Disagree	Agree	Stronglyagree	Don't know
I had friends at school to whom I could talk about personal things.	1.	2.	3.	4.	5.
I liked to participate in many school activities e.g. clubs, sports, drama.	1.	2.	3.	4.	5.
People at school were interested in what I had to say.	1.	2.	3.	4.	5.

Indicate how well each of these statements describes your *overall* university experience to date.

	Never	Rarely	Some of the time	Most of the time	All ofthe time	Don'tknow
I get along well with my professors.	☐1.	☐2.	☐3.	☐4.	☐5.	☐6.
I do as little as possible; I just want to get by.	☐1.	☐2.	☐3.	☐4.	☐5.	☐6.
I pay attention to the professors.	☐1.	☐2.	☐3.	☐4.	☐5.	☐6.
I am interested in what I am learning in class.	☐1.	☐2.	☐3.	☐4.	☐5.	☐6.
I feel like an outsider or like I am left out of things at school.	☐1.	☐2.	☐3.	☐4.	☐5.	☐6.
I have trouble keeping up with the workload.	☐1.	☐2.	☐3.	☐4.	☐5.	☐6.
I have become good friends with other students at school.	☐1.	☐2.	☐3.	☐4.	☐5.	☐6.
I feel like I am just a number to the school.	☐1.	☐2.	☐3.	☐4.	☐5.	☐6.

	Stronglydisagree	Disagree	Agree	Stronglyagree	Don'tknow
I have friends at school that I can talk to about personal things.	☐ 1.	☐2.	☐3.	☐4.	☐5.
I like to participate in many university activities e.g. clubs, sports, drama.	☐1.	☐2.	☐3.	☐4.	☐5.
People at school are interested in what I have to say.	☐ 1.	☐2.	☐3.	☐4.	☐5.

Place a ✓in the box next to the answer that comes closest to describing you, or to describing your opinion.

Among your immediate family what percentage would besmokers?_____%

Among your closest friends what percentage would be smokers?_____%
How often do they smoke?
⌋ *0.Never* ☐*1.Rarely* ☐*2.Occasionally*
⌋ *3.Fairly often* ☐*4. Veryoften*

Among your room-mates what percentage would be smokers?_____%

1. Have you smoked 100 or more cigarettes in your life?
⌋ *1.Yes* ☐*2. No* ☐*3. Don'tknow*

2. Think of the past month. How often did you smokea cigarette, even apuff?
☐ *4. every day* ***(go to #3)***
☐ *3. almost every day* ***(go to #5)***
☐ *2. on some days each week* ***(go to #5)***
☐ *1. once or twice all together* ***(go to #5)***
☐ *0. I did not smoke at all* ***(go to #7)***

3. How many cigarettes do you usually smoke:
each work day?
# of cigarettes OR
# of packs of cigarettes

each leisure day?
# of cigarettes OR
# of packs of cigarettes

Do you ever feel that your friends are putting pressure on you to smoke, or to smoke more often, even when you don't feel like smoking?
⌋ 0. Never ☐ 1. Rarely ☐ 2. Occasionally
⌋ 3. Fairly often ☐ 4. Very often

Would a non-smoker joining you feel out of place?
⌋ 4. Never ☐ 3. Rarely ☐ 2. Occasionally
⌋ 1. Fairly often ☐ 0. Very often

4. When I can, I smoke my first cigarette after waking:

⎦ 1. Within 5 minutes ⍰ 4. Within 1- 2 hrs

⎦ 2. Within 6 to 30 minutes ⍰ 5. Over 2 hours

⎦ 3. Within 31 to 60 minutes (go to # 6)

5. In the past week how many cigarettes did you smoke?

⎦ A few puffs or less

OR

# of whole cigarettes

OR

# of packs of cigarettes

6. Do you plan to quit smoking in the next 6 months?

⎦ 1. No ⍰ 2. Yes ⍰ 3. I don't smoke

If you chose "yes", when do you plan to quit?

⎦ 1. within the next week
⎦ 2. within the next 2 to 4 weeks
⎦ 3. longer than 4 weeks from now

7. Have you intentionally tried to quit smoking?

⎦ **1. I don't smoke** ⍰ **4. twice**

⎦ **2. never** ⍰ **5. three to four times**

⎦ **3. once** ⍰ **6. more than 4 times**

8. At university entrance, and at this time, would you consider yourself a:

	university entrance	**now**
1. non-smoker, who never smokes	⍰	⍰
2. non-smoker, who smokes sometimes	⍰	⍰
3. light smoker	⍰	⍰
4. regular smoker	⍰	⍰
5. ex-smoker who has totally quit smoking	⍰	⍰

Among all students at your previous school (e.g. high school) how many do you believe smoked?

⎦ 1. None or almost none ⍰ 4. Majority

⎦ 2. Minority ⍰ 5. Nearly all or all

⎦ 3. About half ⍰ 0. Don't know

Among all students at this university, about how many do you believe smoke?

⎦ 1. None or almost none ⍰ 4. Majority

⎦ 2. Minority ⍰ 5. Nearly all or all

⎦ 3. About half ⍰ 0. Don't know

During the past month was there an occasion when you were about to smoke a cigarette but resisted the urge?

⎦ 1. Yes ⍰ 2. No

In what situations do you think most students at this university smoke? (check all that apply)

⎦ 1. At a party ⍰ 4. In times of stress

⎦ 2. At a bar ⍰ 5. Alone

⎦ 3. With friends who smoke

In what situations do you smoke? (check all that apply)

⎦ 1. At a party ⍰ 4. In times of stress

⎦ 2. At a bar ⍰ 5. Alone

⎦ 3. With friends who smoke ⍰ 6. I do not smoke

Should people be allowed to smoke at a bar?

⎦ 1. Yes ⍰ 2. No ⍰ 3. unsure

Should people be allowed to smoke at a private party?

⎦ 1. Yes ⍰ 2. No ⍰ 3. unsure

APPENDIX B: CROSS-TABUATION FOR SELF-PERCEIVED SMOKING STATUS AT UNIVERSITY ENTRANCE VS. THE STUDY DATE

Table 1. Agreement between students perception of themselves as a smoker at university entrance and the study date (adjusted n= 323).

		Study Date				
University Entrance		**Regular smoker**	**Light smoker**	**Nonsmoker, who smokes sometimes**	**Nonsmoker, who never smokes**	**Ex-smoker, who has totally quit smoking**
	Regular smoker	249 97.60% 98%	0 0.00% 0.00%	3 1.20% 9.40%	0 0.00% 0.00%	3 1.20% 50%
	Light smoker	3 13% 1.20%	15 65.20% 71.40%	4 17.40% 12.50%	0 0.00% 0.00%	1 4.30% 16.70%
	Nonsmoker, who smokes sometimes	2 20% 0.80%	2 20% 9.5%	4 40% 12.50%	2 20% 20%	0 0.00% 0.00%
	Nonsmoker, who never smokes	0 0.00% 0.00%	4 14.30% 19%	17 60.70% 53.10%	7 25% 70%	0 0.00% 0.00%
	Ex-smoker, who has totally quit smoking	0 0.00% 0.00%	0 0.00% 0.00%	4 57.1% 12.50	1 14.30% 10%	2 28.60% 33.30%

Kappa Statistics

Kappa Value	**95% Confidence Limits**
0.613	0.5386 -0.6875

APPENDIX C: CROSS-TABUATION FOR SELF-PERCEIVED SMOKING STATUS AT UNIVERSITY ENTRANCE VS. THE STUDY DATE – FIRST YEAR STUDENTS ONLY

Table 1. Agreement between first year student's perception of themselves as a smoker at university entrance and the study date (adjusted n = 90).

		Study Date				
University Entrance		**Regular smoker**	**Light smoker**	**Nonsmoker, who smokes sometimes**	**Nonsmoker, who never smokes**	**Ex-smoker, who has totally quit smoking**
	Regular smoker	73 98.60% 98.60%	0 0.00% 0.00%	0 0.00% 0.00%	0 0.00% 0.00%	1 1.40% 50%
	Light smoker	1 25% 1.40%	1 25% 50%	1 25% 10%	0 0.00% 0.00%	1 25% 50%
	Nonsmoker, who smokes sometimes	0 0.00% 0.00%	1 20% 50%	3 60% 30%	1 20% 50%	0 0.00% 0.00%
	Nonsmoker, who never smokes	0 0.00% 0.00%	0 0.00% 0.00%	6 100% 60%	0 0.00% 0.00%	0 0.00% 0.00%
	Ex-smoker, who has totally quit smoking	0 0.00% 0.00%	0 0.00% 0.00%	0 0.00% 0.00%	1 100% 50%	0 0.00% 0.00%

Kappa Statistics

Kappa Value	**95% Confidence Limits**
0.542	0.4107-0.6733