PREDICTORS OF SMOKING INITIATION AMONG THE YOUTH IN KIAMBAA SUB COUNTY, KIAMBU COUNTY

SAMUEL NDAAMA WANGUI

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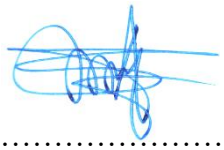
AUGUST, 2021

DECLARATION

The work presented here in is originally mine and has not been presented in any university for award.



16/08/2021

Sign……. Date……

SAMUEL NDAAMA WANGUI

X53/12801/2018

SUPERVISOR

This project was undertaken under my supervision as university supervisor

16/08/2021

Sign……. Date……

DR. LAURA BARASA

Lecturer, School of Economics

DEDICATION

I dedicate this research work to my parents for their support and their inspiration while undertaking my postgraduate course. A special dedication goes to my familiy.

ACKNOWLEDGMENT

I am grateful to the Alimghy God for keeping me safe. I also acknowledge my supervisor; Dr. Laura Barasa, for the endless academic advice and guidance in developing this project. I also recognize my colleagues in the school of economics who have supported me academically via academic consultations.

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ABSTRACT

The study explored the predictors of smoking initiation among youth aged 12-34 years in Kiambaa Sub County, Kiambu County. The study aimed to establish smoking prevalence, determine effect of psychosocial risk factors and identify relationship between socio-economic factors on smoking initiation among the youth. A sample size of 384 youths was calculated using Fishers Formula and semi-structured questionnaires were used to collect data. Logit model was used to evaluate association between smoking predictors and smoking initiation among the youth. It was found that 58.5 percent of the youth ever smoked, having first smoked at an average age of 17 years. Significant psychosocial risk factors predicting smoking initiation included use of alcohol and drug, peer influence and self-esteem while significant social-economic predictors of smoking initiation included gender, age, educational attainment by parent or guardian, marital status and family size. The study concludes that significant predictors of smoking initiation among youth in Kiambaa Sub County fall under two categories; social-economic and psychosocial risk factors. The study recommends for youth sensitization on dangers of smoking in seminars, workshops and mainstream media including radio stations, televisions, social media and newspapers by the county government and National Authority for the Campaign against Alcohol and Drug Abuse (NACADA). Marital counseling by marriage experts, clan members and religious leaders regarding challenges associated with marriage be conducted, parents and guardians act as role model to the youth. Counseling in school, churches and community be conducted to address low self-esteem and devise mechanisms to create self-worth among the youth.

CHAPTER ONE

INTRODUCTION

1.1 Background of study

The smoking habit among youth is an active problem. According to Goldade, Choi, Bernat, Klein, Okuyemi and Forster (2012), more than 80% of adults engaged in smoking habit before reaching the age 18 while 2/3 experimented with smoking by age 15. As per report by World Health Organization [WHO] (2020), an estimated 18% of young people aged 15 years smoke cigarette on weekly basis. It has believed that initiation of unto smoking among many smokers happened largely during adolescent stage where an estimated 40% of current smokers started smoking at adolescent stage. It has also been established that 88% of adult smoking on daily basis were first initiated into smoking by the age of 18 years (Mohammed, Cheung, Winkens, de Vries & de Vries, 2019). It has been established that active initiation into tobacco smoking happens in the youthful stage of life and stoppage is so difficult in adulthood (Joffer, Burell, Bergström, Stenlund, Sjörs & Jerdén, 2014).

Smoking is associated with many social problems, major causes of respiratory problems and health related complication including heart diseases, lung disease, breathing complications, persistent bronchitis and emphysema (Guindon, Paraje & Chaloupka, 2018). High smoking prevalence among youths may result to high dependence. As a consequence, many youth resort to crime like theft to buy cigarette and other narcotics. For school going youth, school drop outs, absenteeism, violence, truancy and other forms of crime become eminent (WHO, 2020).

Age has been established to be a significant demographic characteristic determining active initiation into smoking habits, chances of stopping smoking and risk of health related problems (WHO, 2020). According to Mutumba and Schulenberg (2019) young people who started smoking at age 13 or before, are twice more likely to remain active smokers during their adulthood as compared to young people who started smoking at age 17 and later. Early engagement in smoking habits results to high addiction in the use of nicotine not forgetting health related problems associated with prolonged smoking (So & Yeo, 2015). Initial exposure for those who end up smoking typically occurs early in adolescence and increases over time (Wellman, Dugas, Dutczak, O'Loughlin, Datta, Lauzon & O'Loughlin, 2016). Therefore, any interventions to prevent smoking habits must start at adolescent stage and early adulthood (Tapera, Mbongwe, Mhaka-Mutepfa, Lord, Phaladze, & Zetola, 2020).

Young people who are initiated into smoking later become regular smokers at adulthood because of addiction (Mohammed, *et al.,* 2019).

Most cases of smoking initiation happens in the youthful stage of the victim, yet most smoking policy interventions tend to target active older adults smokers. Cases of smoking among youth are on the rise compared to prevalence of smoking among adults calling for empirical investigation (Joffer, *et al.,* 2014). Moreover, statistics of smoking prevalence among youth and epidemiological reports regarding initiation into smoking and its predictors among youth are inadequately reported in the literature (WHO report, 2020). The smoking rate among teenagers remains high without any sign of decrease (Harrabi, Chahed, Maatoug, Gaha, Essoussi & Ghannem, 2009). Smoking initiation occurs habitually during adolescence. It becomes an established behaviour as initiation age is earlier (Tezera & Endalamaw, 2019). Thus, adequate comprehension of initiators of smoking habits among the youth is important.

It is argued that social related factors contribute significantly to the initiation of smoking habit whereas individual-related factors are key predictors in smoking persistence (Mohammed, *et al.,* 2019). According to Cantrell, Bennett, Mowery, Xiao, Rath, Hair Vallone (2018) there is higher probability of smoking among young people especially if friends and peers are active smokers. The proximal social environment includes smoking influence by smoking friend being a significant predictor in initiating young people into smoking habit (Joffer, *et al.,* 2014) and susceptibility to smoking, the likelihood to smoke if offered. Parental influence, peer influence, living in house with active smoker and access to cigarettes from social setting are other significant proximal risk elements that triggers smoking habit according to Goldade, *et al.* (2012).

There are also psychosocial risk factors are associated with smoking and include alcohol and drugs use, sexual orientation, strictness of parents or guardian, parents/guardian smoking behavior, having friends who smoke (Tapera, *et al.,* 2020). Thus, youth smoking initiation and prevalence of smoking is dependent on socio-economic factors like age, gender, marital status, highest educational level, occupational class/working status, health according to Joffer, *et al.* (2014). Though the age of 12-14 years and 15-17 years among young adult smokers, are categorized separately, most empirical researches focusing on smoking initiation put these age groups into one gutter as youth smoking subgroup (Cantrell, et al., 2018). Smoking pattern among young people is often categorized in the age group of 12–25 years (Terry-McElrath, & O'Malley, 2015).

In the United States, 11.1% of youths first smoked at age 10 years and below whereas 60.4% of school going children of age 16 year and more reported smoked a full cigarette (Cantrell, *et al.,* 2018). Retrospective U.S. national data on smoking prevalence indicates that daily active adult smokers started smoking before the age of 18 years. In India approximated 80% girls and 70% of boys aged 15 years were initiated into smoking habit at age 11 years according to Parascandola and Xiao (2019). In China, of the 104 million young people 12.8 %–47.8% of age 12–17 years had started smoking whereas 12.8-24.3% were females and 33.3-47.8% males. In addition, 1.7–18.3 % are active smokers with 1.7-4.0% being females and 15.0–18.30 % being males (Han & Chen, 2015; Xu & Chen, 2016).

Smoking initiation in Africa is prevalence across age groups. Africa contented is projected that it will have the highest rise in cigarette smoking between 2010 and 2025 (Bilano, Gilmour, Moffiet, d'Espaignet, Stevens, Commar & Shibuya, 2015). According to Ngaruiya, et al. (2018) large portion of active smokers in Africa were initiated into smoking before age 20 years. In most African countries, youthful age is perceived to be the age of 18–29 years. In Africa, smoking initiation occurs as early as age 7 years, smoking prevalence of 0.7% in the age 10-11 years in Ghana and 9.6% smoking prevalence in the age bracket 12-13years in Cote d'Ivoire (Veeranki, John, Ibrahim, Pillendla, Thrasher, Owusu & Mamudu, 2017). According to Peltzer (2013), smoking initiation in the age of 13-15 years is 23.1% in Namibia, 14.1% in Zimbabwe and 12.1% in Botswana. In addition, smoking initiation among children age 13-15 years were lowest in Tanzania at 6.1% and Uganda at 8.2%. In South Africa, there are more chances of adolescents to be initiated into cigarette smoking habitat age12-14 years (Desai, Ruiter, Schepers, Reddy & Mercken, 2019).

Kenya has the highest recorded smoking prevalence in Sub-Saharan Africa Campaign for Tobacco Free Kids (2014). Global Adult Tobacco Survey (GATS) report indicates that smoking prevalence in Kenya is higher in comparison to other African countries where 2.5 million of adults (11.6%) smoke tobacco and this number comprise of 4.55 female and 19.1% males. Young population of ages 12-25 years are becoming susceptible to tobacco use. According to Kenya Household Survey (2014) an estimated 10.0% of 13-15years old adolescents; consisting 6.7% girls and 12.8% boys are actively smoking ((Magati, Drope, Mureithi & Lencucha, 2018). According to Peltzer (2013) Kenya has the second highest prevalence of early smoking initiation at 20.6% after Namibian 23.1%. Figure 1.1 shows smoking prevalence in Kenya from 2000-2016.

Figure 1.1: Smoking prevalence in Kenya and Sub Saharan Africa 2000-2016

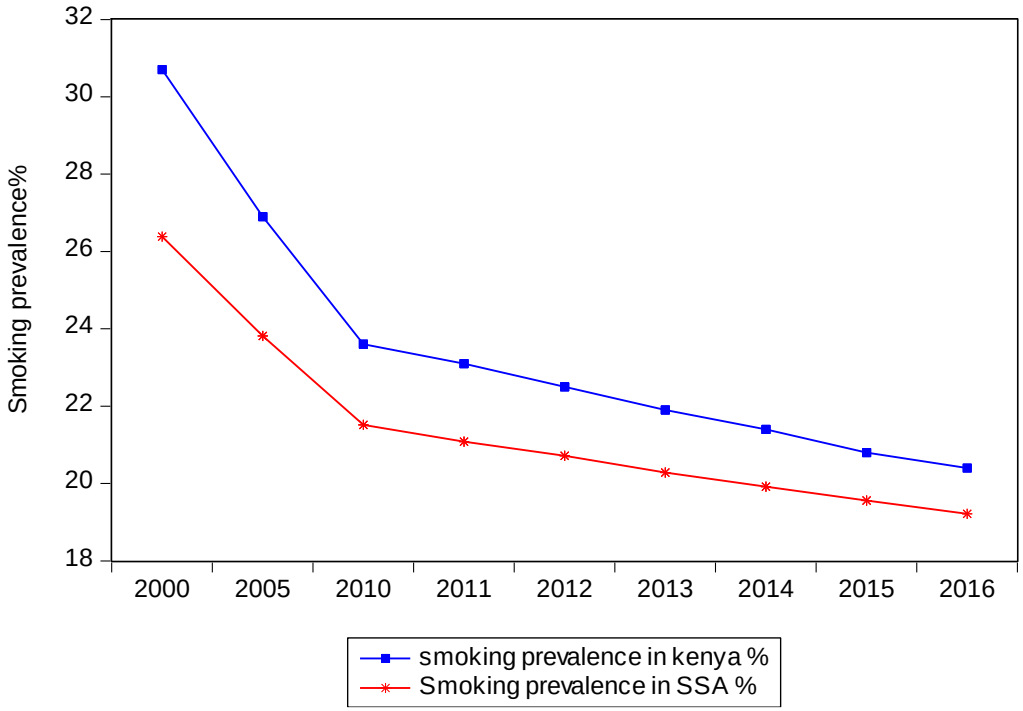
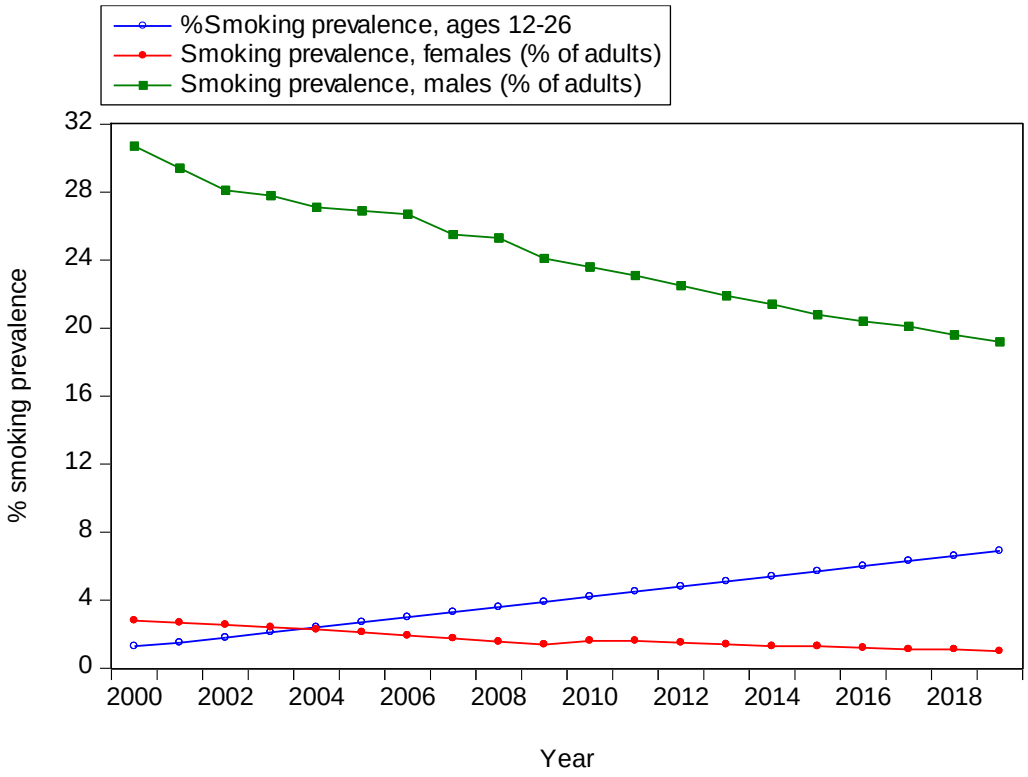


Figure 1.1 shows that smoking prevalence in Kenya was highest in early 2000s. However, smoking prevalence has been gradually declining and this may have been attributed to awareness campaigns on the dangers/ risks associated with smoking. Compared to smoking prevalence in Sub Saharan Africa, smoking prevalence in Kenya is higher. The 2004 Framework Convention on Tobacco Control (FCTC) was meant at increasing awareness of the dangers of smoking while decreasing prevalence of smoking. Smoking prevalence dropped sharply from 2009-2010 and later slowed down after 2010 at declining rate. Figure 1.2 shows percentage smoking prevalence in Kenya by gender.

Figure 1.2: Percentage smoking prevalence in Kenya 2000-2019



Source: WHO report (2020)

It is evident in figure 1.2 that smoking prevalence in Kenya has been decreasing. General, smoking prevalence was highest in early 2000s and across time, it has consistently declines. Smoking prevalence is higher among males compared to females. However, smoking prevalence for young people ages 12-26 has been increasing. Smoking prevalence among young population aged 12-36 years was lowest in the early 2000s but has been rising gradually. The increasing smoking prevalence in the age bracket 12-36 is a grave concern to parents, community and the country.

1.2 Problem statement

Kenya's economic cost of smoking is estimated to a tune of Kenya shilling 2.978 billion including direct expenses in treating health related problems because of smoking and indirect costs that result from lost productivity because of morbidity and mortality (American Cancer Society, 2018). As per the Kenya Demographic and Health Survey (2014), 12.1% of household smoke daily, 1.9% weekly, 0.5% less than monthly, 0.4% monthly and 85.0% never smoked. The rise in the smoking rate among youth is a graving issue among parents, society, government and religious leaders (WHO, 2020). Though prevalence of smoking adults has decreased, cases of smoking among youth are in rise in Kenya. However the

smoking prevalence initiation among youth remains high without any sign of decrease. As per Maina, Nato, Okoth, Kiptui, Ogwell, Maina and Ogwell (2013), 9.85 that is 1 in every 10 youth aged 13-15 years are active smokers in Kenya whereas 24.4% or 1 in every nearly 4 youths having smoked. Cigarette smoking is more common in Eastern and Central regions of Kenya with 30 % and 25%, respectively (National Bureau of Statistics Nairobi, 2015).

In Kiambaa Sub County, tobacco smoking rate among youth aged 12-26 years has persistently risen since the 2001 Global Youth Tobacco Survey (GYTS). Smoking prevalence initiation in Kiambaa Sub County is as early as 12 years old and the habit tend to continue into adulthood (Kenya Demographic and Health Survey, 2014). High smoking prevalence among youths in Kiambaa Sub County has resulted to high dependence (KDHS, 2014). As a consequence, many youth resort to crime like theft to buy cigarette and other narcotics. For school going youth, school drop outs, absenteeism, violence, truancy and other forms of crime become eminent (Maina, *et al.* 2013). Moreover, high smoking addiction among youth may result to health related risks including respiratory complication, cardiovascular diseases, persistent bronchitis and emphysema. Youth who smoke become burden to the parents, community and the country because they become unproductive as they spend most of their time smoking (KDH Survey, 2014). They burden their parents financially who will be forced to seek medical intervention and rehabilitation services that are always very expensive. Basing on socio-economic problems that result because youth who have been initiated into smoking, it is critical to investigate predictors of smoking initiation so that possible corrective actions may be undertaken.

There are many empirical studies undertaken on smoking prevalence. However, very few have focused on smoking prevalence among youth particularly in Kiambaa Sub County. Most of the studies focused on school going children and adult people ignoring youths who may be in school, finished school or are just staying outside there in the society (Peltzer, 2013); Goldade, *et al.* 2012; Tezera & Endalamaw, 2019). Moreover, socio predictors of smoking tend to differ from community to community (Vellios & van Walbeek, 2016; O'Loughlin, *et al.* 2014); Cantrell *et al.* 2018). Likewise, social environment as a predictor of smoking behaviour varies across places hence the need to study smoking initiation among youth in the context of Kiambaa Sub County.

1.3 Research questions

1. What is prevalence of smoking among youth in Kiambaa sub county, Kiambu County?
2. What is the effect of psychosocial risk factors on smoking initiation among youth in Kiambaa sub county, Kiambu County?
3. Is there a relationship between socio-economic factors and smoking initiation among youth in Kiambaa sub county, Kiambu County?

1.4 Study Objectives

1. To assess the prevalence of smoking among youth in Kiambaa sub county, Kiambu county
2. To determine the relationship between socio-economic factors and smoking initiation among youth in Kiambaa sub county, Kiambu County
3. To investigate the effect of psychosocial risk factors on smoking initiation among youth in Kiambaa sub county, Kiambu County

1.5 Significance of the Study

An analysis of Kenya Demographic Health Survey (KDHS) data suggested that demographic, socio-economic and geographic factors that trigger tobacco use need to be explored in detailed with aim of coming have with proper anti-smoking intervention policies. It is with this regard therefore that this study was carried out to assess the Socio-economic, psychosocial, and the awareness pertaining to the risk factors and the prevalence in light of this knowledge. The results are expected to be important in aiding parents, guardians and youth to know the probable initiators of smoking among youth and act accordingly to prevent. The results may act as red alert for narcotic suppliers particularly tobacco and accordingly implement corrective measures to prevent/minimize smoking cases among minors.

This study is expected to inform tobacco control policies and advice the county government and the ministry of health on the control of smoking initiation among the younger population. The study is expected to further inform policymakers and regulators particularly the National Authority for the Campaign against Alcohol and Drug Abuse (NACADA) in enacting and executing smoking control programs on the areas to pay focus on and allocate the resources to areas with best outcomes in control of smoking initiation. The results are also

expected to be beneficial to other scholars and future academicians who may explore more on the subject and test the effect of other more independent variables on initiation of smoking.

1.6 Organization of the study

The other section of the project is arranged as: Chapter two presents the theoretical underpinning the study, empirical literature and outline of literature. Chapter three outlines the theoretical model, empirical model, data source, operationalization of variables and diagnostic tests. Chapter four presents result and discussion of findings while chapter five presents a summary of findings, conclusions and policy recommendations derived in the study.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

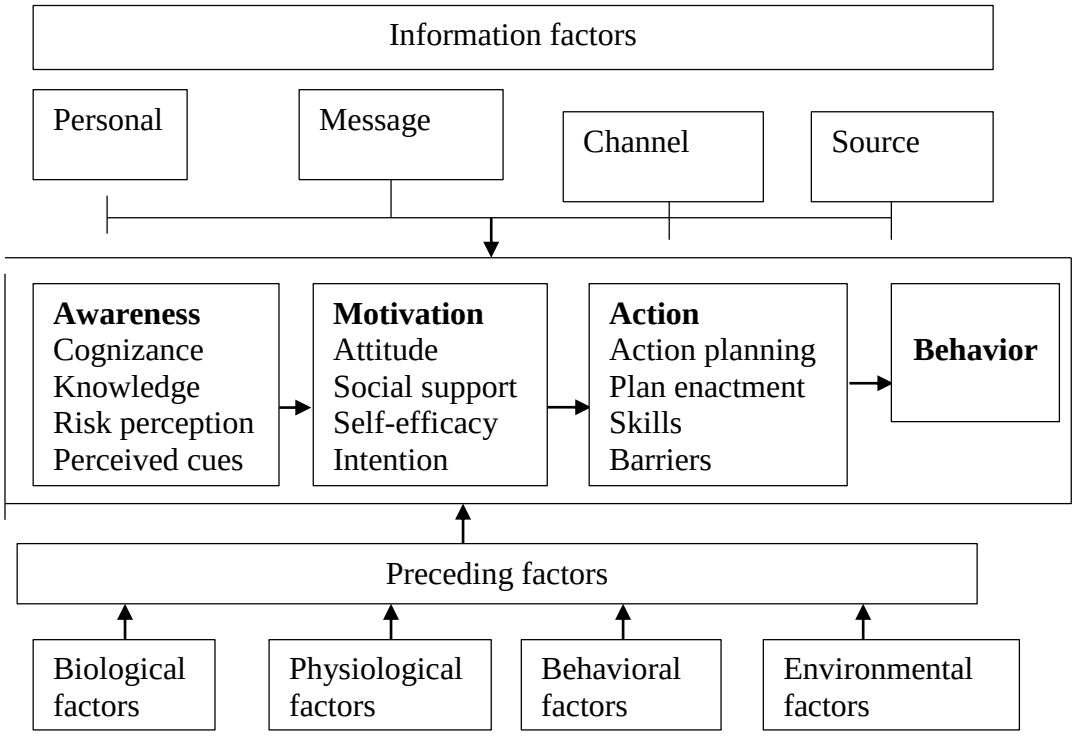
The chapter highlights the theoretical underpinning and empirical literature review.

2.2 Theoretical review

2.2.1 Integrated Change Model

Integrated Change Model (I-Change Model) was advanced by de Vries, Dijkstra and Kuhlman (1988) with aim of understanding individuals behaviors and motivations for particular sort of habit. The I-Change Model, is borrowed from attitude, self-efficacy and social influence model Vries and Mudde, (1998); de Vries, *et al.* (1988) and is viewed to integrate the ideas advanced by the Theory of Planned Behavior Ajzen (1991), Bandura's Social Cognitive Theory Bandura (1986), goal setting theories, Health Belief Model and Prochaska's Trans-theoretical Model De Vries (2017). The I-Change Model attempts to integrate various cognitive models with aim of better understanding health change behavior and habits. As per I-Change Model, behavior and habits of an individual are as a result of certain motivational factors (Kasten, van Osch, Candel & de Vries, 2019).

Figure 2.1: I-Change Model



Source: De Vries *et al.*, 2004, 2005

Individual motivation is influenced by social effects, self-efficacy expectations and attitudes. Social effects entails others perception undertaking this sort of behavior (social shaping), norms upheld by people as far as these behaviors are concerned (social norms) and social support that an individual receives in practicing certain sort of behavior (de Vries, *et al.* 1988). Self-efficacy describes the perception of person and their capabilities to undertake the mention sort of behavior. Attitude in a person comprise emotional advantages, disadvantages of the behavior and perceived cognitive (De Vries, Mudde & Dijkstra, 2000).

The I-Change model is relevant in predicting smoking initiation. In the context of the current research study, the I-Change Model may be employed to understand youth behaviour and how their behavior triggers smoking habits. According to the I-Change Model, intention is a significant predictor of behavior which influences individuals attitude that entail cognitive, emotional feeling and social influences that is; norms surrounding smoking, social pressure and self-understanding.

2.2.2 Theory of Planned Behavior

The Theory of Planned Behavior (TPB) was developed by Ajzen (1991) as an attempt to predict human behavior. According to TPB, individual's behavior are shaped by social influence, attitudes and the level of one's control over their behaviour (Ajzen, 1991). TPB model has been found to be very important understanding and predicting behaviours and intentions in varied health relate behaviors (Conner, 2020). TPB help in the identification of critical behaviours, control beliefs and normative that impact person's behaviors (Ajzen, 1991).

According to TPB an individual with stronger desire to engage in certain behaviors will likely do it compared to an individual lacking the desire and intention. TPB is useful in predicting and explaining certain health related behaviors including smoking habit among the youth. Based on the TPB, the elicitation of shared smoking beliefs among youth can inform future intervention designs among this at-risk population. TPB models can guide anti-smoking policy intervention guidelines.

2.3 Empirical Review

Joffer, Burell, Bergström, Stenlund, Sjörs and Jerdén (2014) investigated smoking predictors among adolescents in Sweden. In 2015-2016, smoking rate among 12-13 year rose by 3.3% to 25.1% among the 17-18 year adolescents. The identified predictors of smoking habit among the Swedish youth included gender of the adolescent, level of parental education attainment, family structure, low self-esteem, attitude toward smoking habit, health related problems, alcohol drinking and use of drugs. However, it focused on smoking initiation among youth in a different environment bearing different sociocultural aspects.

In South Africa, Vellios and van Walbeek (2016) investigated the predictors of current active smoking initiation. The study found that increasing price of cigarettes prices reduced regular smoking habit among males but with no impact among females. Parents who smoke positively influence smoking initiation among children. Children with less educated parents are more likely to be initiated into smoking habit as compared to children with more educated parents. However, sociocultural norms and environmental influences may differ from place to place hence the need to study smoking initiation among youth in Kiambaa Sub County.

Wellman, et al. (2016) studied predictors of smoking cigarette among youth using longitudinal study. Higher risk of smoking initiation is associated with social economic status, age, school academic prowess, pleasure seeking, resentment, smoking family members, peer influence, level of parental supervision, smoking related advert messages, level of self-esteem and film exposure on smoking. Methodological weaknesses that include failure to account for attrition and sample clustering that may lead to incorrect coefficient estimates.

In Botswana, Mbongwe, *et al.* (2017) investigated predictors of tobacco smoking among youth using a sample of 2554 youth from the GYTS. It was found that peer influence and self–esteem are strongest initiators of tobacco smoking among youth in Botswana. It was also established that smoking exposure by peers and family, access to tobacco items was higher in females in comparison to males. However, it focused on smoking initiation among youth in a different environment bearing different sociocultural aspects.

Using cross-sectional survey data extracted from National Survey on Drug Use and Health covering 2002-2015, Cantrell, *et al.* (2018) studied patterns in first regular cigarette smoking cigarette initiation by focusing youths and young adults. The study found that initiation to tobacco smoking and regular initiation decreased significantly across time in the age group

12–14 years and 15–17 years. However, it focused on smoking initiation among youth in a different environment bearing different sociocultural aspects.

Using longitudinal data, Mohammed, Cheung, Winkens, de Vries and de Vries (2019) investigated predictors of smoking among male adolescents in Saudi Arabia. Results also indicated that defragmented families, poor academic performance, size of family income, peer influence, smoking teachers and parents, parental guidance and supervision and desire to smoke in the future initiated more male adolescents into smoking habit.

In East Africa, Tezera and Endalamaw (2019) studied predictors of smoking cigarette among school-going adolescents in and its predictors among school-going adolescents utilizing meta-syntheses systematic review. The study found that smoking prevalence among school going adolescents was 9.02%. In Kenya, cigarette smoking among school going adolescents was 9.8%, 4% in Tanzania, 10.83% in Uganda, 7.12% in Ethiopia and 13.6% in Sudan. The study only focused at school going children ignoring the most risk groups particularly youths who are no longer in school. Current study wishes to study smoking initiation among all youths specifically in Kiambaa Sub County.

2.4 Literature Overview

The chapter highlighted the theoretical models that anchored the study and includes Integrated Change Model and Theory of Planned Behavior. Empirical literature showed that there is sufficient empirical evidence on smoking initiation. However, most of the studies focused on school going children and adult people ignoring youths who may be in school, finished school or are just staying outside there in the society (Peltzer, 2013; Goldade, *et al.* 2012; Tezera & Endalamaw, 2019). Moreover, socio predictors of smoking tend to differ from community to community (Vellios & van Walbeek, 2016; O'Loughlin, *et al.* 2014) Cantrell *et al.* 2018). Likewise, social environment as a predictor of smoking behaviour varies across places hence the need to study smoking ignition among youth in the context of Kiambaa Sub County.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This part highlights the theoretical framework and empirical model that were employed in this study. Data source is also presented.

3.2 Theoretical Framework

The theoretical model for this research was generated from both the I-Change Model and TPB. The I-Change Model postulates that behaviors in individuals are as a result of individual motivation or personal intention/choice to engage in that particular sort of behaviour. According to I-Change model, the behavior of an individual or action is influenced by many factors that include predisposing factors; behavioral that includes life style, motivational factors; awareness like perceptions on risks associated, cues to action and knowledge; psychological factors comprising personality, biological characteristics like age and gender. Also according to the I-change model, information factors including price of items, policy regulations and nature of messages, channels and sources of information are also perceived to influence behavior of an individual. Thus, according to Integrated Change Model, behaviour or habits are a function of;

$$Y = f\left(X_{1,}X_{2,}X_{3,}X_{4,}X_{5,}X_{6}\right) \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 3.1$$

Where Y is behavioral habits, X_1 is motivational factors, X_2 is predisposing factors, X_3 is psychological factors, X_4 is biological factors, X_5 is sociocultural and X_6 as information factors.

In this study, the predictors of smoking initiation are function of motivational factors (risk perceptions, cues to actions and knowledge), predisposing factors (life style), psychological factors (personality), biological factors (gender, age), social-cultural factors (price of products, norms and values) and information factors (channels of information). Thus, the theoretical model to be estimated is.

$$Y = f\,(kX_{1,}X_{2,}X_{3,}X_{4,}X_{5,}X_{6}X_{7,}X_{8,}X_{9}) \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 3.2$$

Where Y is smoking initiation, and the independent variables X include knowledge, risks, lifestyle, gender, personality, family structure, price of cigarette, peer influence and awareness.

Also basing on the TPB by Ajzen (1991) individual's behavior are shaped by social influence, attitudes and the level of once control over their behaviour. Actions and behaviour of individuals are dependent on motivational factors, like availableness of necessary opportunities and resources that include money, skills, time and synergies. Thus, the behaviour or habits of an individual based on TPB is a function of;

Y=f(X_1, X_2, X_3, X_4)……..3.3

Where Y is behavioral habits/actions, $X_1$is attitude, X_2 is social pressure, X_3 is control over the behaviour and X_4 is motivational factors.

In the context of this study, the theoretical model estimated is;

Y=f(X_1, X_2, X_3, X_4)……..3.4

Where Y is smoking initiation, X_1 is nature of attitude toward smoking, X_2 is peer pressure and X_3 is motivational factors.

3.3 Empirical Model

The empirical model estimated involved combining postulations of the I-Change Model and TPB. Thus, equation 3.2 and 3.4 was modified to generate a model specification of the study as indicated in 3.5 and 3.6. In this study smoking initiation is the dependent variable while the various factors identified by Integrated Change Model and Theory of Planned Behavior are the smoking predictors. Smoking initiation is a binary variable taking value 1 if the youth ever smoked and 0 if otherwise. The logit model is presented as;

$ln\left[\frac{p}{1-p}\right] = a + \sum_{i=1}^{m} \beta iXi + \mu$…….3.5

Expanding the equation by including smoking predictors, the model becomes;

Smoking initiation$= a + \beta_1 X + \mu$ ……3.6

Where X represents gender, age, family size, marital status, educational attainment by youths, level of education of parents, employment status, income, religion, health status of youth, locality, alcohol and drug use, strictness of parents, peer influence, parental or guardian influence, awareness influence, self-esteem and μ= error term

3.4 Data Source

The target population of this study was 116,637 youths of ages 12-34 years in Kiambaa Sub-County in Kiambu County according to the Kenya Population and Housing Census of 2019 report by Kenya National Bureau of Statistics (KNBS). According to 2019 census, Kiambaa Sub County had a population of 236,400 people with 120,690 being female, 115,690 being males and 15 being of unisex gender. 116,637 (49.3%) persons were between the ages of 12-34 years classified as youthful stage as per the KNBS Household Census of 2019.

Table 3.1: Target population

Ward	Target population	Sample size
Cianda	29,893	99
Karuri	24,076	79
Ndenderu	31,652	104
Muchatha	16,641	55
Kihara	14,375	47
Total	116,637	384

(Source: KNBS Household Census, 2019)

Since the target population is larger than 10,000, Fishers Formula proposed by Fisher (1998) was used to calculate a sample size of 384 youths to participate in this study. Cluster sampling was employed to sample the wards within the sub-county while systematic sampling was used to identify households to be sampled. Stratified random sampling (by age) was employed to choose the youths that were included in the study. Data collection was conducted by use of semi-structured questionnaires. The semi-structured questionnaires were administered to youths in person across the wards in Kiambaa Sub County.

3.5 Variables

Smoking initiation was the binary dependent variable. The dependent variable was a binary variable of if ever the youth smoked or not. Frequency of smoking and number of sticks smoked were also employed to determine the level of smoking among the youth. The predictors of smoking initiation were grouped into socio-economic factors and psychosocial risk factors. The socio-economic factors include gender, age, education attainment by youth, education attainment by parent/guardian, marital status, religion, family size, employment status and income size. The psychosocial risk factors include contemplation of suicide, use of alcohol and drugs, level of strictness of parent or guardian, peer influence, awareness about dangers of smoking and level of self-esteem. Table 3.2 shows a summary of defining and measuring variables in the study.

Table 3.2: Variable Definition, Measurement and Source

Variable	Definitions and measurement	Source/author	Expected sign
Smoking initiation	Binary outcome as 1=Ever smoked or 0=never smoked.	Mohammed, *et al.*, (2019) Joffer, *et al.*, (2014)	
Age	Age of women under study, categorized in age groups in years	Wellman, et al. (2016) Cantrell, *et al.* (2018)	positive/ negative
Marital status	Marital status of woman under status, married, single, divorced or widowed, cohabiting	Tezera and Endalamaw (2019) and Cantrell *et al.* 2018)	positive/ negative
Family size	Number of the family members, categorized	Joffer, et al. (2014) Mbongwe, et al. (2017)	positive/ negative
Educational attainment by the youth	Level of education attained by the youth, none, primary, secondary, polytechnic and university	Vellios and van Walbeek (2016) Wellman, et al. (2016)	positive/ negative
Educational attainment by parent/guardian	Level of education attained by parent or guardian, none, primary, secondary, polytechnic and university	Vellios and van Walbeek (2016) Joffer, et al. (2014)	positive/negative
Employment Status	Dummy variable described as 1 if youth is employed; 0 if not employed	Mohammed, et al. (2019)	positive/ negative
Income size	Size of family annual monthly income, categorical	Mohammed, Cet al. (2019), Vellios and van Walbeek (2016)	positive/ negative
Religion	Religion affiliation of the youth, categorized as either Christian, Muslim, Hindu, Rastafarian, no religion	Garrusi and Nakhaee, (2012). Hussain, Walker and Moon (2019).	positive/ negative
Health status of the youth	if youth has some persistence health problems or not	Mohammed, *et al.*, (2019) Joffer, *et al.*, (2014)	positive/ negative
Use of alcohol and drugs	If ever used or using alcohol and other drug use	He, Bishwajit, & Yaya, (2019), Beard, et al, (2017).	positive
Strictness of parents or guardians	if parent or guardian is strict regarding any indiscipline cases of the youth	Ossip et al. (2013) and Mulvihill (2014).	negative
Peer influence	if ever influenced by a friend or peer to smoke	Mbongwe, et al. (2017) Mohammed, et al. (2019)	positive
Parental or guardian influence	if ever influenced by a parent or guardian to smoke	Vellios et al. (2016) Wellman, et al. (2016)	positive/ negative
Awareness	if ever attended or listen to smoking awareness or sensitization programmes	Mutumba and Schulenberg (2019)	negative
Self-esteem	Self-esteem of youth, low or high	Joffer et al. (2014), Wellman, et al. (2016)	positive/ negative

3.6 Data analysis

Data analysis was done by use of Statistical Software for Social Sciences (SPSS) Version 25.0 Software. A significance level of p of <0.05 was used. Logit model was employed to determine the nature of association among predictors and smoking initiation among youth in Kiambaa Sub-County. A 5% level of confidence interval was employed to check the significance level of the model. Average marginal effects were used to measure the likelihood of smoking initiation based on the various predictors identified in the literature.

The diagnostic tests checked include normality test, Multicollinearity Test and Heteroscedasticity. Kolmogorov-Smirnov was employed to check the normality distribution of data in this study. The null hypothesis was that; data is not normal. The criterion was that if the p-value calculated is <0.05, null hypothesis is not rejected that is; data is not normal whereas p-value>0.05, data is normal and null hypothesis is rejected (Tabachnik & Fidell, 2007).

Presence of multicolliearity in this study was checked by use of Variance Inflation Factor (VIF). The decision criterion is that if VIF>10, multicolliearity is present in the model whereas VIF<10 implies that there is no multicolliearity and model estimation can be conducted. Breusch-Pagan/Godfrey test was employed to check for error variance where the null hypothesis is that; error variance is homoscedastic. Heteroscedasticity is present if the null hypothesis is rejected and this scenario calls for the estimation of Feasible Generalized Least Squares model. Error variance is constant when p-value>0.05, is homoscedastic.

CHAPTER FOUR

RESULTS AND DISCUSSIONS

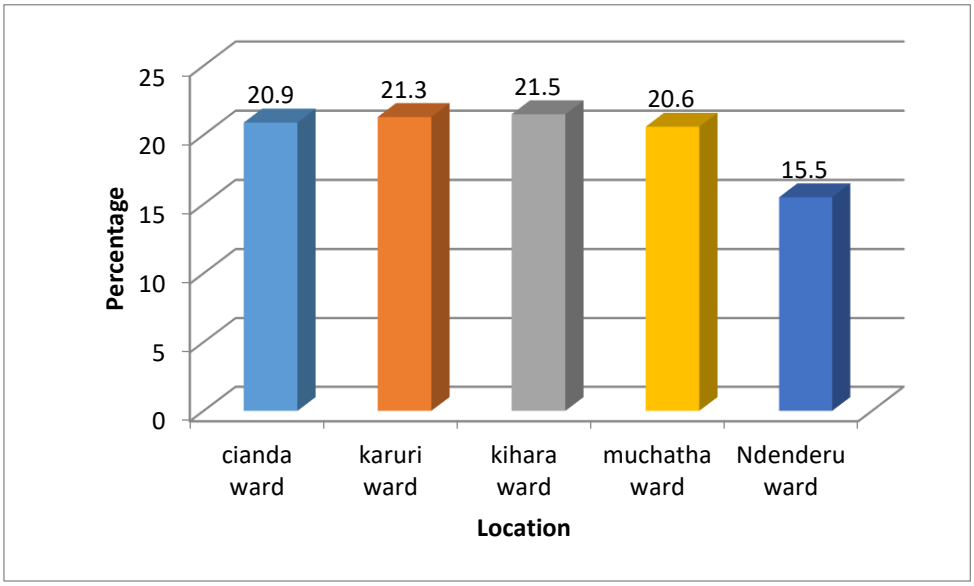
4.1 Introduction

This chapter presents results and discussion of the study. Results of the study are presented in line with objectives of the study. Descriptive statistics in terms of frequency and percentages have been used in this study. In addition, binary logistic regression was employed to identify the socioeconomic and psychological variables that predict prevalence of smoking among youth in the study area.

4.2 Descriptive Statistics

Youth who participated in the study came from Cianda, Karuri, Kihara, Muchatha and Ndenderu wards of Kiambaa Sub County. A total of 384 questionnaires were distributed to youth where 330 questionnaires were successfully filled and return representing 86.0 percent response rate. This response rate is adequate for the study and was attributed to pre notification of respondents and follow up. Figure 4.1 shows youth distribution by location in the study area.

Figure 4.1: Respondents distribution by location/area



Source: Author (2021)

Figure 4.1 shows that the study was very representative as respondents were drawn from various wards of Kiambaa Sub County. Results in figure 4.1shows that most of the youth

were drawn from Cianda, Kihara, Muchatha and Ndenderu. Table 4.1 shows smoking initiation in the study area by number of respondents.

Table 4.1: Cross tabulation of smoking initiation by Ward of residence

		Ward					Total
		Cianda	Karuri	Kihara	Muchatha	Ndenderu	
Have you ever smoked	yes	45	40	32	26	50	193
	no	24	31	39	42	1	137
Total		69	71	71	68	51	330
(χ)							51.032
P-value							.000

Source: Author (2021)

From the table above, most youths who smoked were from Ndenderu ward followed by Cianda Ward and Karuri ward. This may be explained by the fact the three areas have high prevalence of smoking among youth. Less smoking among youth was recorded in Muchatha ward. The chi square of 51.032 and p-value of .000 implied that an area of residence/ location has a statistically significant association with smoking initiation.

4.2.1 Cross Tabulation of Socio Economic Factors and Smoking Initiation

The study explored possible socio economic factors that may be significant in influencing smoking initiation among youth in the study area. The socio-economic factors explored include gender of the youth, age, education attainment by youth, education attainment by parent/guardian, marital status, religion, family size, income size of the family a month and any persistent health problems. The descriptive results are presented in Table 4.2.

Table 4.2: Cross Tabulation of Socio Economic Factors and Smoking Initiation

Socio Economic Factors	**Category**	**Smoked**	**Never smoked**	**Total**	**%**
Gender of youth	Male	147	64	211	64
	Female	46	73	119	36
	Total	**193**	**137**	**330**	**100**
Age of the youth	Below 12 years	4	8	12	3
	13-17 years	25	13	38	12
	18 – 22 years	79	46	125	38
	23 – 27 years	44	44	88	27
	28-34 years	41	26	67	20
	Total	**193**	**137**	**330**	**100**

Education attainment by youth	None	6	6	12	4
	Primary	63	27	90	27
	Secondary	85	59	144	44
	Polytechnic	27	28	55	17
	University	12	17	29	9
	Total	**193**	**137**	**330**	**100**
Education attainment by parent/guardian	None	69	27	96	29
	Primary	50	45	95	29
	Secondary	49	43	92	28
	Polytechnic	15	15	30	9
	University	10	7	17	5
	Total	**193**	**137**	**330**	**100**
Marital status	Single	109	96	205	62
	cohabiting	7	5	12	4
	Married	48	30	78	24
	divorced	25	3	28	8
	Widowed	4	3	7	2
	Total	**193**	**137**	**330**	**100**
Religion	Christian	177	129	306	93
	Muslim	3	5	8	2
	Hindu	2	1	3	1
	Rastafarian	9	1	10	3
	No religion	2	1	3	1
	Total	**330**	**100.0**		
Family size	Less than 3 members	80	37	117	35
	4-5 members	90	71	161	49
	6-8 members	18	21	39	12
	Over 8 members	5	8	13	4
	Total	193	137	330	100
Employment status	Employed	48	42	90	27
	Not employed	145	95	240	73
	Total	**193**	**137**	**330**	**100**
Income size of the family a month	Less than KES 10,000	117	81	198	60
	10,001-20,000	42	25	67	20
	20,001 – 30,000	15	14	29	9
	30,001 – 40,000	7	9	16	5
	40,001-50,000	6	5	11	3
	Over 50,000	6	3	9	3
	Total	**193**	**137**	**330**	**100**

Source: Author (2021)

About 64 percent of the youth in the sample were males. Thirty six percent of the youth in the sample were females. In terms of age distribution, at least 38 percent of the youth were aged 18-22 years while 27 percent of the youth were aged 28-34 years.

In terms of education attainment by the youth, 44 percent were in secondary, 27 percent primary, 17 percent polytechnic, 9 percent university and 4 percent no education. Education attainment by youth may have an impact on smoking awareness and its dangers. In addition, it was found that 29 percent of the youth had parents/guardians who had attained education up to primary and 29 percent secondary. Surprisingly, 29 percent of parents/guardians did not have any formal education at all.

Focusing on marital status as a segment of socioeconomic factors, majority (62 percent) of the youth were single while 26 percent were married. The marital status of an individual may push someone into smoking.

It was also found that majority (93 percent) of the youth who participated in the study were Christians. There were few youths who were Muslims, Rastafarian and with no religion. The results imply that majority of residents in Kiambaa Sub County are Christians. Teachings by religion, in church, temples, mosque and other places of worship are often geared toward promoting morality and good habits including discouraging smoking among people particularly youths.

Most of the youth (49 percent) came from family size of 4-5 members. It was also revealed that 36 percent came from family size of less than 3 members. The size of a family may influence children character monitoring, upright growth and behaviour.

A majority of the youth who participated in the study were unemployed (73 percent). Employment is a form of earning income and this income is required in buying smoking product. Most youth indicated that they were engaged in small businesses and casual work. It was evidently that majority of youth were in self-employment. Some of the youth were still in school studying.

It was also established that majority (60 percent) of the youth who participated in the study came from families that earned income of less than KES 10,000 a month. It was also established that 20 percent of youth were from families earning KES 10,001 to 20,000. Most smoking products are classified as luxury good and so often expensive. Income is required to buy cigarettes and in case of addiction, the addict will have to seek more income to buy smoking products.

4.2.2 Cross Tabulation of Psychosocial Risk Factors and Smoking Initiation

The study explored possible psychosocial risk factors that may be significant in influencing smoking initiation among youth in the study area. The psychosocial risk factors explored include contemplated suicide, use alcohol and drugs, sex orientation, parent/guardian strictness regarding indiscipline and smoking, peer influence, parental/guardian influence, presence or absence of smoking awareness or sensitization programmes and level of self-esteem. The results are presented in Table 4.3.

Table 4.3: Cross Tabulation of Psychosocial Risk Factors and Smoking Initiation

Psychosocial Risk Factors	Category	Smoked	Never smoked	Total	%
Do have any persistent health problems	Yes	31	13	44	13
	No	162	124	286	87
	Total	193	137	330	100
Contemplated suicide	Yes	27	7	34	10
	No	166	130	296	90
	Total	**193**	**137**	**330**	**100**
Drank alcohol or used drugs	Yes	181	65	246	75
	No	12	72	84	25
	Total	**193**	**137**	**330**	**100**
Sexual orientation	Heterosexual	183	128	311	94
	Bisexual	8	8	16	5
	Homosexual	2	1	3	1
	Total	193	137	330	100
Ever been pushed to smoke because of your sexual orientation.	Yes	20	10	30	9
	No	173	127	300	91
	Total	**193**	**137**	**330**	**100**
Parent/guardian strictness regarding indiscipline and smoking	Yes	138	97	235	71
	No	55	40	95	29
	Total	**193**	**137**	**330**	**100**
Peer influence	Yes	156	37	193	58
	No	37	100	137	42
	Total	**193**	**137**	**330**	**100**
Parental/guardian influence	Yes	19	4	23	7
	No	174	133	307	93
	Total	**193**	**137**	**330**	**100**
Ever attended smoking awareness or sensitization programmes	Yes	75	80	155	47
	No	118	57	175	53
	Total	**193**	**137**	**330**	**100**
Level of self-esteem	Low	79	28	107	32
	High	114	109	223	68
	Total	**193**	**137**	**330**	**100**

Source: Author (2021)

The study also explored any possible persistent health problems among the youth. Majority 87 percent did not have any health complications. Table 4.4 shows the regarding persistent health problems identified by the youth.

Table 4.4: Tabulation of qualitative responses regarding persistent health problems identified by the youth

Question	Responses	Percent	Comment
What health problems are you suffering from?	Asthma	14	Common health problems among the study population was liver cirrhosis, HIV, asthma and ulcers
	Chest pain	6	
	headache	7	
	HIV	19	
	nose bleeding	4	
	Ulcers	10	
	Liver cirrhosis	23	
	Tumor	8	
	Diabetes	6	
	Poor eyesight	3	
How has it affected your mental health?	Constant depression	51	Constant depression and mental disturbance are common psychological problems of smoking
	mental disturbance	39	
	Forgetfulness	10	

Source: Author (2021)

Some health conditions identified by those respondents who indicated they had persistent health problems include asthma, mental health, backache, chest pain, diabetes, headache and tumour, HIV, lungs infection, nose bleeding, poor eyesight and ulcers due to stress. Smoking habit may be triggered by health conditions of a person.

Table 4.3 also shows very few youth contemplated committing suicide (10 percent). Using open ended question, the youth were asked to elaborate on what made them contemplate dying. Table 4.5 shows the tabulation of qualitative responses on what pushes smoking youth to contemplate dying and how they overcame.

Table 4.5: Tabulation of qualitative responses regarding contemplation of dying

Question	Responses	Percent	Comment
What made you contemplate dying	Addiction	42	Addiction and depression are the most common triggers of suicide
	Depression	34	
	Failures	16	
	Giving up and loosing hope in life	8	
How did you overcome it?	Counseling	46	Counseling was found to be the most common method that helped youth overcome the thought of suicide. Walking out of the bad company was also found to be effective
	Walked out of the bad company	33	
	Talked about it with my parents	21	

Source: Author (2021)

For those youth that contemplated suicide, the triggers were lost hope of life, failures and disappointment of life, depression, stress, sadness, addiction to drug use and smoking and frustrations about life. Youth who contemplated suicide overcame it through counseling from psychologist. Other indicated that parents came through for their rescue and changed company of friends.

Youth were asked to indicate if ever drunk or used alcohol. Majority (75 percent) of youth had ever drunk or used alcohol. The results imply that majority of youth in the study area have ever drunk alcohol and used drugs. Table 4.6 shows the tabulation of qualitative responses on the introduction to drinking alcohol and other drugs

Table 4.6: Introduction to drinking alcohol and other drugs

Question	Responses	Percent	Comment
Who introduced you	Peer and friends	42	Peer influence friends and relatives play major role in the initiation of youth into smoking
	Relatives/family members	34	
	On my own	16	
	During parties	8	
Other form of drugs did you use	Bhang	58	Bhang and miraa are the other common drugs used by youth aside from alcohol and smoking
	Miraa	42	

Source: Author (2021)

Further using open ended question, the youth who ever drunk were requested to indicate when and who introduced them into drinking habit. It was established that most youth were introduced to smoking by friends, college friends, classmates, peers and relatives. Some youth were introduced to drinking during traditional festivals like circumcision while others started by themselves. Most youth indicated that they smoked while in school, properly at the average age of 14-22 years. When asked of other forms of drugs they ever used, Bhang and Miraa were on the top list.

Sexual orientation is also a significant biological feature that impacts psychological understanding of oneself. Majority (94 percent) of youth were heterosexual, 5 percent bisexual and 1 percent homo sexual. It was also established that 9.1 percent of youth entered into smoking habit because of sexual orientation. The results imply that sexual orientation is not a big trigger of smoking though it pushes some portion of youth into it.

Majority of youth had strict parents/guardian in regard to indiscipline and smoking (71 percent). A 29 percent of youth indicated that parents are not strict regarding indiscipline and smoking. Parental strictness may imply that parents have the role of teaching their children acceptable and moral ways of life that include drug and smoking avoidance. Table 4.7 shows the tabulation of qualitative responses regarding parental/guardian level of strictness.

Table 4.7: Tabulation of qualitative responses regarding parental/guardian strictness

Question	Responses	Percent	Comment
How did you know that your parent/guardian is strict regarding any indiscipline acts	Warnings/condemnation	36	Parents and guardian express their strictness through warnings and punishment
	Punishment	41	
	Took me to seminars to avoid drug use	15	
	Educated me on dangers of smoking	6	
	Thrown out of the home	2	

Source: Author (2021)

For those youth who indicated that their parents/guardians are strict, this was evidenced by strict warnings from parents/guardians against smoking and other forms of indiscipline, corporal punishment, ejection from home, condemnation against drug use, took to seminars that teach and create awareness about dangers of smoking and drug use, advised against smoking, educated about effects of drugs and asked to go to church. For those who had

indulged to smoking and got addicted, their parents and guardians took the initiative of taking them to rehabilitation.

The study found that 58 percent of youth were initiated into smoking by friends and peers to smoke. The results imply that friends and peers are top influencers of smoking habit among the youth. Peers and friends are significant actors when it comes to youth enrollment into smoking. When asked how they were introduced into smoking; introduction of youth into smoking happened mainly through trying on smoking, alcohol drinking and later frequent smoking. This happened at party places and celebrations, friends who offer buying to them, lure by friends, the illusion that it brings pleasure and comfort and believe it reduces stress.

It was also established that majority 93 percent of youth indicated that parents and guardians have never influenced their children into smoking. The results imply that majority of parents and guardians wish well for their children and make no attempt of influencing them into bad habit and behavior including smoking. However, from open ended question, some youth indicated that their parents and guardians introduced them into smoking. This happened majorly through parent offering children smoke to taste and when parents drink and smoke in the presence of the children.

Slightly majority (53 percent) of youth have never attended smoking awareness or sensitization programmes. Smoking awareness and sensitization programmes happened in schools, churches, organized seminars, media (radio), and community training on drugs and parents' advice. According to the youth, smoking awareness and sensitization programmes have been helpful in in creating awareness on the dangers of smoking and use of other drugs. Smoking awareness and sensitization programmes may act as source of knowledge on the dangers associated with smoking.

About 32 percent of the youth reported experiencing low esteem. Low self-esteem can be a significant trigger to smoking habit. From the open ended question, some youth indicated that low self-esteem had pushed some of them into smoking and drug use to minimize embarrassment and feeling of poor self-worth.

4.3 Prevalence of Smoking

The study investigated the prevalence of smoking among youth in Kiambaa Sub County. The results are presented in Table 4.8.

Table 4.8: Prevalence of Smoking

Prevalence of Smoking	Category	Frequency	Percent
Ever smoked	Yes	194	58.5
	No	136	41.5
	Total	**330**	**100.0**
Frequency of smoking	Once a day	31	16.0
	Twice a day	51	26.3
	Thrice a day	55	28.4
	Four times a day	20	10.3
	More than 5 times a day	37	19.1
	Total	**194**	**100.0**
Number of sticks smoked per day	1 stick	23	11.9
	2-3 sticks	82	42.3
	4-5 sticks	44	22.7
	6-8 sticks	10	5.2
	More than 8 sticks a day	35	18.0
	Total	**194**	**100.0**

Source: Author (2021)

The study revealed that majority 59 percent of the youth ever smoked. The results imply that smoking among youth in Kiambaa sub County is on the rise. It was further established that most youth first smoked at the average age 17 years. The youngest youth smoked at the age of 10 years while the oldest smoked first at the age 32 years.

From Table 4.8, many youths are smoking more than twice a day. The results imply that smoking can be habitual and addictive as the youth are smoking more than twice a day an implication of rising smoking initiation among youth in Kiambaa County. This is also supported by the rising number of sticks smoked by youths per day where. It was found that most 42 percent of youth were smoking 2-3 sticks a day. The results imply that smoking prevalence among youth is on the rise. Many youth felt that smoking made them comfortable, relaxed, feeling high and active, stress free and relieved which is basically the illusion of smoking. Some youth also indicated that smoking made them weak and tired coupled with chest pains.

4.4 Logistic Regression Model

Before running logistic regression, it was important to test certain diagnostic tests. Checking for diagnostic tests is intended to ensure that important assumptions of linear regressions are not violated. Violation of assumption test may result to spurious results. The diagnostic tests checked include normality test using Kolmogorov-Smirnov, Multicollinearity Test using Variance Inflation Factor and Heteroscedasticity using Breusch-Pagan / Godfrey Test. Error variance in all the data set was normally distributed as the significance value in all cases is greater than 0.05.The Collinearity statistics indicated a Variance Inflation Factor (VIF) <10 for all the variables thus an indication that the variables were not highly correlated, hence no existence of Multicollinearity. It was found that the variables under this study did not suffer from heteroscedasticity since the p value was greater than 0.05 (0.9287). Refer Appendix III for diagnostic tests output.

A logistic regression model was fitted between smoking initiation among youth in Kiambaa Sub County against the socio economic and psychosocial risk factors. Table 4.9 shows the model summary results and Omnibus Tests of Model Coefficients.

Table 4.9: Model summary results

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	227.593[a]	.487	.656

a. Estimation terminated at iteration number 6 because parameter estimates changed by less than .001.

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	220.335	37	.000
	Block	220.335	37	.000
	Model	220.335	37	.000

Source: Author (2021)

Model results in Table 4.9 shows that between 48.7% and 65.6% of the variation in the dependent variable (smoking initiation) are explained by the variables of the study. The predictors of smoking were grouped into socioeconomic factors and psychological factors. The Omnibus Tests of Model Coefficients shows that the chi square is highly significant (chi square=220.335, p=.000). The results imply that the sequential addition of explanatory variables explain more of the variance in the outcome variable that is smoking initiation. The logistic regression model results are presented in Table 4.10.

Table 4.10: Logistic regression of smoking predictors

	Average marginal effects		Logit results		
Variable	**(dy/dx)**	**S.E.**	**B**	**S.E.**	**Exp(B)**
Socio Economic Factors					
Gender Male	0.330***	.088	1.407***	0.394	4.083
Age					
Below 12 years					
13 – 17 years	0.615***	.197	2.085**	1.219	8.045
18 – 22 years	0.486***	.184	2.145**	1.053	8.542
23 – 27 years	0.299	.189	-1.346	1.048	0.26
28-34 years	0.312	.196	-1.394	1.066	0.248
Education attainment by youth					
None					
Primary	-0.032	.306	0.13	1.272	1.138
Secondary	0.062	.295	-0.267	1.232	0.766
Polytechnic	0.049	.313	-0.207	1.312	0.813
University	-0.005	.354	0.022	1.472	1.022
Education attainment by parent/ guardian					
None					
Primary	-0.123	.107	0.553	0.483	1.739
Secondary	-0.118	.116	0.533	0.526	1.704
Polytechnic	0.322**	.162	1.46**	0.717	4.307
University	-0.015	.198	0.074	0.958	1.076
Marital status					
Single					
Cohabiting	0.196	.186	-0.881	0.965	0.414
Married	0.114	.107	-0.482	0.469	0.618
Divorced	0.333***	.104	1.827**	0.867	6.2152
Widowed	0.091	.295	-0.378	1.283	0.685
Religion					
Christianity					
Muslim	-0.363	.264	1.538	1.334	4.653
Hindu	-0.018	.441	0.075	1.863	1.078
Rastafarian	0.163	.215	-0.814	1.304	0.443
No religion	-0.392	.330	1.692	1.8	5.428
Family size					
Less than 3 members					
4-5 members	-0.049	.087	0.227	0.412	1.255
6-8 members	0.377***	.129	1.591***	0.594	4.907
Over 8 members	0.527***	.153	2.383**	0.965	10.842

Employment status Not employed	0.112	.107	-0.468	0.443	0.627
Income size					
Less than KES 10,000					
10,001-20,000	0.089	.104	-0.39	0.47	0.677
20,001 – 30,000	0.067	.144	-0.288	0.639	0.75
30,001 – 40,000	-0.066	.205	0.267	0.828	1.307
40,001-50,000	0.074	.228	-0.317	1.03	0.728
Over 50,000	0.065	.299	-0.279	1.34	0.757
Persistent health problems(no)	0.023	.123	-0.098	0.516	0.907
Psychosocial Risk Factors					
Suicide(no)	-0.018	.153	0.078	0.664	1.082
Alcohol and drug(no)	-0.625***	.071	2.958***	0.503	19.259
Parent or guardian strictness(no)	0.059	.096	-0.255	0.426	0.775
Peer influence (no)	-0.443***	.078	1.958***	0.39	7.084
Awareness influence (no)	0.201**	.084	-0.862**	0.367	0.422
Self-esteem (high)	-0.236***	.085	1.084**	0.427	2.955
Constant			-0.974	1.678	0.378

*<p0.10, **p< 0.05, *** p < 0.01, Exp (B)/Odds ratio (OR)

Source: Author (2021)

Gender is positively and statistically significant in relation to smoking initiation. The marginal effects of males were 0.330 percentage points implying that males are more likely to smoke by 33.0%. Gender is associated with smoking initiation among youth. Male youth in reference to female youth are more likely to smoke. The results implied that a male youth is more likely to smoke compared to females. Majority smoker have been males but in the recent, the cases for smoking females have been on the rise. In comparison to females, men commence to smoke at younger ages and smoke more cigarettes per day. The results concur with Joffer, et al. (2014) who investigated smoking predictors among adolescents in Sweden and identified gender as one of the predictors of smoking habit among the Swedish youth. According to Bilano (2015), approximately 250 million women and 1 billion men are daily smokers. While male rates have peaked and are in slow decline, female rates are still rising. The prediction is that, while 12% of the female population currently smokes, this will rise to 20% by 2025.

There was a positive and significant association between youth in age 13 – 17 years; age 18 – 22 years and their likelihood to smoke. The marginal effects of youth aged 13 – 17 years was 0.615 percentage points implying that youth aged 13 – 17 years are more likely to smoke by 61.5%. Likewise, the marginal effects of youth aged 18-22 years was 0.486 percentage points

implying that youth aged 18-22 years are more likely to smoke by 48.6%. Thus, certain age group of youth is associated with smoking initiation among youth. The results imply that age is a significant predictor of smoking among youth. Smoking habit has been found to be high between the ages 15 years to the age 40 years by scholars. According to WHO (2020) age has been established to be a significant demographic characteristic determining active initiation into smoking habits, chances of stopping smoking and risk of health related problems. Wellman, et al. (2016) studied predictors of smoking cigarette among youth using longitudinal study and found age, as one of the predictor. According to Mutumba and Schulenberg (2019) young people who started smoking at age 13 or before, are twice more likely to remain active smokers during their adulthood as compared to young people who started smoking at age 17 and later. However, the results contrast that of Cantrell, *et al.* (2018) who studied patterns in first regular cigarette smoking cigarette initiation by focusing youths and young adults and found that initiation to tobacco smoking and regular initiation decreased significantly across time in the age group 12–14 years and 15–17 years.

It was also revealed that youth whose parents/guardian attained polytechnic level of education in reference to parents/guardian that did not have any education at all are more likely to smoke. The marginal effects of parents with polytechnic level of education are 0.322 percentage points higher to smoke. The results imply that youth whose parents/guardian attained polytechnic level of education are 32.2% likely to smoke compared to parents/guardian that did not have any education. To some extent, education of parents/guardians is associated with smoking habit among youth. Educated parents may be informed of the dangers of smoking and thus well informed to discourage their children from smoking. According to Alves, et al. (2017), low educated parents may impose less restrictive norms on their children's tobacco use, and adopt less restrictive norms in regard to their own smoking behaviour. According to Kuntz and Lampert (2013) higher parental education level is linked to lower adolescent smoking rates compared with having lower parental education levels.

The marginal effect points of divorced youth is 0.333 percentage points implying that divorced youth are 33.3% more likely to smoke compared to youth who are single/unmarried. Marital status is associated with smoking habit among youth. Marital status is an important social-contextual factor in predicting tobacco use. Married and divorced persons may be psychologically traumatized and would want to seek comfort from smoking. The results

concur with Mandil, et al. (2010) who studied smoking among university students found that divorced persons is significantly associated with their smoking status. The results also agree with Kim, (2012) that there is high smoking prevalence is evident among widowed or divorced persons.

The marginal effects was 0.377 percentage points implying that youth from family size of 6-8 members are more likely to smoke by 37.7% compared to youth from family size of less than 3 members. In addition, a positive and significant association between youth from family size of over 8 members and smoking initiation was found. The marginal effects was 0.5265 percentage points an implication that youth from family size of over 8 members are more likely to smoke by 52.65%. There is high tendency for family size to trigger smoking habits among the youth.

There is perception that large family size may not adequately monitor the behavior of their children including when they start smoking or start using any drugs. The results agree with Du, et al (2015) who studied the association between family structure and adolescent smoking among multicultural students in Hawaii and found that family size is a significant predictor of smoking behaviour among children where family size of more than 5 members are more likely to have smoking person. Likewise, Martini and Sulistyowati (2015) in a study on the determinants of smoking behavior among teenagers in East Java Province indicated that the larger the family size, the lower the smoking prevalence rate. Also, Mohammed, et al. (2019) who investigated predictors of smoking among male adolescents in Saudi Arabia indicated that size of family income initiated many adolescents into smoking habit.

The marginal effect of youth who do not use alcohol and drugs are -0.625 percentage points implying that youth who do not consume alcohol and drugs are 62.5% less likely to smoke compared to those who consume. The results imply that youth who use alcohol and drugs in relation to youth who do not use alcohol and drugs are more likely to smoke. Use of alcohol and drugs is highly associated with smoking initiation. Based on the results, use of alcohol and drugs is the greatest predictor of smoking among youth. Youth who drink alcohol and consume other drugs like bhang, cocaine and others are more likely to also smoke cigarette. The results agree with Joffer, *et al.* (2014) who investigated smoking predictors among adolescents in Sweden and found that adolescents who drink alcohol are more likely also to smoke. Also, Nowak, et al. (2018) revealed that adolescents who drink alcohol are more likely also to smoke.

Peer influence has a positive and significant association with smoking. The marginal effects of peer influence is -0.443 percentage points implying that youth not under peer influence are 44.3% less likely to smoke compared to youth under peer influence. Peer influence thus, is a significant predictor of smoking among the youth. The results imply that youth experiencing high peer influence to smoke in reference to youth with minimal peer influence are more likely to smoke. Peer influence is widely recognized as a crucial factor affecting young people's early experimentation with tobacco and their willingness to continue smoking.

Peer influence compels many youth to try things they won't have done without pressure including smoking and other sorts of drugs. Under influence of peers, a youth would want to smoke as a proof to friends/peers that he/she is great and know about smoking and is not naïve. The results agree with Wellman, et al. (2016) studied predictors of smoking cigarette among youth using longitudinal study and found that peer influence, is a significant predictor of smoking. The results also concur with Mbongwe, *et al.* (2017) who investigated predictors of tobacco smoking among youth using a sample of 2554 youth from the GYTS and found that peer influence and self–esteem are strongest initiators of tobacco smoking among youth in Botswana. Also, Mohammed, et al. (2019) who investigated predictors of smoking among male adolescents in Saudi Arabia identified peer influence as a significant predictor of smoking initiation among youth.

Attending or listening to smoking awareness or sensitization programmes has a negative and significant association with smoking initiation. The marginal effects of youth without awareness about dangers of smoking is 0.201 percentage points implying that lack of awareness about smoking will result to 20.1% increase in smoking. The results imply that youth who attend or listen to smoking awareness and sensitization programmes in reference to youth who do not are 20.1% less likely to smoke. Smoking awareness or sensitization programmes can be inhibitors of smoking initiation among the youth. The awareness on the harmful effects associated with smoking is likely to reduce cases of smoking. Smoking awareness or sensitization programmes can be inhibitors of smoking initiation among the youth. Activities that involved youth may be important because they contributed to building awareness of smoking as a public health problem, increasing visibility of tobacco control efforts, and changing policies on youth access to tobacco. The results concur with Kaleta, Polanska, Wojtysiak and Szatko (2017) who investigated involuntary smoking in adolescents, their awareness of its harmfulness, and attitudes towards smoking in the presence of non-

smokers and found that awareness on the health consequences of active smoking may reduce case of smoking among the youth.

Finally, model output indicated that low self-esteem is positively and significantly associated with smoking initiation. The marginal percentage points for youth with high self-esteem is -0.236 implying that youth with higher self-esteem are less likely to smoke by 23. 6%. The results imply that youth with low self-esteem in reference to youth with youth with high self-esteem are more likely to smoke. Self-esteem among youth is a significant predictor of smoking among the youth. Self-esteem refers to oneself confidence and feeling of worth. However, when this special virtue is destroyed, or inadequate, someone feels less worth as human and may contemplate other actions to suppress this including smoking and drinking alcohol.

Youth who are suffering low self-esteem may indulge to smoking to try cover-up on the feeling of shame, unworthy and dislike of oneself. According to Joffer, et al. (2014) who investigated smoking predictors among adolescents in Sweden, low self-esteem was identified as of predictors of smoking habit among the Swedish youth. Wellman, et al. (2016) while studying the predictors of smoking cigarette among youth using longitudinal study indicated that higher risk of smoking initiation is associated with low self-esteem. The results also concur with Mbongwe, *et al.* (2017) who investigated predictors of tobacco smoking among youth using a sample of 2554 youth from the GYTS and found that self–esteem is one of the strongest initiators of tobacco smoking among youth in Botswana.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND POLICY IMPLICATIONS

5.1 Summary and Conclusion

The study sought to explore the predictors of smoking initiation among the youth in Kiambaa Sub County, Kiambu County. The specific objectives were to; assess the prevalence of smoking among youth in Kiambaa Sub County, determine the relationship between socio-economic factors and smoking initiation among youth in Kiambaa Sub County and investigate the effect of psychosocial risk factors on smoking initiation among youth in Kiambaa Sub County. Primary data were collected by use of a semi-structured questionnaire. Cross tabulation tables and logit model were used to evaluate association between the smoking predictors and smoking initiation among youth in Kiambaa Sub County.

While assessing the prevalence of smoking among youth in Kiambaa Sub County, it was found that majority 59 percent of the youth ever smoked an implication that smoking among youth was on rise in the study area. It was further established that most youth first smoked at the average age 17 years. The youngest youth smoked at the age of 10 years while the oldest smoked first at the age 32 years. At least 84 percent of the youth who ever smoked were now smoking cigarette more than twice a day and implication that smoking can be habitual and addictive. This is also supported by the rising number of sticks smoked by youths in Kiambaa Sub County per day where it was found that majority 88 percent of youth who smoked were using more than 2 sticks of cigarette per day. The study thus concludes that smoking initiation in Kiambaa Sub County is on the rise.

The significant social economic factors that predict smoking initiation among youth in Kiambaa Sub County include gender, age, educational attainment by parent or guardian, marital status and family size. Male youth is more likely to smoke compared to females. Youth who are in the age bracket of 13 to 17 years and age 18 and 22 years are more likelihood to smoke in reference to youth in the age bracket below 12 years of age. Parents/guardian attained polytechnic level of education in reference to parents/guardian that did not have any education at all are more likely to smoke. Married and later divorced youth were more likely to start smoking. In addition, youths from family size of more than 6 members are more likely to smoke compared to youths from family size of less than 3 members. The study thus concludes that gender, age, educational attainment by parent or

guardian, marital status and family size are significant predictors of smoking initiation among youth.

The significant psychosocial risk factors that predict smoking initiation among youth in Kiambaa Sub County were identified as use of alcohol and drug, peer influence, awareness influence and self-esteem. It was found that use of alcohol and drugs is highly associated with smoking initiation. Youth who use alcohol and drugs in relation to youth who do not use alcohol and drugs are more likely to smoke. Peer influence was found to be a significant predictor of smoking among the youth and youth experiencing high peer influence to smoke in reference to youth with minimal peer influence are more likely to smoke. In addition, attending or listening to smoking awareness or sensitization programmes is likely to reduce the tendency of smoking as the relationship is negative with smoking initiation. Low self-esteem was also poised to significantly trigger smoking initiation among youth. A conclusion is therefore made that use of alcohol and drug, peer influence, awareness influence and self-esteem are significant psychosocial risk factors that influence smoking initiation among the youth.

5.2 Policy recommendation

Findings in the study indicated that smoking initiation is on the rise among youth in Kiambaa Sub County. There is need for sensitization and educational campaigns among youth on the dangers of smoking that include health problems and implications on youth socio-economic growth. These educational campaigns can be organized in form of seminars, workshops by the county government in conjunction with youth groups and the National Authority for the Campaign Against Alcohol and Drug Abuse (NACADA). There is also need for widespread sensitization and education against smoking through the mainstream media including radio stations, televisions, social media and newspapers.

Gender, age of the youth, educational attainment by parent or guardian, marital status and family size were identified as significant social economic factors that trigger smoking initiation among youth. There is need for awareness programmes that specifically target male youth, female youths and youth of different age groups on the need to shun smoking and refocus their youthful energy on socio-economic growth including paying attention to education, sports and other constructive activities. Parents and guardians can better play this role in creating awareness among the youth of different gender and age brackets. There is also

need for marital counseling sessions from marriage experts, clan members, religious leaders and other kin in regard to challenges associated with marriage. This will make sure challenges arising from marriage are resolved and don't push youth into smoking and alcohol drinking to suppress the challenges. Parents and guardians need to act like role model among the youth and avoid smoking in the presence of their children or young people.

Use of alcohol and drug, peer influence, awareness influence and self-esteem are significant psychosocial risk factors that predict smoking initiation among youth. There is need for periodic educational awareness programmes for youth regarding use of alcohol and drug. Educational institutions including schools, colleges and rehabilitation centers need to further emphasize in teaching and creating awareness among youth on the dangers associated with smoking. There is also need for counseling sessions in school, churches and community levels for youth who may be facing problems related with low self-esteem. The counseling sessions should gear at identifying the causative factors and devise mechanism to create self-worth among the youth. In addition, parents, guardians, religious leaders and other community members need to work in coordination to identify peer influence among youth and advise accordingly to protect many youth from falling trap to peer influence for lack of awareness. There is also need to for correctional centers serviced by well-trained social personnel, psychologists to counsel and correct youth who are addicted to smoking.

5.3 Areas for Further Research

The study only focused on smoking cigarette disregarding other substances that are smoked including bhang. Future research may entail studying smoking prevalence among youth with main focus on bhang smoking among youth in Kenya. It also not known how effective are sensitization and educational programmes regarding smoking among youth. Further research should attempt to determine the effectiveness of the smoking sensitization and educational programmes among the youth in Kenya.

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APPENDICES

Appendix I: Consent Form

Predictors of Smoking Initiation among the Youth in Kiambaa Sub County, Kiambu County

1. Ivoluntarily agree to participate in this study.

2. I am aware that though I have agreed to participate, I can withdraw any-time or decline to answer any question without any consequences of any type.

3. I am aware that I can withdraw rights to use data for any other purpose other than the one intended for.

4. The aim and nature of the research was explicitly explained to me and had the chance to make inquiries on where I did not understand.

5. I am aware that participation involves collecting data on predictors of smoking initiation among the youth in Kiambaa Sub County.

6. I am aware that there are no benefits of whatsoever that I shall accumulate for agreeing to participate in this research.

7. I am aware that any information I provide in this research shall be held confidentially.

8. That in the reporting of this results, my anonymity will be observed though use of unique codes that shall conceal any details of me or the identity of people I speak about.

9. I understand that disguised information from my participation may be cited in in dissertation, conferences, published materials etc.

10. I understand that by informing the researcher on any potential harm to myself or any other individual of participating in this study, they can report to appropriate authorities; they may decide to report to me first or report to the relevant authority

without my permission.

11. The undersigned consent form will be kept at the University of Nairobi and shall be granted access upon permission by relevant authorities, school of post graduate.

12. I am aware that I can access the information any time as required by freedom of information legalization.

13. I am free to engage any person who participated in the study to ask for more clarification and information.

Samuel Ndaama Wangui
X53/12801/2018
Post graduate student, School of Economic, University of Nairobi
In case of any complains or further clarification, kindly contact the;
The Chairman
University of Nairobi,
Ethics Review committee (UON-ERC)
P.O BOX 30197-0000
Nairobi

---------- ----------

Signature of participant Date

I believe the participant is giving informed consent to participate in this study

---------- ----------

Signature of researcher Date

Appendix II: Semi-Structured Questionnaire

The questionnaire is purposed in gathering data predictors of smoking initiation among the youth in Kiambaa Sub County, Kiambu County. The data is for the purpose of academic research only and confidentiality of information is guaranteed. The participation is voluntarily.

INSTRUCTIONS

Answer the questions in this template by ticking (√) where best suits you or your answer.

SECTION A: SOCIO ECONOMIC FACTORS

1. Gender; (tick) Male { } Female { }
2. Age;
   Below 13 years { } 13 – 17 years { }
   18 – 22 years { } 23 – 27 years { }
   28-34 years { }
3. Your level of education
   None { } Primary { }
   Secondary { } Polytechnic { } University { }
4. Level of education of your parent/guardian
   None { } Primary { }
   Secondary { } Polytechnic { } University { }
5. Marital status
   Single { } Cohabiting { } Married { }
   Divorced { } Widowed { }
6. Religion
   Christian { } Muslim { } Hindu { }
   Rastafarian { } Non religion { }
7. Family size
   Less than 3 members { } 4-5 members { }
   6-8 members { } Over 8 members { }
8. Employment status;
   Employed { } Not employed { }
   Any other form of employment?……..

9. Income size of the family a month;

   Less than KES 10,000 { } 10,001-20,000 { }

   20,001 – 30,000 { } 30,001 – 40,000 { }

   40,001-50,000{ } Over 50,000{ }

10. Do have any persistent health problems and confirmed through medical testing?

    Yes { } No { }

If yes what is/are the health problems suffering? How has it affected your mental health?

……
……
……

SECTION B: PSYCHOSOCIAL RISK FACTORS

11. Have you ever drunk alcohol or used any other form of drugs?

    Yes { } No { }

    If yes when did you ever drunk alcohol and who introduced you? What other form of drugs did you use?

    ……..…..

12. Sexual orientation?

    Heterosexual { } Bisexual { } Homo sexual { }

    At any time did your sexual orientation pushed you to smoke?

    Yes { } No { }

13. Is your parent/guardian strict regarding any indiscipline including smoking and use of alcohol or any other drug?

    Yes { } No { }

    How did you know that your parent/guardian is strict regarding any indiscipline acts?

    ……..…..

14. Have your ever been influenced by friends/ peers to smoke?

    Yes { } No { }

    If yes, how did they do it?

    ……..…..

15. Have your ever been influenced by parent or guardian to smoke?

    Yes { } No { }

    If yes, how did they do it?

    ……..…..

16. Have your ever attended or listen to smoking awareness or sensitization programmes?

Yes { } No { }

If yes, where? Was it helpful?

……..…..

17. Have you ever contemplated suicide?

Yes { } No { }

If yes what made you contemplate dying? How did you overcome?

……
……

18. Rate your self-esteem?

Low { } High { }

Has ever low self-esteem pushed you to contemplate smoking or using any other drug to minimize embarrassment?

……..…..

SECTION C: PREVALENCE OF SMOKING

19. Have you ever smoked?

yes { } no { }

If ever smoked, at what age did you first smoked?

……..…..

……..…..

20. How frequently do you smoke currently?

Once a day{ } twice a day { } Thrice a day { }

Four times a day { } More than 5 times a day { }

21. How many sticks do you smoke per day?

1 stick { } 2-3 sticks { } 4-5 sticks { }
6-8 sticks { } More than 8 sticks a day { }

22. How do you feel after smoking?

……..…..

……..…..

Appendix III: Diagnostic Tests Output Results

Results of Kolmogorov-Smirnov[a] Test for Normality

Variable	Kolmogorov-Smirnov[a]		
	Statistic	**df**	**Sig.**
Socio Economic Factors	.992	330	.166
Psychosocial Risk Factors	.967	330	.453
Prevalence of Smoking	.981	330	.825

Table Multicollinearity Test

Variable	**VIF**
Socio Economic Factors	2.105
Psychosocial Risk Factors	2.208
Prevalence of Smoking	2.504
Mean VIF	2.261

Results of Breusch-Pagan / Godfrey Test for Heteroscedasticity

H_o: Constant variance

chi2(1) = 0.010

Prob > chi2 = 0.9287