INTRAPERSONAL AND INTERPERSONAL DETERMINANTS OF ADOLESCENT PREGNANCY AMONG GIRLS AGED 10-18 YEARS IN IGEMBE NORTH SUB-COUNTY, MERU COUNTY, KENYA

BY

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DECLARATION

Declaration by the student:

This thesis is my original work and has not been presented for a degree in any other university or for any other university or any other award.

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DEDICATION

To my parents: Mr. & Mrs. Mbae and Son Jayden for moral support and most of all for their prayers which have strengthened my course.

ABSTRACT

Globally, 10% of total births occur among adolescent girls aged 10 - 18 years, 90% of whom reside in Africa. Adolescent pregnancy entails high morbidity and mortality risks yet, intervention show mixed outcomes, with those found to be effective showing small effect sizes across contexts. In Kenya, adolescent pregnancy is about 18%, with Meru being one of the high burden counties, accounting for 24% among estimated 18,123 adolescent girls countrywide. Igembe North sub-County accounts for the highest proportion (59%) of adolescent pregnancy in the County. Few studies exist in Kenya on person-centered risk factors, hence the need for research to further clarify personal and interpersonal determinants of adolescent pregnancy. This is needful to enable improvements in interventions design. The current study specifically investigated occurrence of risky sexual behavior, intrapersonal and interpersonal determinants of pregnancy among adolescents who had begun childbearing, based on the Socio–ecological theory. Through a cross-sectional mixed methods design using explanatory sequential, quantitative dominant approach, 398 participants were sampled from an estimated 18,123 adolescent girls aged 10-18 years who had begun childbearing in Igembe North sub-county. Participants were recruited from 8 sub-County hospitals through simple random sampling. Quantitative data was collected using structured questionnaires (Cronbach's α, 0.88) and qualitative data through 8 focus group discussions of 8-12 participants each. Variable characteristics were summarized descriptively and frequency distributions displayed in tables and figures. Bivariate logit regression identified determinants of adolescent pregnancy ($p< 0.05$). The prevalence of risky sexual behavior was 59% ($p= 0.001$). Early sexual debut (p= 0.01); being married ($p= 0.001$) and; having primary-level education ($p= 0.001$) had an association with adolescent pregnancy. Significant intrapersonal factors were, perceived behavioral control (OR 3.98; 95%*CI -0.92, -0.84; p*=0.049) and intention to have sex (OR 2.01*;* 95%CI -0.46, -0.076; *p*=0.018). Living with a single parent (OR 2.42*;* 95%CI 1.12, 18.95; p=0.01), maternal education (primary) (OR 2.39*;* 95%CI .1.23,3.48; *p*=0.01), living with a sibling who had had adolescent pregnancy (OR 2.10*;* 95%CI 1.22, 5.23; *p*=0.03), has communication with parents on reproductive health issues (OR 0.53*;* 95%CI 3.12, 13.64; *p*=0.01) and peer pressure (OR 4.23*;* 95%CI 2.22,10.98; *p*=0.03) were significant interpersonal predictors. Intentions to have sex was a strong predictor of pregnancy and was likely mediated by family relational environment and peer factors. It is recommended that combination multi-level interventions should harness intervention components that build protective behavioral intentions as well as strengthen social dimensions to prevent adolescent pregnancy.

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LIST OF ABBREVIATIONS AND ACRONYMS

AIDS	-	Acquired immune deficiency syndrome
HIV	-	Human immunodeficiency virus
KDHS	-	Kenya demographic health survey
PDT	-	Pregnancy diagnostic test
STI	-	Sexually transmitted infections
DHIS	-	District health information system
WHO	-	World health organization
UNESCO	-	United Nations Education, Scientific & Cultural Organization
UNHCR	-	United Nations High Commissioner for Refugees
UNFPA	-	United Nations Population Fund
USAID	-	United States Agency for International Development

OPERATIONAL DEFINITION OF TERMS

Adolescence: the period between ages 10-19 years

Attitude: a favorable or unfavorable disposition towards a behavior as measured using Likert scale with 1 indicating strongly disagree and 5 indicating strongly agree and a total score of <16 indicating positive and <16 negative attitude

Behavioral control: exercise of influence and authority over human behavior as measured using Likert scale with scores 1 indicating strongly disagree and 5 indicating strongly agree. A score of >10 indicates high behavior control and <10 low behavior control

Perceived ability: an individual's assessment of their own ability as measured using Likert scale with scores 1 indicating strongly disagree and 5 indicating strongly agree a score of <4 low and >4 high perceived ability

Knowledge of contraceptives: awareness of the method and where it can be sourced from as measured by a score assigned indicating the level of knowledge currently sustained by the individual a score of >7 indicates high knowledge and <7 low knowledge

Determinants: will be used interchangeably with factors that cause adolescent pregnancy

Interpersonal: relating to the immediate environment of an adolescent

Intrapersonal: characteristics of the individual including, but not limited to, knowledge, self-concept, and attitudes.

Risky sexual behavior: adolescent participating in either sex under the age of 14, non-use of condom, multiple partners, transactional sex, inconsistent use of condom as measured by yes and no on any of the behaviors.

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CHAPTER ONE
INTRODUCTION

1.1 Background of the Study

This chapter provides the reader with a clear understanding of the problem from the global perspective down to the study area.

The World Health Organization (WHO) defines Adolescent pregnancy as a pregnancy in females aged ten to nineteen years (WHO, 2014). Adolescent pregnancy is a global problem dating back to the 1960s (Kirchengast, 2016). The effects of adolescent pregnancy trickles down from the individual level to the society at large (Jordan, 2018). Adolescence is associated with poor ANC attendance and hence poor birth outcomes. At the individual level poor birth outcomes have been most prevalent in this group. This brings about health events such as infant and maternal mortality and morbidities and a vicious cycle of poverty. Pregnancy and childbirth complications are the leading cause of death among girls 15-19 years globally (WHO, 2017). Still births and deaths in the first week of life are 50% higher among babies born to adolescent mothers than among babies born to mothers in their twenties (UNFPA, 2019). Over 70,000 deaths of adolescent girls occur as a result of pregnancy and childbirth complications. The global statistics indicates a growing burden despite the interventions. In some countries there has been a progressive decline while in others an increase (WHO, 2018). Over the last years there has been a marked drop in maternal mortality from1990 and 2010 in general due to improved healthcare. According to CDC (2018) the decline has been slightly less among the adolescent 15-19years compared to the other age groups. The biggest contributor of adolescent pregnancy the world over has been the developing countries (WHO, 2018). By reducing adolescent pregnancy this will lead to realization of sustainable development goals 3.1 and 3.7. Understanding explanatory factors for heterogeneous progression across context is critical to evaluate program implementation outcomes.

Globally, 10% of births occur among adolescent girls (age 10 -19 years) 90% of whom reside in Africa (Kalipeni *et al.,* 2018). According to CDC (2018), risky sexual behavior is a major contributor to adolescent pregnancy. Risky sexual behavior in the study context, includes having multiple partners, sex without condom, early sexual debut, alcohol consumption, sexual violence and transactional/paid sex (WHO, 2018). However, the drivers of these behaviors are heterogeneous and vary widely across contexts yet, these antecedent factors and their contributions are still understudied. There are many risk factors of adolescent pregnancy

starting at the intrapersonal level (individual) to the interpersonal level (interactions) which predict adolescent pregnancy. Risky behavior associated with adolescent pregnancy is predicted by knowledge, attitude, motivations of an individual at intrapersonal level (CDC, 2018), as well as gender (masculinity and femininity factors), religion, ethnicity, sexual orientation, economic standing, financials, morals, goals, expectations, age, resilience, coping skills, time managing skills, health literacy and access to health care, skills and abilities, stigma of accessing counseling services and sexual socialization at the interpersonal level (Singh *et al.,* 2016). According to WHO, the sub-Saharan Africa's, burden of adolescent pregnancy is 193 births per 1000 births. This means that the risk of having adolescent birth is multiplied in Africa as opposed to other continents. These risks are to a large extent preventable. However, why, in the face of obvious vulnerability, do some young people make good choices and others poor ones is not often clear.

According to KDHS 2019, 14.7 percent of adolescents in Kenya have ever given birth, 22 percent of adolescents had ever given birth in Meru County which has increased over time. According to KDHS 2022, Meru ranks fifth country wide in adolescent pregnancy at 24% compared to neighboring counties(share similar geographical location) Tharaka Nithi 10% and Laikipia 9.1% and Isiolo 17% in 2022 . This is highest in the region and higher than the national prevalence which is 14.7%. According to DHIS 2, 41.7 percent of first antenatal care clients were between 15-19 years while 1.3% were between 10-14years in Meru County between January and June 2019. According to research by JHPIEGO to investigate the number of adolescent pregnancies in Meru County, Igembe North Sub-County registered the top number of adolescent pregnancies in Meru County with adolescents accounting for 59 percent of recorded pregnancies in the sub county hospital. Thirty-two percent of all women who gave birth in hospitals between the study period (January to May 2019) in Igembe North were adolescents.

Sexual risk reduction response is a critical component of the Kenya national adolescent sexual and reproductive health policy (Denno *et. al.*, 2015). This is engrained in the socio-cognitive theory (Denno *et. al.*, 2015). Social Cognitive Theory indicates that behavior is determined by the culmination of influences of personal, environmental and behavioral interactions. Adolescent acquisition of life skills, particularly sexual communication and negotiation of safer sexual behavior is critical for sexual risk reduction. However, volitional mechanisms to resolve conflict, and the relation of these processes to perceived sexual and reproductive health decision abilities and problem solving have been rarely considered in

majority of study contexts (Thongmixay *et. al.,* 2019). However, the interaction of these factors and how they influence or predict decision making is not always very apparent and varies by contexts. Igembe North sub-County which exhibits high adolescent pregnancy rates probably represents a unique clustering of risk factors. These factors, contained in a complex socio cognitive model, may be abstract though and thus may often be overlooked.

Few studies have looked at intrapersonal and interpersonal determinants of adolescent pregnancy. There is still a gap in knowledge on what is happening at the individual level as well as the immediate environment. In past studies, Kiarie *et al*. (2015) for instance dealt with the factors influencing adolescent pregnancy in Imenti North Meru County. In the study, the researcher investigated the influence of cultural factors, economic factors, peer group pressure and social media on adolescent pregnancies among public secondary school students. On the other hand, Moturi *et al.* (2016) studied individual, cultural and socioeconomic factors that determine adolescent pregnancy. Under individual factors, the study only dwelt on contraceptive use and age at sexual debut which are not intrapersonal determinants which are predictive of adolescent pregnancy. These studies dwelt on environmental factors that are institutional and not proximal factors within the individual and their relationships as our study proposes to do, since behavior is mostly predicted by individual and immediate environment of the individual.

1.2 Statement of the Problem

Adolescent pregnancy is an emerging public health and social problem in Kenya, being 22% in 2019 (KDHS, 2019) and 24% in 2022 (KDHS, 2022). Further it is the number one cause of mortality among adolescents in Kenya. Existing interventions (mainly health, education, wealth, and violence prevention) show mixed outcomes, with those found to be effective largely showing small or inconsistent effect sizes across Kenyan contexts (Feyissa *et. al.*, 2023). Recent systematic reviews attribute this to lack of adequate implementation and/or fidelity as well as lack of intervention efficacy, with recommendation for more studies to inform these aspects. Adolescent pregnancy in Meru is one of the highest among counties in Kenya and regionally, accounting for 22% of 18,123 adolescent girls. Igembe North sub-County accounts for the highest proportion (59%) of adolescent pregnancy in the County. According to a report by NACC in 2017, Meru ranked seventh country wide in adolescent pregnancy, being 38% compared to neighboring counties such as Isiolo (29%), Tharaka Nithi (26%) and Laikipia (28%). In Meru county a report by the Ministry of Health in collaboration with JHPIEGO indicated that Igembe North Sub-County had the highest prevalence of

adolescent pregnancy with 59 % of pregnancies reported in the Sub County being from adolescents. Few studies exist in Kenya on person-centered risk factors which determine behavior, hence the need for this research to further clarify personal and interpersonal determinants of adolescent pregnancy to enable improvements in interventions.

Based on the socio-cognitive theory, behavior is a culmination of interactions between personal (self-efficacy, motivations, sexual intention, perceived abilities) and environmental factors. The transitions experienced by adolescents makes them vulnerable to issues at the intrapersonal level, interpersonal (school, family aspects, peers) and behavioral levels (protective and risky behaviors) which are the focus of this study. Whereas majority of interventions in Kenya are targeting improving adolescent sexual and reproductive health, including mitigation of early pregnancy, there is little knowledge on the factors that drive prevalence of risky sexual behavior particularly. It is not clear as to why some adolescents choose to indulge in risky sexual behavior while others don't. Moreover, there are challenges in implementing strategies that simultaneously target root causes, going by the observed outcomes which have been largely sub-optimal. Understanding of risks for adolescent pregnancies will enable development of more effective and targeted person-centered interventions to address the adolescent pregnancy epidemic in this country. This current study results contributes to our understanding of key proximal and distal factors associated with reproductive decisions and protective behaviors.

1.3 Objectives of the Study

1.3.1 Main Objective

To determine the interpersonal and intrapersonal determinants of adolescent pregnancy among girls aged 10-18 years in Igembe North sub-County.

1.3.2 Specific Objectives

i. To establish prevalence of risky sexual behavior in adolescent pregnancy in Igembe North sub-County, Kenya

ii. To establish intrapersonal determinants of adolescent pregnancy in Igembe North sub-County, Kenya

iii. To establish interpersonal determinants of adolescent pregnancy in Igembe North sub-County, Kenya

1.3.3 Research Questions

i. What is the prevalence of risky sexual behavior of adolescent pregnancy in Igembe North sub-County, Kenya?
ii. What are the intrapersonal determinants of adolescent pregnancy in Igembe North sub-County Kenya?
iii. What are the interpersonal determinants of adolescent pregnancy in Igembe North sub-County, Kenya?

1.4 Significance

Adolescent pregnancy is a growing problem that needs to be addressed. Many interventions have been put in place to address it in Igembe North Sub County but the problem still persists. Several studies have focused on the determinants of adolescent's pregnancy while few have focused on what is happening at the individual level as well as the immediate environment/relations. Mixed method cross sectional design will not only identify the determinants that are significant but also provide insights into why they happen through FGDS conducted. This will inform action points for interventions. This study results show specific individual-level and interpersonal risk factors that influence occurrence of pregnancy among adolescence. The findings will be useful for guiding reproductive decisions among adolescents and design of interventions among stakeholders, including parents, adolescents and agencies such as non-governmental organizations (NGOs) working in the field of adolescent pregnancy and the government departments of education in Igembe North sub-County. The findings will also raise awareness on prevalence of determinants in the area as well.

1.5 Scope of the Study

The study was confined to Igembe North sub-County. The study focused on prevalence of risky sexual behavior and intrapersonal and interpersonal determinants of adolescent (10-18 years) pregnancy.

1.6 Limitations of the Study

The study was hospital-based thus more likely to largely capture participants who might be unique and self-motivated to seek interventions at the facilities. Adolescents are known to not easily attend health facilities for care. It is uncertain how this might have differed from community-based design. However, the study population still represents a relatively unique population among adolescents, worth studying.

CHAPTER TWO
LITERATURE REVIEW

2.1 Introduction

This chapter focuses on the theoretical and conceptual research in order to provide further insights into the intrapersonal and interpersonal determinants of adolescent pregnancy.

2.2 Socio Demographic Factors

2.2.1 Level of Education

Level of education refers to the education attainment of an individual in school. Education is a social determinant for healthh and well-being (WHO, 2022). Research has also shown a connection between level of education and incidence of adolescent pregnancy. Higher education achievement proffers protective dispositions against adolescent pregnancy through diverse within-individual and interpersonal positive processes which enables them to navigate or mitigate behavioral or social risks. Higher education level may interact with the within-individual factors including life-skills; social capital; social networks and relations; temperament, motivations, perception of risk and severity of teen pregnancy-related challenges, and; other cognitive processes such as factual knowledge and learning, to assist those at high risk to develop protective response compared to those considered to be at lower risk (Nuru *et. al*., 2023.). Individuals with higher level education may develop better supportive networks, have higher expectations and opportunities to participate in social interactions that promote and generate resilience with positive health outcomes. Other Studies have shown conflict moderate the relationship between education and adolescent pregnancy.

These include socioeconomic status, access to comprehensive sex education, Knowledge about contraception, family support and peer influence. In the developed world a study conducted in Canada US, UK Sweden and France found that lower education achievement was associated with child bearing as compared to the teens with higher educational attainment (Sing *et. al.,* 2020). In Africa, a review of demographic health surveys between 2000 and 2010 in 24 countries showed that individuals with more education were less likely to report early sexual debut (Doyle & Ross, 2012). A study conducted in Narok county, Kenya indicated that the more educated an adolescent is, the less the likelihood of adolescent pregnancy hence education was protective (Moturi *et. al*., 2018).

In Africa a review of demographic health surveys between 2000 and 2010 in 24 countries showed that individuals with more education were less likely to report early sexual debut (Doyle, Mavedzenge *et. al.,* 2018). Enrolment in school in south Africa was associated with decrease in adolescent pregnancy rate according to a study carried out. This meant that school enrolment was protective. It further established that pregnancy was less common during school term as opposed to during school holidays (Glynn *et. al.,* 2020). Recent evidence from four countries in Sub-Saharan Africa suggests that a significant minority of young people aged 12–14 are already sexually active. In addition, a sizeable proportion of young people become sexually mature between the ages of 12 and 16, when females typically have their first menstruation, and males experience pubertal physical changes.

The school can act as an agent for disease transmission/ a protection factor from diseases. Adolescents' decision about sex has been found to be connected to school. The academic scores, as well as if they perceive school as supportive and connected as well as whether they are involved in activities after school is related to whether they will have early pregnancy. The school environment may play a role in transmission of risky sexual behavior or responsible behavior. Adolescents are known to form peer groups based on their locality e.g., schools (Nguyen *et. al.,* 2018). They are also known to conform to the cultures of these groups which may be misleading. The pressures to conform to these cultures may lead to risky behaviors that may perpetuate adolescent pregnancy. Schools also act as agents of disease (risky behavior) in that adolescents with poor academic achievements may disengage and breed pessimism which may turn them to risky behaviors. On the other hand, schools may act as agents of disease prevention in that they reduce risky behavior by involving adolescents in extracurricular activities which play a major role in promoting responsible sexual behavior.

Additionally, schools occupy the minds and time of an adolescent to an extent that they hardly get time to engage in risky behaviors. The discipline cultivated in schools through counseling and other subjects go a long way in reduction of risky behavior and hence reduction in early pregnancy. This answers the research question on the interpersonal factors that predict likelihood of early pregnancy among adolescents. This study will elicit the influence of education levels on adolescent pregnancy in the area. Studies reviewed have shown a relationship between level of education and adolescent pregnancy. Experiential knowledge about the context of the study area point at a high level of drop outs in the area.

However, a knowledge gap exists as to whether level of education contributes to high rates of adolescent pregnancy in the study area which this study hopes to fill.

2.2.2 Marital Status

Marital status refers to one's situation in regards to whether an individual is married, single, divorced or widowed. Having an adult partner has been identified as a factor in adolescent pregnancy (Harner, 2018). This becomes an agent for catalyzing adolescent pregnancy. Marriage brings about expectations of child birth which the adolescent will be too young to bear. In most of these relationships the male is much older than the adolescent. Adolescents in such relationships are more likely to fall pregnant as the adult partners expect the adolescents to take charge of contraception which never happens.

Several factors mediate adolescent pregnancy, they include, Socioeconomic status, whereby the parents may marry off an adolescent for dowry, parental support and communication will determine whether an adolescent gets married or not (Yakubu &Salisu, 2018). Lack of access to comprehensive sex education will make an adolescent to make uninformed choices, cultural and religious beliefs that allow adolescent marriages and peer influences. Risky behaviors as well as environmental exposure may push the adolescent into intergenerational relationships that may be brought about by economic hardships (Yakubu &Salisu, 2018).

The impact of early marriages to adolescents are well documented. First, their education may be cut short as they may be required to stay home to take care of their families. Secondly marriage may lead to economic hardships as the adolescent is most likely jobless and dependent on their husband. This imbalance of power may lead to intimate partner violence among other problems. Thirdly the well-being of the adolescent may be affected as she may be forced to being child bearing which may take a toll on their bodies. The studies reviewed above show that marital status influences adolescent pregnancy. Experiential knowledge about the context of the study area, which is characterized by miraa farming has led to early marriages which has motivated this study to include marital status as a variable as few studies have looked at association of marital status on adolescent pregnancy in the study area.

2.2.3 Economic Status

Economic status refers to social standing of an individual in terms of income. Family economic status may act as an agent of risky sexual behavior among adolescents or protection against risky behaviors (Odimegwu & Mkwananzi, 2018). Adolescents from families residing in well up communities may choose to get pregnant as they are assured of financial support

(Sing *et. al.*, 2018). They may also lack opportunity for risky behavior due to isolation and lack of access to potential partners. Living in areas known to be associated with poverty such as slums, early pregnancy may be seen as an escape from the unhappy lifestyle and a solution to poverty (Sing *et. al.,* 2018). Exposure to environments that promote prostitution to generate revenue may increase their chances of early pregnancy.

A study done in the UK identified poverty as a common factor in adolescent pregnancy. Areas with higher poverty in the UK were found to have higher conception rates (Bradshaw, Finch & Miles, 2019; Diamond *et. al.,* 2020). According to Nguyen *et. al.,* 2018, adolescents who could not afford basic needs were more likely to engage in sex for monetary gains while others would shy away from sex since they feared the consequences. In South Africa, poverty was found as a contributor to early pregnancy as it led to transactional sex, and sexual relations that provide benefits (Flanagan *et. al.,* 2023). Zulu *et. al.,* (2022) found that adolescents in slum areas had a higher rate of risk taking than other women. A study in Narok Kenya identified poverty to be associated with adolescent pregnancy. An adolescent in midlevel wealth index was 7percent less likely to get adolescent pregnancy than a poor one (Moturi *et. al.,* 2018). Given the contradicting view of whether poverty confers protective measures against adolescent pregnancy or not, this study elicited its effect in Igembe North. Given the experiential knowledge of Igembe North as a miraa farming zone, it would be important to find out its association to adolescent pregnancy which lacks in studies done previously.

2.2.4 Religion

Religion is defined as a worship of a higher being who is super human. Religion may become an agent of risky sexual behavior. Research has shown that there is an association between the religious beliefs held by adolescents and their sexual behavior (Aparicio *et. al.,* 2018). The frequency of attendance of church/mosque may impact an adolescent positively while the opposite is also true. The church structures give a strong sense of religiosity to the adolescents (Sing *et. al.*, 2019). The nearer the church is, the higher the likelihood of the adolescent to attend. Religion serves the purpose of delaying sexual debut among adolescents but does not provide information deemed necessary when making decisions on sexuality and how to guard against HIV/STIs and unwanted pregnancy. Frequent attendance of religious activities will inculcate values that may delay sexual initiation in adolescents (Maluluke, 2018).

Globally religiosity has been seen as pivotal in delay of first sexual intercourse. Evidence from research in an African American setting has shown that religiosity led to delayed coitus (McCree *et. al.,* 2023). Equally another study by Zaidi, *et. al.,* (2018) established a causal relationship of religion on behavior. In Africa, Nishimura *et. al.,* (2018) conducted a study in Mauritius and found that young people in a specific religion were less likely to be sexually active compared to those without any religious affiliation. In West Africa a study carried out in Wusu, Nigeria shows that religiosity did not play a significant role in reduction of sexual risks among adolescents as attending religious services provided an opportunity for adolescents to meet and mingle. Another study found that frequency in church attendance meant a delayed sexual debut among those studied. However, the association between religiosity and outcomes is complicated. Religions have been associated with contraceptive non-use and inconsistency (McCree *et. al.,* 2018). This study will be interested to elicit the connection between religion and adolescent pregnancy. This will identify if religion is a determinant of adolescent pregnancy. Igembe north being largely a Christian community, this study elicited whether religion served as a deterrent to risky sexual behavior or protective. It will determine whether frequency of attendance to church, importance of religion in one's life and level of participation in church since studies done in the area were only interested in type of religion of adolescents.

2.3 Prevalence of Risky Sexual Behavior

Prevalence refers to the total number of people in the population with a specific factor under investigation. Risky sexual behavior is a major contributor of HIV among adolescents the world over. In Africa, risky sexual behavior contributes to the high prevalence of HIV. Studies indicate that adolescents are at an increased risk due to advancement in technology. This has led to enhancing communication among their peers and availability of sexual content online as well as peer pressure with prevalence of between 7 and 47% in African countries (Fetene &Makonnen, 2018). In the Kenyan context 36.6% reported to have had risky sexual behavior in a study in Kilifi (Ssewanyana *et. al.,* 2019). Among the risky sexual behaviors considered in this review that contribute to increased risk of adolescent pregnancy are drug and substance abuse, early sexual initiation, having sex under the influence of alcohol, non-use of condom, multiple sex partners and frequent sex.

2.3.1Drug and Substance Abuse

Drug and substance abuse is one of the agents that aid risky sexual behavior to adolescents. As a result of substance use, adolescents face a multiplicity of risks in a continual basis. The

use of drugs and substances increases their risk of participating in sexually risky behaviors. There is a strong association between drug abuse and risky sexual behavior (Dunn *et. al.,* 2018; Anderson and Mueller, 2018). Many factors contribute to drug and substance abuse that leads to adolescent pregnancy. First, peer influence plays the biggest role (Ssewanyana *et. al.,* 2019). Adolescents regard peers as important in determining their behaviors. Family dynamics such as having a member of the family who abuses drugs and alcohol may influence an adolescent to indulge in the same. Socioeconomic factors such as poverty may force an adolescent into drugs to escape the problems at home. Lack of comprehensive sex education may influence an adolescent to engage in drugs and alcohol abuse which may influence judgment making them engage in risky sexual behaviors.

Worldwide research by UNICEF to determine the risk of substance use and risky sexual behavior found that 27% of those surveyed had engaged in risky sexual activities as a consequence of substance abuse (Hubbard *et. al.,* 2018). A study in Hawaii carried out to determine the likelihood of unsafe sexual practices following consumption of substances found that those engaged in alcohol and substance abuse were prone to many partners, and have alcohol and drug abuse while having sex. Alcohol and substance abuse is viewed as a justification for engaging in risky sexual behavior such as not using condom (Ssewanyana *et. al.,* 2019).

George *et. al.,* (2019) assert that the use of alcohol intensifies the risk of participating in sexual risks. Those who were exposed were three times more likely to experience early pregnancy and HIV. Those adolescents who avoid the use of alcohol and substance abuse are unlikely to have sex, have lesser sex partners and are prone to use contraceptives than those who use drugs (Albert *et. al.,* 2018). Those who engage in alcohol and substance abuse are more likely to have intentions of engagement in risky sex than those who don't use alcohol. Lin *et. al.,* (2018) found an association between those adolescents who took alcohol and increased intention to have sex than those who didn't. In sub–Saharan Africa alcohol and substance abuse was ranked one of the determinants that predict adolescent pregnancy (Yakubu *et. al.,* 2018). Given the risk posed by drug and substance use to adolescents, this study sought to determine whether its consumption influenced adolescent pregnancy in the region given the miraa grown. The study looked at whether adolescents had contact with drugs and substance use prior to engaging in risky sexual behavior as a norm.

2.3.2 Early Sexual Initiation

Early sexual debut in this study is defined as sex before the age of 14 years as defined by WHO. Early sexual debut is most likely coerced or forced. In other situations, it is brought about by early marriages. Early marriages may be brought about by poverty. Early sexual debut may also be in a bid to look for basic necessities (Zito & De Coster, 2018). Early sexual debut is associated with many sexual partners as well as alcohol and substance abuse. Adolescents are known not to use contraceptives as they see it as a preserve of the older women. This exposes them to STIs and adolescent pregnancy.

In Sub-Saharan Africa, the onset of sexual activity typically occurs by age 20 and often earlier. Sexual debut exposes young adolescents to myriad negative sexual and reproductive health outcomes. In Kenya, at least 15 percent of women 20-49 had their first intercourse by 15years and fifty percent by 18years and at least 71 percent by 20years (KDHS, 2022). Conversely, the median age of sexual debut among adolescents has been increasing over the years from 16 years in 1993 to 18 years currently. In Meru County where this research will be based, mean age at sexual debut is 17.1 years for women 20-49years and 17 years for those 25-49years. Based on experiential knowledge of the study area, there is high rates of adolescent pregnancy. many adolescent girls are lured into early sexual initiation due to poverty and miraa farming which needs cheap labor. There is however a gap in research as to whether there is an association between this early sexual initiation and adolescent pregnancy.

2.3.3 Adult Partners/Transactional Sex

Having an adult partner has been acknowledged as a factor in adolescent pregnancy (Harner, 2018). In most of these relationships the male is much older than the adolescent. Adolescents in such relationships are more likely to fall pregnant as the adult partners expect the adolescents to take charge of contraception which is not always the case. Adolescent women are also less likely to use contraceptives due to the misconception that contraceptives are a reserve for the married. An adult partner is also perceived to be financially stable and an adolescent may get involved to get financial benefits and economic stability. Some adolescents may also be involved in selling sex in exchange for money to cater for their everyday needs.

Research consistently highlights the power differentials inherent in relationships between adolescents and adult partners. Adolescents often have limited agency and decision-making power within these relationships, rendering them susceptible to coercion or pressure to engage in sexual activity and forego contraceptive use. Studies by Smith et al. (2019) and

Jones et al. (2020) underscore the role of power imbalances in increasing the risk of unintended pregnancy among adolescents involved with older partners. Age disparities between adolescent girls and their adult partners contribute significantly to the risk of adolescent pregnancy. Analysis by Ramirez et al. (2018) reveals that adolescents in relationships with significantly older partners are more likely to experience early and unintended pregnancies compared to their peers in age-concordant relationships. These findings underscore the importance of addressing age differentials in interventions aimed at reducing adolescent pregnancy rates.

Transactional sexual relationships, characterized by the exchange of goods, money, or other benefits for sexual activity, are prevalent among adolescents, particularly in resource-constrained settings. Research by Agyei et al. (2017) and Mmari et al. (2018) demonstrates the heightened vulnerability of adolescents engaged in transactional sex to unintended pregnancy due to economic dependence on adult partners and limited access to contraception.

Adolescents in relationships with adult partners often encounter barriers to accessing reproductive health services, including contraception and pregnancy testing. Studies by Wilson et al. (2021) and Patel et al. (2019) highlight the impact of stigma, confidentiality concerns, and logistical barriers on adolescents' ability to obtain essential reproductive health care, exacerbating their risk of unintended pregnancy. Cultural and social norms play a significant role in shaping adolescent-adult partnerships and influencing pregnancy outcomes. Research by Reed et al. (2020) and Garcia et al. (2017) underscores the influence of gender norms, familial expectations, and community attitudes on the acceptability of relationships between older men and younger women, perpetuating cycles of adolescent pregnancy in certain contexts.

The influence of adult partners on adolescent pregnancy is complex and multifaceted, encompassing power dynamics, age disparities, transactional relationships, access to reproductive health services, and cultural norms. There is however a research gap in igembe north sub county on whether the problem of adult partners has an association with adolescent pregnancy which is the focus of our study. Addressing these factors requires comprehensive interventions that empower adolescents to assert their reproductive rights, promote gender-equitable relationships, expand access to youth-friendly reproductive health services, and challenge harmful social norms. By addressing the influence of adult partners on adolescent pregnancy, public health efforts can mitigate the adverse consequences of early childbearing and promote the health and well-being of adolescents worldwide.

2.3.4 Inadequate Knowledge, Misconceptions and Non-Use Of Contraceptives

Numerous studies have highlighted the correlation between inadequate knowledge about sexual health and increased rates of adolescent pregnancy. A study by Kirby *et. al.,* (2007) found that adolescents with limited knowledge about contraception were more likely to engage in unprotected sexual intercourse, thus increasing their risk of unintended pregnancies. Similarly, Guttmacher Institute of research (2018) emphasized that adolescents who lacked comprehensive sex education were more prone to early and unprotected sexual activity, leading to higher rates of pregnancy. Misconceptions about contraceptives and their efficacy play a pivotal role in adolescent pregnancy. Research by Santelli *et. al.,* (2008) revealed that many adolescents hold inaccurate beliefs about contraceptive methods, such as the myth that contraception is harmful to health or that one cannot get pregnant the first time they have sex. These misconceptions often deter adolescents from using contraceptives effectively or at all, thereby increasing their vulnerability to unintended pregnancies.

The decision to not use contraceptives, either due to lack of access or personal beliefs, significantly contributes to adolescent pregnancy rates. A systematic review by Sedgh et al. (2016) found that a substantial proportion of adolescent pregnancies worldwide resulted from inconsistent or non-use of contraceptives. Factors such as stigma surrounding contraceptive use, fear of side effects, and limited access to contraceptive services further exacerbate the problem, particularly in low-resource settings.

Inadequate knowledge of the adolescents has been fueled by health practitioners (Chernick *et al.,* 2018). They have been blamed for giving health education without considering the sociocultural context of the messages. They have instead been giving biomedical facts as well as negative consequences associated with adolescent pregnancy. This has resulted in poor impact to the adolescents and misconceptions on contraceptives. Uninformed adolescents have then made uninformed choices as pertains contraception as a reserve for those in marriage. Worldwide contraceptives are recognized as essential service to combat poverty. In the US evidence has shown that the need for contraceptives was ranked as second among the poor in Nicaragua where 34 percent of vouchers issued were used for sexual and reproductive health of adolescents. (Meuwissen *et. al.,* 2018). A study by Yakub *et. al.,* (2018) identified misconception of contraceptive as a determinant of adolescent pregnancy in sub–Saharan Africa. Evidence from research in Tanzania has shown that fear of side effects as the major reason why women don't use contraceptives (Mosha *et. al.,* 2018). Ochako *et. al.,* (2018) presents evidence on myths and misconception on contraceptives citing that adolescent feared

infertility, birth defects and deformities, cancers among others and also quoted being warned by their mothers against some of the methods. Others believed that contraceptives caused side effects such as weight loss or gain, heavy bleeding as well as associating contraceptives with straying/promiscuity (Ochako *et. al.,* 2018). Consistent use of condoms among adolescents is a major problem as the negotiating skills of these adolescents are poor (Ssewanyana *et. al.,* 2019). Correct usage of condoms is also hindered in this group by lack of knowledge on the correct use.

Inadequate knowledge, misconceptions, and non-use of contraceptives are interconnected factors that contribute to the high prevalence of adolescent pregnancy in Igembe North Sub County. Experiential knowledge of the study area shows existence of this facts presented here, interventions have been put in place but the problem still persists. This study will elicit the knowledge of contraceptives among adolescents in the area. This study evaluated knowledge of contraceptives by allowing the adolescents to describe the methods they knew and scores would be generated indicating positive or negative knowledge. This was arrived at from previous studies.

2.3.5 Mass Media

Mass media if abused can be an agent for spreading risky sexual behavior among adolescents. According to Whitehead and Pearson (2018), those adolescents that were exposed to a culture of sex in early life would normally get information on sex from the web before anyone could teach them. The content they watch, listen to or read may influence their attitude on sex. Media has been recognized as having the biggest power on adolescents. The type of behavior they see in the media may be seen as normal to them leading to copying of the same (Alabi & Oni, 2018). Media may portray a picture that sex is most important and an integral part of life which is not the case leading to sexual initiation. There is a link between early sexual initiation and watching sex on television according to studies (Albert *et. al.,* 2018, Todd *et. al.,* 2018). Adolescents who watch television frequently are likely to have a positive attitude towards sex than those who don't (Albert *et. al.,* 2018). Music in the mass media also has an important role in an adolescent's life. According to Maluluke, (2020) some songs portray the image of women negatively and enhance violence against them. Obscene and vulgar language in music also portray that it is normal to use such language and may try to imitate the lyrics of the music. This enhances the adolescent's risky behavior. Media has become a critical factor in adolescent pregnancy the world over. Evidence from America indicated that more than 2000 youths surveyed across the United States aged 8-18years said that media plays a

pivotal role in their lives (Kaiser family foundation). In a study in Scotland, Todd *et al.*, (2018) noted a gradual increase over the years from 1990-1998 (25-32%) in the number of girls who reported media as having a focal point for information about sex. In an Irish study, Holland *et al.*, (2018), identified that most female topics on sex were left hanging making girls seek the information from media. Another research indicated that ninety-two percent of youths surveyed in the United States indicated an online visit as a daily chore that has been enhanced due to availability of smart phones. In Africa, access to media has been cited as increasing chances of early pregnancy in Ghana (Campus, 2018) and Zimbabwe (Mothiba, & Maputle, 2012). Evidence from a study carried out in Imenti North Kenya on the effect of mass media on adolescent pregnancy showed that 52.3 percent of adolescents reported that electronic media has an influence on their sexual intention (Mugambi *et. al.,* 2016). Given the direct influence of mass media to adolescent pregnancy, this study opted to ask the adolescents on the causes of adolescent pregnancy in the focus group discussion as most studies had tackled it in the interviews. Most however did not have access to smart phones or televisions in their households.

2.4 Intrapersonal Determinants of Adolescent Pregnancy

Intrapersonal characteristics refer to individual attributes that increases an adolescent's risk of early pregnancy. According to McCall *et. al.*, (2014), adolescent pregnancy is a result of individual factors. These intrapersonal characteristics are sexual intention, attitudes, implicit/explicit motives, perceived abilities, subjective norms and behavioral control. These factors act at multiple levels to influence decision making. There is no clear evidence on how these factors act to influence / impact the individuals' sexual reproductive decisions such that the rates are very high. It is further clear that, as part of sexual socialization process, intrapersonal and interpersonal factors interact uniquely to influence behavioral control.

2.4.1 Sexual Intentions Towards adolescent Pregnancy

Sexual intention refers to the willingness of an adolescent to engage in sexual acts in the future. Sexual intention is a determinant to sexual behavior of adolescents. The stronger the motivation towards the given behavior the higher the likelihood that the behavior will be performed. There is an association between the sexual conduct of adolescents and their intention (Lin, 2018). Adolescents who intend to have risky sexual behavior will indeed have it. Adolescents may not fully understand the consequences of sexual intercourse such as STIs and pregnancy. Their decisions may be influenced by peer pressure, societal norms or lack of information. Evidence from around the world indicates an association of sexual intention and

actual behavior (Hubbard *et. al.,* 2018). In sub–Saharan Africa, sexual intention was found to be related with early pregnancy (Yakubu *et. al.,* 2018). In Ethiopia, a study identified that sexual intention was actually significantly related to adolescent pregnancy (Dinku *et. al.,* 2018). In Kenya, a study conducted in Narok identified that sexual intention was related to actual sexual activity. If an adolescent did not have an intention to have sexual intercourse in the future, they would not (Moturi, 2016).

Sexual intention was found to be increasing with age in a Chinese study. The older the adolescent got, the higher the sexual intention (Shek *et. al.,* 2018). Experienced adolescents are more probable to display intent to be involved in sex in the coming days as the intention to be involved in sex is connected to actual engagement in sex (Thompson *et. al.,* 2018). Adolescents with low intentions towards child bearing are less likely to be engaged in risky behavior.

Various factors have been found to influence sexual intention among adolescents which are, the economic position of the adolescent, functionality of close family and intactness of the family (Shek *et. al.,* 2016). This demonstrates the fact that sexual intention, an intrapersonal factor is highly influenced by interpersonal factors and socio demographic factors. Adolescents who display uncertain intentions are most likely from disadvantaged backgrounds as well as those with low aspirations (Thompson *et. al.,* 2018).

The Social Cognitive Theory emphasizes the role of observational learning, self-regulation, and self-efficacy in shaping behaviors. In the context of adolescent sexual intention, it considers how adolescents learn from their peers, families, and media and how their self-efficacy affects their decisions regarding sexual behavior. On the other hand, theory of Planned Behavior (TPB) posits that individual intentions, attitudes, subjective norms, and perceived behavioral control influence the likelihood of engaging in a specific behavior. In the context of adolescent sexual intention, TPB can be used to examine the influence of personal beliefs, social norms, and perceived control on their decisions regarding sexual activity. Based on experiential knowledge of the study context, most adolescents have a high sexual intention as most drop out of school with the intention of marriage and beginning a family. This study was interested in sexual intention and asked eight questions that elicited the adolescent's feelings towards pregnancy as to whether it was a good or bad time for the mother. This was intended to fill the gap of knowledge as many studies have not looked at sexual intention from these perspectives but rather asked whether the pregnancy of the adolescents was intentional or not.

2.4.2 Perceived Abilities (Self-Efficacy)

According to Hanson *et. al.,* (2015) perceived abilities can only be attained through skills and knowledge gain. Hubbard *et al.,* 2018). Adolescents are known to have shifted perceived abilities as they are not mature enough and may lack experience in developing self-efficacy that can be of use. Coupled with the fact that they are easily influenced by peers and are bent on pleasing them which makes it more complicated. Additionally, perceived ability to resist sexual advancement can be of no use when the adolescent is subjected to violent sex. Research carried out in Uganda identified that adolescents had no control over what happened to them sexually (Maly *et. al.,* 2017). They did not perceive themselves as able to shun away advances for sex. The study revealed that everything is mostly pegged on the male including use of contraceptives. This was so because the adolescent would trade other needs for sex from males that promised to provide for them.

Numerous studies have highlighted the link between self-efficacy and contraceptive use among adolescents. Adolescents with higher levels of self-efficacy regarding contraceptive use are more likely to engage in consistent and effective contraception, thereby reducing their risk of unintended pregnancy (Jones et al., 2019). However, adolescents with low perceived ability may exhibit a lack of confidence in their ability to use contraception correctly, leading to inconsistent or incorrect usage and an increased risk of pregnancy (Rocca et al., 2010).

Adolescents' perceived ability to make informed decisions about sexual activity and contraception is influenced by their level of knowledge and access to comprehensive sex education. Research suggests that adolescents who receive comprehensive sex education are more likely to feel confident in their ability to make informed choices about sexual behavior and contraception (Kohler et al., 2008). Conversely, inadequate sex education and misinformation can undermine adolescents' perceived ability to protect themselves from pregnancy and sexually transmitted infections (STIs), increasing their vulnerability to unintended pregnancies (Santelli et al., 2017). Social and cultural factors play a significant role in shaping adolescents' perceived ability to prevent pregnancy. Family dynamics, peer norms, and societal attitudes towards adolescent sexuality and contraception can either support or hinder adolescents' confidence in their ability to make responsible choices regarding sexual behavior and contraception (Gibbs et al., 2020). For instance, adolescents from conservative or religious communities may experience stigma or moral judgment surrounding contraceptive use, leading to diminished perceived ability to access and use contraception effectively (Martinez et al., 2018).

Intersectional perspectives emphasize how multiple dimensions of identity, such as race, ethnicity, gender, and socio-economic status, intersect to shape adolescents' perceived ability and experiences of pregnancy prevention. Marginalized groups, including low-income adolescents and adolescents of color, may face systemic barriers that undermine their perceived ability to access reproductive healthcare services and contraception (Geronimus et al., 2016). Intersectional approaches highlight the importance of addressing structural inequalities and promoting reproductive justice to empower adolescents from marginalized communities and enhance their perceived ability to prevent pregnancy (Ross et al., 2016).

Perceived ability plays a crucial role in adolescents' reproductive decision-making and behaviors. Interventions aimed at reducing adolescent pregnancy should focus on enhancing adolescents' self-efficacy, knowledge, and agency regarding contraception use and sexual health. Addressing social and structural determinants of perceived ability, such as access to comprehensive sex education, healthcare services, and supportive social environments, is essential for promoting adolescent reproductive health and reducing unintended pregnancies. This study will identify the association between the adolescents self-efficacy and adolescent pregnancy as this gap has not been adequately filled with research to inform the interventions above. Igembe north area is characterized by school drop out and adolescent girls are unlikely to have developed skills on perceived ability. Its therefore important to study this in research context.

2.4.3 Subjective Norms

Subjective norms relate to the conviction that people around the individual agree or disapprove of a specific behavior (Nurmala *et. al.,* 2019). The people include people of importance to the individual, peers and associates of the person. These people may act as agents of spread of risky behavior or otherwise. If the person’s associates approve to a given behavior, then the individual will see the behavior as favorable. This works in collaboration with the individual’s motivation to perform the said behavior. If an adolescent believes that a person of significance to the adolescent approves of the behavior combined with their motivation will propel the adolescent to perform the said behavior. Conversely if the adolescent believes that the person of significance does not approve of the behavior then they will have a negative subjective norm. These people of significance may include people who mislead such as peers and partners who may act as agents of transmitting risky behavior to the vulnerable adolescents.

Morrison *et al.*, (2000) identified subjective norms and attitude as the highest predictors of sexual intention among Indian Americans. A study carried out in Ethiopia ranked subjective norms as the highest predictor of adolescent behavior **(**Dinku *et. al.*, 2018). In a study in Harar, Ethiopia, by Dessie *et al.*, (2015), adolescents with poor subjective norms and didn't have discussions of sexual subjects with parents displayed poor sexual health behaviors. In a study in Busia Kenya, adolescent's poor subjective norm increased the risk of being sexually active (Bakeera-Kitaka, *et al.*, 2019).

Subjective norms exert a significant influence on adolescents' decisions regarding sexual activity and pregnancy. Interventions aimed at reducing adolescent pregnancy should address subjective norms within family, peer, and cultural contexts, promoting supportive environments that reinforce responsible sexual behavior and pregnancy prevention strategies. Enhancing parental communication, fostering positive peer influences, and challenging negative cultural and societal norms can empower adolescents to make informed choices, prioritize their future goals, and reduce their risk of adolescent pregnancy. Experiential knowledge of the study area points at a society with poor role models as well as culture. Looking at subjective norms in the study context is important as it will establish whether there is an association of subjective norms and adolescent pregnancy and this will guide intervention.

2.4.4 Perceived Behavioral Control

Perceived behavioral control can be an agent of risky sexual behavior or protection against risky sexual behavior. This refers to a person's conviction as to the ease or difficulty to do a behavior in question. Personal attributes that promote behavioral control include the socio-economic status, behavior and environmental exposure of the adolescent.

Research suggests that adolescents with higher levels of perceived control regarding contraceptive use are more likely to engage in consistent and effective contraceptive behaviors, reducing their risk of unintended pregnancy (Higgins et al., 2016). Conversely, adolescents with low perceived control over contraception, such as doubts about their ability to use methods correctly or manage side effects, may be less likely to use contraception consistently or at all, increasing their vulnerability to adolescent pregnancy (Schwartz et al., 2017). Adolescents' perceived behavior control is influenced by their decision-making skills and future orientation, including their ability to weigh the consequences of their actions and prioritize long-term goals over immediate gratification. Adolescents who perceive themselves as capable decision-makers and prioritize their future aspirations may exhibit greater control

over their reproductive choices, such as delaying sexual debut and using contraception effectively (East et al., 2018). Conversely, adolescents who perceive limited control over their future outcomes or lack confidence in their decision-making abilities may engage in risky sexual behaviors and experience unintended pregnancies as a result (Wilson et al., 2020).

On its own perceived behavioral control cannot confer a person's behavior. It only works in collaboration with intention/motivation. An adolescents perceived control in combination with their intention to shun risky sexual behavior is a predictor for behavioral control. Perceived behavior control has been ranked as the highest predictor of sexual behavior in a study in sub-Saharan Africa (Yakubu & Salisu, 2018). Perceived behavior control plays a crucial role in shaping adolescents' reproductive decision-making and behaviors related to pregnancy prevention. Interventions aimed at reducing adolescent pregnancy should address factors influencing adolescents' perceived control over contraception, reproductive healthcare in general and decision-making skills. Perceived behavior control in this study is an important determinant worth investigating. Previous studies have ranked perceived behavior control as the most important determinant of adolescent pregnancy hence the need for focusing on it in this context.

2.5 Interpersonal Determinants That Influence Likelihood of Adolescent Pregnancy

Interpersonal determinants refer to factors that are in the adolescent's immediate environment. An adolescent's daily social interaction with their environment can influence their behavior (Panday *et al*., 2014). The families they come from, peers they are involved with, school, and cultural communities, media and religiosity have a significant part to play in formation of an adolescent's identity and decision making (Albert *et al.,* 2015).

2.5.1 Peer Pressure

Peer pressure refers to the influence from people of the same age(peers). As children, many adolescents relied on their parents and close relatives as their only source of guidance as well as decision making (Bingenheimer & Reed, 2014). As adolescents, this changes and peer pressure, norms and behaviors are largely influenced by their peers. Adolescents become increasingly motivated by peer pressure and would want to conform to how their peers approve/behave. Peers act as vectors which are social in nature. They act as transmitters of health and behaviors. They can be distal or proximal in nature. Proximal involves relationships which are personal with friends or partners e.g. Opposite sex relationships as well as same sex friendships. Distal involves cultural ascriptions to groups in a common

setting e.g. upholding a culture as a sign of belonging to a certain group. Peers educate each other on various issues such as sex (Hubbard *et al.,* 2018). However, their knowledge on sex is deficient and may mislead. The information received may serve to mislead adolescents who may be taken advantage off by their boyfriends. When adolescents believe that their peers are involved in sex, they are prone to also engage in the same.

This makes the adolescents more popular (Bingenheimer & Reed, 2014). Adolescents may be fooled to believe that engaging in sexual intercourse may give them popularity. Whereas this may be the case, early pregnancy is seen as morally wrong and hence may lead to stigma/shame by friends and family. They are labeled as misfits and failures. Peer pressure may also lead adolescent girls to seek relationships with males perceived to be of higher status. They aim to receive gifts and economic gains which might lead to prostitution. Worldwide coercive behavior among peers is a great contributor to adolescent pregnancy. Evidence in the United States shows that adolescents regarded views by other adolescents on sexual issues in social media as a major influence of sexual intention (Litt& Stock, 2011). Further, adolescents were shown to listen more to their peers than they would do to any other person. Yakubu *et al.,* 2018 identified peer influence as a major cause of adolescent pregnancy in Sub-Saharan Africa through a survey of studies from different countries in the region. In Kenya, Marston *et al.,* (2013) identified peer pressure as the leading cause of adolescent pregnancy in Nairobi's informal settlements. This was coupled with the fact that slums have high rates of crime making the adolescents prone to rape.

Peer pressure is an important aspect in any adolescent setting. It plays huge role in determining behavior. In this study we chose peer pressure as a variable since systemic reviews evidence available on adolescent pregnancy locally and regionally emphasizes the need to establish an association between peer pressure and adolescent pregnancy.in this study peer pressure was measured through asking questions on whether the adolescent attended parties, and its frequency as well as movies and number of friends to the adolescents who had adolescent pregnancy as these were concerns in previous research.

2.5.2 Families

Family is the basic unit of society. It is a collection of nuclear members as well as extended members of the society. Many aspects within the family will influence the attitudes and decision making as regards sex and contraceptives. Adolescents begin to form their own identity as well as practicing what they will be as adults from their families. Families may act as catalyst or as deterrent to risky sexual behavior to the adolescent. This may be transmitted

either directly or indirectly. Amid a lot of peer pressure, parents still remain an influence to their lives (Zito& De Coster, 2016). The structure of the family directly transmits risky sexual behavior to the adolescent. It plays a critical role in determining the age at which they begin sexual intercourse. Those in families with both parents are related with adolescents who begin sexual relations later in life. While the reverse is true. The absence of a dad figure may mean less supervision. Adolescents born in families with high educational achievement and income indirectly impacts the adolescent by setting for them higher goals. This may result in postponement of sexual intercourse by the teens.

Parental monitoring refers to parents' knowledge of their adolescents' activities, whereabouts, and peer associations. Research consistently demonstrates that higher levels of parental monitoring and supervision are associated with reduced risk of adolescent pregnancy (Crosnoe et al., 2016). Adolescents who perceive their parents as involved, attentive, and aware of their activities are more likely to delay sexual debut, use contraception consistently, and avoid risky sexual behaviors, thereby lowering their risk of unintended pregnancy (Viner et al., 2018).

Open, supportive, and effective communication between parents and adolescents about sexual health and contraception is crucial for reducing the risk of adolescent pregnancy. Adolescents who report having frequent and meaningful discussions with their parents about sex are more likely to delay sexual debut, use contraception consistently, and make informed decisions about their reproductive health (DiIorio et al., 2017). However, barriers to communication, such as discomfort, embarrassment, or cultural taboos surrounding sexuality, may hinder parents' ability to engage in productive conversations with their adolescents, leaving them vulnerable to misinformation and risky sexual behaviors (Katz et al., 2019).

Parents' attitudes, beliefs, and values regarding sexuality, contraception, and adolescent pregnancy significantly influence adolescents' perceptions and behaviors. Adolescents who perceive their parents as supportive of contraception, comprehensive sex education, and delaying childbearing are more likely to adopt similar attitudes and behaviors, reducing their risk of adolescent pregnancy (Gubrium et al., 2018). Conversely, adolescents who perceive their parents as endorsing traditional gender roles, moralistic views on sexuality, or stigmatizing attitudes towards contraceptive use may internalize these beliefs and engage in risky sexual behaviors, increasing their likelihood of experiencing adolescent pregnancy (Tanner et al., 2020).

Family socioeconomic status shapes adolescents' access to resources, opportunities, and social support networks, influencing their risk of adolescent pregnancy. Adolescents from low-income families may face structural barriers to accessing reproductive healthcare, contraception, and educational opportunities, increasing their vulnerability to early pregnancy (Manlove et al., 2016). Interventions aimed at addressing socioeconomic inequalities, such as providing comprehensive sex education, expanding access to healthcare services, and promoting economic empowerment initiatives for families, can mitigate the risk of adolescent pregnancy among vulnerable populations (Teitelman et al., 2019).

A study by Hoffmann (2016) in the United States shows that poverty in families was associated with adolescent pregnancies. Parents who don't talk about sex to their adolescent girls also contribute to high rates of adolescent pregnancy. Since adolescents highly regard their parents, hence parents that talk against teen pregnancies will shun adolescent pregnancies. However, in the African context it is considered a taboo. In the Kenyan context, a study by Kiarie, (2018) in Meru County revealed that parents don't talk to their adolescent girls about sex. The reasons for this were, they thought the girls were too young, it was a taboo while others left the responsibility for other relatives. The study further revealed that 76 percent of the respondents thought that parental communication of sex and pregnancy would reduce chances of becoming pregnant.

Families play a critical role in shaping adolescents' risk of experiencing adolescent pregnancy through parental monitoring, communication, attitudes, and socioeconomic influences. Interventions aimed at reducing adolescent pregnancy should involve strengthening family relationships, promoting open and supportive communication, enhancing parental monitoring and supervision, and addressing socioeconomic inequalities that contribute to reproductive health disparities. It is important for this study to address the gap of research on the association of family on adolescent pregnancy as present interventions have not targeted these issues. This study focused on the aspect of parent's discussion with adolescents about reproductive health issues, single parenting's influence on adolescent pregnancy, having a sibling who had adolescent pregnancy and living with a relative who had drug and substance use.

2.5.3 School

Adolescents' decision about sex has been found to be connected to school. The academic scores, as well as if they perceive school as supportive and connected as well as whether they are involved in activities after school is related to whether they will have early pregnancy.

Comprehensive sex education programs implemented in schools have been shown to reduce the risk of adolescent pregnancy by providing students with accurate information about contraception, sexually transmitted infections (STIs), and healthy relationships (Santelli et al., 2017). Research indicates that adolescents who receive comprehensive sex education are more likely to delay sexual debut, use contraception consistently, and make informed decisions about their sexual health, thereby reducing their risk of unintended pregnancy (Kirby et al., 2016).

School-based health centers (SBHCs) provide adolescents with convenient access to reproductive healthcare services, including contraception counseling, STI testing, and pregnancy testing (Bersamin et al., 2019). Adolescents who have access to SBHCs are more likely to receive timely and confidential reproductive healthcare, enabling them to address their contraceptive needs and prevent unintended pregnancies (Kisker et al., 2018). Schools with supportive and inclusive climates create environments where adolescents feel safe, respected, and empowered to make healthy choices regarding their sexual health (Resnick et al., 2017). Research suggests that supportive school climates, characterized by positive relationships between students and teachers, comprehensive health promotion initiatives, and zero-tolerance policies for bullying and harassment, are associated with lower rates of adolescent pregnancy (Goesling et al., 2019).

Academic achievement and future opportunities are inversely related to the risk of adolescent pregnancy, with higher levels of educational attainment associated with reduced likelihood of early childbearing (Kane et al., 2018). Schools play a critical role in supporting adolescents' academic success through rigorous coursework, college and career readiness programs, and extracurricular activities, thereby empowering students to achieve their educational and career goals and delay parenthood (Rose et al., 2020). School-based interventions aimed at addressing structural inequalities, such as poverty, racism, and gender inequality, can mitigate the risk of adolescent pregnancy among vulnerable populations (Eisenberg et al., 2019). Interventions that provide targeted support to marginalized groups, including low-income students, students of color, and LGBTQ+ students, can promote equitable access to reproductive healthcare, educational opportunities, and supportive school environments, reducing disparities in adolescent pregnancy rates (Salazar et al., 2021).

Existing evidence has shown an association between schooling and delaying sexual debut. In the developed world a study conducted in Canada US, UK Sweden and France found that lower education achievement was associated with child bearing as compared to the teens with

higher educational attainment (Sing *et al.,* 2001). In Africa, a review of demographic health surveys between 2000 and 2010 in 24 countries showed that the more educated an individual was, the later the sexual debut (Doyle & Ross, 2012). A study conducted in Narok county Kenya indicated that the more educated an adolescent is, the less the likelihood of adolescent pregnancy hence education was protective (Moturi *et. al.,* 2016). Schools are key settings for promoting adolescent sexual health and preventing unintended pregnancy. Comprehensive sex education, access to reproductive healthcare, supportive school climates, academic achievement, and efforts to address structural inequalities are essential components of effective school-based interventions aimed at reducing adolescent pregnancy rates. This study will be interested in level of education and school as an agent to delay sexual debut and hence adolescent pregnancy in focus group discussions which have not been done in other studies.

2.6 Inter-relationships between Intrapersonal and Interpersonal Factors

Adolescent pregnancy is a social problem that has been said to be an epidemic (WHO, 2022). Its etiology has been associated with adolescent girls who are exposed to risk factors at the individual level and trickles down to risk factors in their immediate surrounding. In integrating the Theory of Planned Behavior (TPB) within the Socioecological Model (SEM) and Social Cognitive Theory (SCT), it becomes evident that while each theory offers valuable insights, the Socioecological Model stands out as particularly relevant and comprehensive for understanding adolescent pregnancy. The TPB emphasizes individual-level determinants such as attitudes, subjective norms, and perceived behavioral control in shaping behavior. However, by embedding TPB within the SEM, which acknowledges the multifaceted interplay between individual, interpersonal, community, and societal factors, a more comprehensive understanding of adolescent pregnancy emerges. The SEM recognizes that adolescents' behaviors are influenced not only by their individual beliefs and attitudes but also by the broader social, cultural, and environmental contexts in which they live. Moreover, by incorporating Social Cognitive Theory, which emphasizes observational learning, self-efficacy, and the influence of social environments on behavior, the SEM provides a framework for understanding how social norms, cultural values, and community resources impact adolescents' reproductive choices. Thus, while the Theory of Planned Behavior offers valuable insights into individual decision-making processes, the Socioecological Model provides a more holistic approach that considers the dynamic interplay of individual, interpersonal, and environmental factors, making it superior for understanding adolescent pregnancy in diverse cultural and social contexts.

The socioecological model (fig. 1) appreciates the multiplicity of factors that impact sexual behavior. It looks at a person's individual characteristics individually and social issues comparable to one another (Robinson, 2018). The first circle represents the individual. At this level factors that may be of importance as regards adolescent pregnancy include the knowledge, attitudes behavior and skills acquired from school or inborn. These factors may influence a person's risk perception. These factors interact closely with interpersonal factors such as peer influence, family and relationships around this adolescent to help shape their risk perception which will in turn influence behavior. However, to understand the behavioral aspects we adopted components of Social Cognitive Theory (Bronfenbrenner, 1979). This theory indicates that behavior is determined by the culmination of influences of personal, environmental and behavioral interactions (actions of others). The intrapersonal determinants will determine how an individual will relate with their immediate environment. At the same time the values inculcated by the environment will also mold an individual's intrapersonal values that will determine whether or not they will have adolescent pregnancy.

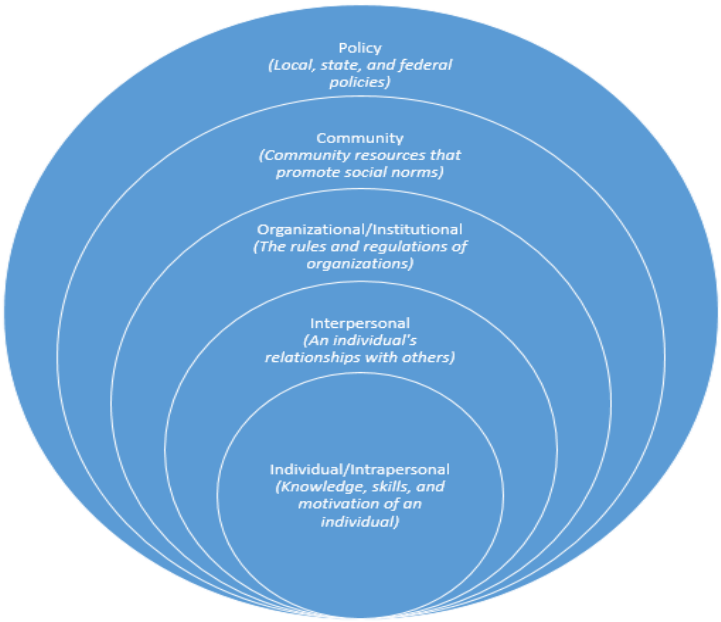


Figure 2.1: Socio-ecological theory (adapted from Bronfenbrenner, 1979)

2.7 Conceptual Framework

The current study specifically investigated intrapersonal and interpersonal predictors of pregnancy among adolescents who had begun childbearing. Socio–ecological theory together with Social Cognitive Theory guided the study conceptualization. The conceptual framework illustrates the intrapersonal determinants and interpersonal determinants will determine how an individual relates with their immediate environment. At the same time the influence of the environment will mold an individual's intrapersonal values that will determine whether or not

they will be involved in protective or risky behaviors that are associated with adolescent pregnancy.

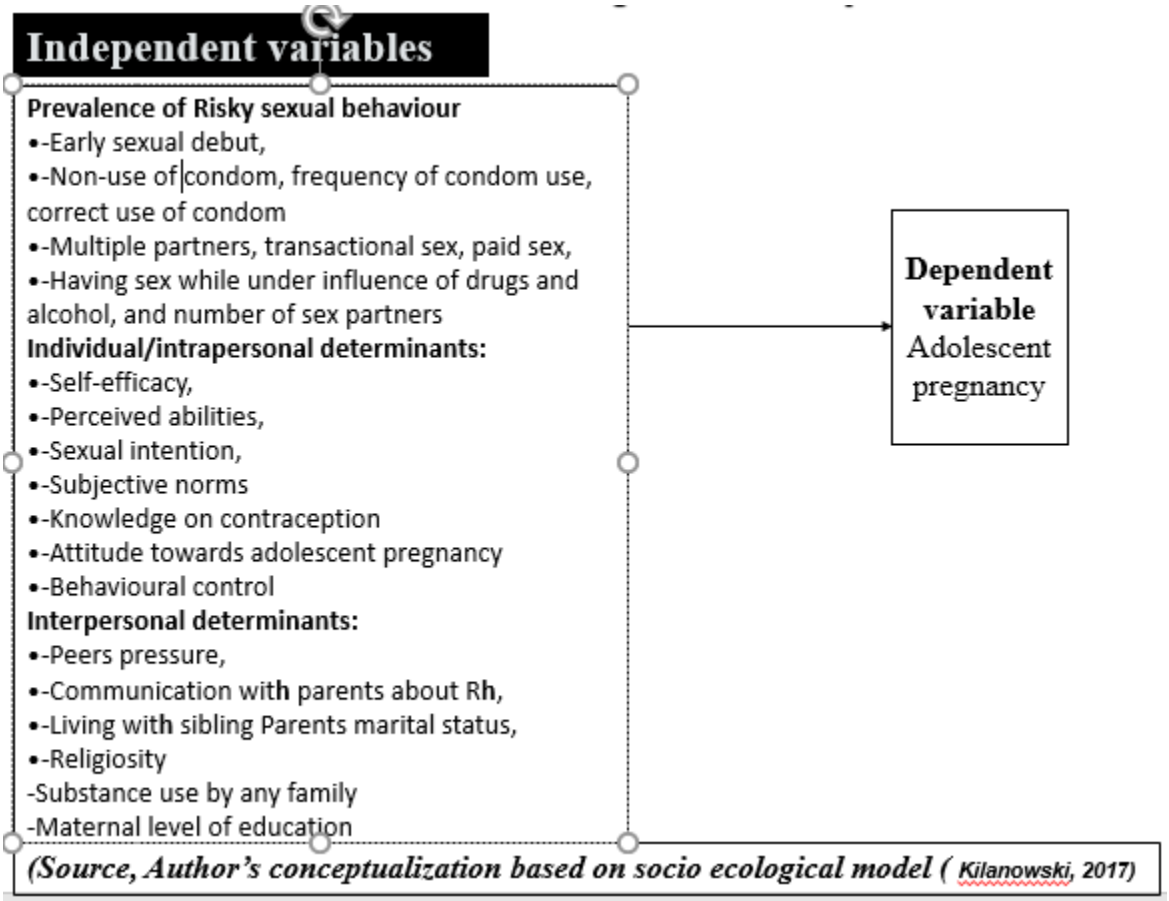


Figure 2.2: Conceptual Framework

CHAPTER THREE
METHODOLOGY

3.1 Introduction

This section covers description of the area of study, study population, sample size determination, the study design, sampling criteria, sampling procedure, data collection tools, data analysis and presentation.

3.2 Study Area

Igembe North sub-county is one of the nine sub-counties in Meru County, Kenya. It is located 50kilometres from Meru town the head quarter of Meru County. It is located at Latitude 0.4606° N, longitude 37.7450° E. It consists of 13 government health facilities which are dispensaries and health centers and a level 4 hospital Mutuati sub county hospital. These health facilities are distributed in the five wards of the sub county namely; Amwathi, Antuambui, Antubetwe kiongo, Naathu and Ntunene wards. The study was conducted in 8 facilities that have registered new adolescent ANC visits in the past month. They include: Mutuati sub county hospital, Laare health center, Theera health centre, Laare nursing home, Kaelo dispensary, Mutuati Catholic hospital, Mercy clinic and A/kiongo health centre. Aa host of services are offered to adolescents by the health care providers. These services include, reproductive health services such as counselling on contraceptives, and provision, management of HIV, voluntary counselling and testing and management of sexual and reproductive health cases.

3.3 Study Population

The study population was pregnant adolescent girls in Igembe North Sub-County. There are approximately 101,640 adolescent girls in Igembe North sub-county. The research was interested in intrapersonal and interpersonal factors among adolescent mothers (pregnant or have ever been pregnant) who form 24%.

3.4 Study Design

The study design was cross sectional design using explanatory sequential, quantitative dominant mixed methods approach. This was appropriate as we needed a better understanding of adolescence pregnancy which qualitative methods could explain. Moreover, mixed methods are best for behavioral constructs which this study focuses on.

3.5 Target Population

The target population was adolescent girls in Igembe North. It is estimated that 18,123 adolescent girls have ever been pregnant.

3.5.1 Inclusion Criteria

1. Being 10 -18 years of age,
2. Parenting /currently pregnant
3. Both married and unmarried,
4. Residing in Igembe North Sub-County,
5. Consented to participate in the study.

3.5.2 Exclusion Criteria

1. Those adolescents who arrived at the hospital seeking medical attention due to severe illness.

3.6 Sampling and Sampling Technique

3.6.1 Sample Size

The sample was calculated using Fischer *et al.*, (1998) formula for large populations.

$n = Z^2 pqD/d^2$

n = the desired sample size,

Z = normal deviation (1.96) corresponding to 95% confident interval,

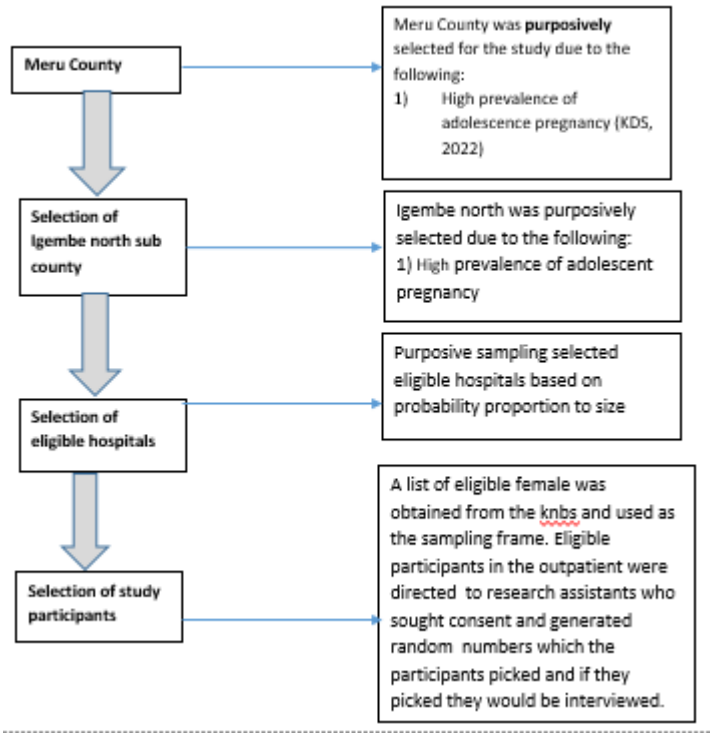
p=proportion of the target population estimated to have the desired characteristics (Meru County prevalence of adolescent pregnancy is 38% - p is 0.38) (NACC, 2017) 1-p, that is 1-0.38 = 0.62

d=margin of error

Hence, $n = 1.96^2 * 0.38 * 0.62 * 1/0.05^2 = 0.6373/0.0025 = 362$.

10% of the sample size was added to cater for non-response

362+(10%*362) =398



3.6.2 Sampling Technique

The facilities were sampled purposively based on number of adolescent visits in the month of December 2020 (facility caseload of adolescent pregnancy). This was because of uncertainty of ever getting clients. The sample size was distributed in accordance with probability proportional to size (PPS) (Table 3.1)

Table 3.1: Probability according to size of eight health facilities

Hospital	Attendance (January)	Pps (attendance/total attendance sample size
Mutuati sub county hospital	42	128
Laare health centre	23	69
Theera health centre	11	33
Laare nursing home	10	31
Atiru ruujine dispensary	15	46
Mutuati Catholic hospital	12	37
Mercy clinic	7	21
A/kiongo health centre	11	33
Total	**131**	**398**

The study used simple random technique to select study participants. Random numbers were generated from excel and every client that corresponded to the number participated in the study. If they did not consent to participate the next number from the generated numbers would be picked. Random sampling ensures random selection of participant's representative of the whole population. Adolescents who came to the hospital for treatment were directed to a specific room were research assistants were stationed. They were given information on the study and those who consented proceeded with picking papers with random numbers generated from excel. If they picked one of the random numbers they would proceed to participate in the interviews.

3.7 Data Collection

3.7.1 Data Collection Tools

Quantitative data was collected using questionnaires while qualitative data was collected using focus group discussion. Focus group discussions were conducted and a guide for the same was provided.

All objectives used closed ended questionnaire/Focus Group Discussion

All data collection tools were tested for validity and reliability as presented in 3.6.3 and 3.6.4.

3.7.2 Survey Questionnaire

Survey data was collected using both closed and open-ended questions (Appendix 3). The questionnaire was divided into four sections. Section 1 contains the socio demographic information. Section 2 had questions on risky sexual behavior, section 3 had questions on intrapersonal determinants of adolescent pregnancy while section 4 had questions on interpersonal determinants of adolescent pregnancy The contents of the questionnaire were based on model questionnaire developed by WHO sexual and reproductive health for young people (2011) which had a validity (Cronbach alpha) of 0.93 and test-retest reliability p value of >0.05 indicating no significant differences in the responses between the two times. Intrapersonal characteristics and interpersonal factors of adolescent pregnancy were identified. The questionnaire was divided into three parts: socio-demographics, intrapersonal and interpersonal sections.

3.7.3 Measurement of Variables

In these sections scores were generated from the scale (1=strongly disagree 5=strongly agree) and a score of above a certain value was considered positive and below a certain value it was

considered negative. Sexual intention a score of <4 was low intention and >4 was high intention. A score of >16 and <16 was considered as positive and negative attitude towards adolescent pregnancy respectively. >10 and <10 was considered high and low behavioral control respectively. A score of >4 and <4 was considered high and low perceived ability. <4 and >4 was considered negative and positive subjective norms respectively. A score of >3 and <3 implied a yes and no on peer pressure and score of <3 and >3 was considered a no and yes on religiosity respectively.

The focus group discussion recordings were transcribed which made analysis easier. Recurring topics/themes were noted. They were coded according to themes in line with the objectives of the study. Related themes and codes were condensed together and others merged. Triangulation was also done which involved comparing data from questionnaires and those from FGDs to corroborate/validate the results.

3.7.4 Procedure

The questionnaire is administered by well-trained research assistants who follow a standardized script to ensure neutrality.

3.7.5 Focus Group Discussion (FGD) Guide

Focus group discussions were designed to complement data collected using a guide by exploring the intrapersonal and interpersonal factors that contribute to adolescent pregnancy. A focus group discussion guide is a structured outline or set of questions used to facilitate a focus group session. This guide serves as a roadmap for the moderator to steer the conversation in a productive direction while ensuring that key topics are covered. The guide consists of key topics which align with the research objectives. open ended questions which encouraged participants to share their opinions. Probing helped delve deeper into their thoughts and experiences. It was divided into three subtopics: prevalence of risky sex behavior, interpersonal and intrapersonal determinants

3.7.6 FGD Procedure

The girls who participated in filling of questionnaires were further involved in the focus group discussion that were scheduled for a later date. Focus group discussions assisted in understanding the problem more deeply. The FGDs stimulate memories and enhance disclosure of information (Babbie and Mouton, 2007). The groups consisted of 8-12 participants each. The FGD were conducted according to age of the participants, 10-14years and 15-18 years each group had two FGD with total of 48participants. This ensured

homogeneity to enhance disclosure. The FGDs were conducted as guided by the WHO guidelines on conducting FGDs for young women in disadvantaged circumstances. The guideline outlines procedure of carrying out the FGD the rules to observe and what the facilitator is expected to do.

Adolescents who were parenting or pregnant participated. They were segregated as those between 10-14 and 15-18. Four focus group discussions in each age group were conducted. According to Guest et al. (2016), an average of four focus group discussions would be enough to reach saturation of themes and codes. The researcher moderated the discussions and ensured they were within the objectives. The lead researcher took notes and tape-recorded discussions for future analysis. The moderator notified participants to ensure privacy, confidentiality and respect for each other's opinion. No names were used but identification numbers were given prior. Venue of the FGDs was in private, comfortable and free from distracters within the hospital. Analysis was done according to objectives.

3.7.7 Validity of Instrument

The instruments were developed under close supervision with the academic supervisors. The instruments were checked for content and construct validity to ensure that all research questions are covered and are meaningful. Construct validity was ensured by checking the logical relationship among variables.

3.7.8 Reliability of Instrument

According to Mugenda and Mugenda (2003) reliability measures the degree to which a research instrument yields consistent result on data after repeated trials. Reliability was assessed using SPSS version 22 by conducting Cronbach alpha reliability test on pretested tools and since most of the question are Likert scale and dichotomous. It is a measure of how closely related a set of items are as a group. This was done during pretest. Data from responses was entered into the SPSS where the rows represent each participants' responses to the questions. Questions that were not Likert/dichotomous responses were excluded. The alpha reliability test was then generated as 0.88 and results interpreted as good. Test and retest method yielded a p value of >0.05 indicating no significant difference between the two times when the questionnaire was tested. The test and retest method was done for questions that had no Likert scale type of responses.

3.8 Pretesting Data Tools

A pretest was carried out prior to the research. This helped in refining of the tools. The pretest was carried out at Kaelo health center in Igembe North Sub County. Questionnaires were tested on the adolescents attending Kaelo health center since geographical location of the facility was similar to where the study was conducted. This served to refine the tools to be used. Ten percent of the sample size was used hence 39 adolescents participated in the pretest. One FGD was also conducted at Kaelo dispensary with 12 participants.

3.9 Research Assistants and Training

The research assistants were recruited and trained. the research assistants had to have experience in doing other researches and had to be residents in the sub county where data were collected. The research assistants were nurses with training in counselling. Training was done using an existing curriculum. The curriculum entails an overview of the project, ethics surrounding focus group discussions, how to recruit a participant, venues, communication protocol, room set up, how to conduct FGDs as well as roles of the research assistants. Data to be collected were based on the objectives of the study.

3.10 Quality Control

The researcher was the supervisor in the field and results were compared to other studies done elsewhere. All interviews were recorded for purposes of later reference and review to ensure that the data on hard copies were same as given by the adolescents and was responsible for data quality.

Table 3.2: Variable Definition & Measurements

No.	Study variables	Operational definitions	Measurement
1	Adolescent pregnancy	Occurrence of adolescent pregnancy	self-reporting
2	Knowledge	knowledge on how to prevent adolescent pregnancy	Likert scale with 1 as strongly disagree and 5 as strongly agree. A score is then generated where <4 low intention >4 high intention
3	Attitudes	evaluation of adolescent whether adolescent pregnancy is good	Likert scale with 1 as strongly disagree and 5 as strongly agree. A score is then generated where <16 negative >16 positive
4	Perceived abilities(self-efficacy)	Ability of adolescent to refuse sexual advances	Likert scale with 1 as strongly disagree and 5 as strongly agree. A score is then generated where <4 low >4 high

5	Behavioral control	person's conviction as to the ease or difficulty to do a behavior in question	Likert scale with 1 as strongly disagree and 5 as strongly agree. A score is then generated where <10 high behavior control >10 low behavior control
6	Sexual intention	intention to have children in future prior to pregnancy	Likert scale with 1 as strongly disagree and 5 as strongly agree. A score is then generated where <4 low intention >4 high intention
7	Subjective norm	whether people approve/disapprove of pregnancy	Likert scale with 1 as strongly disagree and 5 as strongly agree. A score is then generated where <4 negative >4 positive
8	Peer pressure	influence of peers in making decision on pregnancy	Self-reporting 1 yes and 0 no scores are generated and >3 yes <3 no
9	Marital status of parents	structure of family/closeness to mother prior to pregnancy	Self-reporting yes and no statements
10	Maternal Levels of education	Adolescent's uppermost educational level attained	Self-reporting involving ticking the level of education primary, secondary or tertiary
11	Living with sibling who had adolescent pregnancy	Living with sibling who had adolescent pregnancy in the same household	Self-reporting involving a yes or no response
12	Whom they live with	Whether the adolescent lives with parents, alone or with husband	Self-reporting involves ticking against whom they live with
13	Communication with parent on Rh issues	Any conversation on reproductive health they have ad with the mother specifically sex	Self-reporting involving a yes and no responses
14	Substance use by family member	Any family member who has substance use problem	Self-reporting involving a yes and no responses
15	Sexual debut	age at which adolescent started/had sex for the first time	Self-reporting the age they had their first sexual debut
16	Religiosity	degree to which individuals adhere to, practice, or are committed to religious beliefs, rituals, and practices.	Self-reporting with a Likert scale and scores generated <3 yes and >3 no
17	Substance use	the use of alcohol or drugs	Self-reporting involving a yes and no response

3.11 Data Analysis

Data were collected from the field and percentages; frequencies and correlation coefficients were calculated using SPSS. Intervening variable level of education was controlled during analysis to eliminate the possibility of confounding.

Table 3.3: Frequencies and correlation coefficients

Item	Objective	Variables	Statistical test used
		*DV-adolescent pregnancy *IV-age, marital status, sexual debut, religion, employment status, level of education	Chi-square test for association and logistic regression. Results significant when p-value is <0.05
Objective 1	to determine the prevalence of risky sexual behavior among adolescent in Igembe North sub county.	*DV-Adolescent pregnancy *IV-age at sexual debut, condom use, frequency of use of condom, number of sex partners, transactional sex -An adolescent was reported to have risky sexual behavior if they reported having participated in at least one risky sexual behavior	prevalence where n =353 chi square test for association and logistic regression p-value of <0.05 focus group discussions-manual identification of major themes
Objective 2:	To establish the intrapersonal determinants associated with adolescent pregnancy in Igembe North sub-County, Kenya	*DV- Adolescent pregnancy *IV-Knowledge on contraceptives Sexual intention Attitude towards adolescent pregnancy Behavioral control Perceived ability Subjective norms	bivariate analysis (logit regression) identified association of each independent variable with the dependent variable. Results significant when p-value is <0.05 and odds ratio focus group discussions-manual identification of major themes
Objective 3:	To establish interpersonal determinants associated with adolescent pregnancy of Igembe North sub-County, Kenya	*DV-adolescent pregnancy *IV-living with parent or husband Parents marital status Maternal education Living with sibling who had adolescent pregnancy Communication with parents on R issues Peer pressure Substance use by family member Religiosity	bivariate analysis (logit regression) identified association of each independent variable with the dependent variable. Results significant when p-value is <0.05 and odds ratio focus group discussions-manual identification of major themes

*DV –dependent variable
*IV-independent variable

3.12 Ethical Consideration

Ethics talk about differentiating between evil and good or what is humanly wrong or right (Dewey & Imagination, 2020). Ethical approval was obtained from Maseno University Ethical Review Committee. A research permit was obtained from NACOSTI serial number NACOSTI/P/21/11433 attached. Permission was sought from the Meru County Commissioner ref EDU.12/3/TY (100) attached, Meru county Ministry of Education MRU/C/EDU/11/1/277 attached, Igembe North Sub County Medical Officer for Health and hospital administration verbally. The researcher assured the respondents of the intentions to use the information for research purposes only. Since the study was conducted on adolescent girls, the study followed guidelines for World Health Organization for conducting safe and ethical study on adolescent women (WHO, 2018) as well as guidance on conducting sexual and reproductive health research in adolescents in Kenya. According to the Kenyan guidelines (KEMRI, 2018) pregnant adolescents were treated as mature minors and able to make their own informed consent as per the guideline. A consent form (Appendix II) was provided for them to sign. For purposes of consenting of the adolescents four points were fulfilled, understanding of the purpose of the research, procedures, risks and benefits. All this were highlighted in the consent form.

Adequate privacy was provided by conducting interviews in secluded areas with visual and audio privacy. Adequate information was provided to the adolescent regarding the research in a language understandable to them and responses were provided. Any questions from the adolescents were clarified as the research proceeds. The adolescents were given adequate time to consider all options available to them. The clinician and nurses in the facility identified and prompted potential research participants to eliminate the possibility of undue influence. The clinician or nurse then referred the adolescent to the research assistants who were in a different room. This ensured that true voluntary consent is achieved. A copy of the consent form was given to all participants to sign before commencing. Those who consented also signed 2 dated copies of the consent document, a copy of which was given to the study participants. Mere failure to object was not interpreted as assent. The questionnaire was in a simple language devoid of complicated terms to enable the participants understand and give the right answers. Due to the sensitivity of the information being sought, research assistants were nurses with psychosocial training to alleviate potential psychological harm. Participants were assured of privacy and confidentiality. Confidentiality was achieved by coding as opposed to use of names. The researcher ensured that information collected was used only for

the purposes stated. Computerized information was password protected while hard copies were stored under lock and key accessible only to the principal researcher. Findings were presented in the School of Public Health defense sessions and dissemination of the same planned with the administrations concerned. The researcher will also endeavor to present the findings in local, regional and international scientific conferences/workshops. According to adolescent guidelines for conducting reproductive health research, minors under the legal age of consent requires that parental consent is sought. However, in the case where the research involves prevention of pregnancy, parental consent is waived and hence their consent is allowed.

CHAPTER FOUR

RESULTS

4.1 Information on Variable and Respondents Characteristics

The researcher targeted a sample size of 398 respondents from which 381(93.2%) participants took part in the study, out of which 376 (91.9%) were analyzed as some declined mid-way leading to incomplete questionnaires. The mean (SD) age was 15.45±2.95 years. Most of the adolescents were single or separated (63.2%; p= 0.01); of primary level education (68.4%; p= 0.01) and; the majority were unemployed (91.7%; p= 0.01). This is presented in table 4.1). Intrapersonal and interpersonal characteristics of adolescent pregnancy are presented in table 4.2

Table 4.1: Sociodemographic characteristics of participants

Variable	Frequency (%)	$x^2(df)$	*p-value*
Age			
10-14	232(61.50)	7.88(1)	0.78
15-18	144(38.50)		
Marital status			
Married	138(36.80)	38.02(1)	**0.01**
Single/separated	238(63.20)		
Religion			
Protestants	277(73.70)	17.10(1)	0.85
Catholics	99(26.30)		
Employment status			
Employed	31(8.30)	19.60(1)	**0.01**
None	345(91.70)		
Level of education			
Primary	263(68.40)	19.10(1)	**0.01**
higher	113(31.60)		
Age at sexual debut			
12	19		
13	83		
14	129	7.10(5)	**0.01**
15	156		
16	113		
17	42		

Table 4.2: Intrapersonal and interpersonal characteristics of participants

Variable	Frequency (%)
Score on knowledge of contraceptives (scale of 1-14)	
<7	147(39.1)
>7	229(60.9)
Score Sexual intention (scale of 1-8)	
<4	199(52.9)
>4	177(47.1)
Score on Attitude towards adolescent pregnancy (scale 1-32)	
*Positive <16	
Negative >16	22(5.9)
	354(94.1)
Scores on Behavioral control (scale 1-8)	
<4	243(64.6)
>4	133(35.4)
Perceived ability (A person's assessment of their own ability)	
(scale 1-8)	234(62.2)
<4	142(37.8)
>4	
Scores on Subjective norms (scale 1-8)	
<4	213(56.6)
>4	163(43.4)
Live with husband	8 (2)
Parents	368(98)
Parents marital status	
Married	252(67)
Single/separated	124(33)
Maternal education	
Secondary	110(29.3)
primary and below	266(70.7)
Living with sibling who had adolescent pregnancy Yes	212(56.4)
No	164(43.6)
Communication with parents on RH y/n	
Yes	116(30.9)
No	260(69.1)
Peer pressure yes	226(60.1)
no	150(39.9)
Substance use by family Yes	77(20.5)
No	299(79.5)
Religious	
Yes	268(71.3)
No	108(28.7)

*negative- those that scored >16 had negative attitude while <16 positive attitude

4.2 Prevalence of risky Sexual Behavior Associated with Adolescent Pregnancy

The observed prevalence of risky sexual behavior among adolescent girls in Igembe North sub-county was found to be 59%. Age >14 years at sexual debut (57%; p=0.03), having 2 or more sexual partners in the past 12 months (91%; p= 0.01), not used condoms in the past 12 months (51%; p=0.01) and 'always' used condom uses in the past 12 months (69%; p=0.02) were associated (chi square test of association) with occurrence of adolescent pregnancy as presented on table 4.2. association of sexual behavior with adolescent pregnancy. On focus group discussion participants reported the high prevalence of risky sexual behavior in the study is as a result of coercion by their partners as well as peer pressure which drives most adolescents to try to "fit in". some reported that they would trade off sex for economic benefits, *"men have a lot of money which makes us want to give them sex in return for money."* On condom use, participants reported that they used condoms in the past year *"Condoms are accessible to use compared to other contraceptives"* others however said *"it was difficult to convince their boyfriends to use them as most did not cooperate."* Participants indicated they did not use condoms consistently in the past year. One participant indicated that, *"once we are tested in the VCT there is no need for condoms"* Participants also reported that sex without condom was not pleasurable. *"When we do it using condom once, the next round must be without since my partner complains it is not good enough with condom."* Some participants indicated that they had had sex for monetary benefits since they could not get everything they needed at home. *"Men have a lot of money which makes us want to give them sex in return for money."* The participants reported that their parents could not meet their needs and little luxuries which they desired, *"my parents could not afford a phone so I had to give my body in order to get money for buying this phone."* Some adolescents had habitually drunk alcohol prior to sex. Participants reported that sex under the influence of alcohol was pleasurable and would help them not feel guilty afterwards. *"Alcohol helps us not to feel guilty for having sex away from marriage. It also makes sex sweeter."*

Table 4.3: Association of Sexual Behavior with Adolescent Pregnancy

Variables (n=376)		Frequency	x^2(df)	*p*-value
Age at sexual debut mean 15±3.001	*<14	142(37.77%)	7.10(1)	**0.01**
	≥14	234(62.23%)		
Number of sexual partners in the past 12 months	None	18 (4.79%)	3.73(1)	**0.01**
	One	203 (53.98%)		
	Two and more	155 (41.22%)		
Coital frequency (per month)	None	273(72.61)	2.77(2)	**0.01**
	Once	79(21.01)		
	More than once	24(6.38)		
Used condom in the past 12 months	Yes	186 (58%)	3.45(1)	**0.03**
	No	190 (42%)		
Frequency of condom use in the past 12 months	Sometimes	63(16.76%)	0.45(2)	**0.02**
	Rarely	88 (23.40%)		
	Always	225 (59.84%)		
Having sex under influence of drugs and alcohol in the past 12 months	Yes	282 (78%)	0.73(1)	0.99
	No	94 (25%)		
Had transactional sex past 12 months	Yes	65 (17.29%)	0.65(1)	0.76
	No	311 (82.71%)		
Had at least one risky sexual behavior*	Yes	222 (59.04%)	12.07 (1)	**0.01**
	No	154 (40.96%)		

*World Health Organization define early sexual debut to be sex under 14 years

4.3 Intrapersonal Determinants Associated with Adolescent Pregnancy

A logit model was used to elicit the intrapersonal determinants of adolescent pregnancy. The dependent variable was adolescent pregnancy which was regressed against score generated (scores were generated from the scale 1=strongly disagree 5=strongly agree and a score of above a certain value was considered positive and below a certain value it was considered negative as indicated in measurement of variables in chapter 3).

Potential multi collinearity was assessed using variance inflation factors and found to be 1 indicating no multi collinearity among the independent variables. The best fitting model was identified using R-squared which was 0.92. Low knowledge on contraceptives, low sexual intention, negative attitude towards adolescent pregnancy, high behavior control, high perceived ability and high subjective norms were used as reference category. The results are presented as in table 4.3. Knowledge, behavioral control, perceived ability and subjective

norms had negative coefficients indicating an inverse relationship with risk for adolescent pregnancy (table 4.3). Sexual intention and attitude towards adolescent pregnancy had positive coefficients which means that an increase in the makes adolescent pregnancy more likely.

The results showed that high sexual intention OR=2.01 *p=0.018.* That high sexual intention is two times more likely to lead to adolescent pregnancy than low sexual intention, low behavioral control OR=3.98 *p=0.041* was four times more likely to lead to adolescent pregnancy than high behavioral control, low perceived ability OR=2.58 *p=0.019* was approximately three times more likely to lead to adolescent pregnancy than high perceived ability. Participants reported that they were not able to negotiate safer sex with their partners since they were much older than them. *"it's hard to convince my partner to always use condoms since he refuses to listen."* Additionally, most reported that having their priorities right have helped them concentrate in school and shunning peer pressure to have sex. Another participant also intimated that concentrating in schoolwork as well as church activities have shaped their values. "*When in school, we are ever busy and while at home church activities such as choir practice, youth meetings as well as counselling has helped us keep on track.*

low subjective norms OR=3.72 *p=0.001* were associated with adolescent pregnancy Most participants of focus group discussion reported that subjective norms- (parents and peer's opinion on good behavior) were important in their lives. Most valued their parents and were keen not to let them down. "*My parents work very hard to keep me in school so that I can have a bright future and so I work hard and shun bad behaviors not to frustrate them".* On the other hand, peers were among the people the adolescents were keen on pleasing participants reported that they did not care what anyone's view was on sex since it was their life, *"I don't care wat anyone said about my pregnancy, they had their time too and they should let me have my life too"* reflecting a "don't care" attitude. On the other hand, knowledge on contraceptives (*p=0.056*) and attitude towards adolescent pregnancy (*p=0.623*) were found not to be associated with adolescent pregnancy in this study.

Participants reported that knowledge on contraceptive was acquired from youth groups meetings in churches as well as schools which largely emphasized on abstinence." *In school our teacher taught us on abstinence and* in church *mostly condoms." Participants reported that there was information on methods of contraceptives and only learnt from peers and*

health facilities. "My friend told me about pills and morning after pills and told me to get them from the hospital nearby." She continued, "At the hospital I was given a lot of information on contraceptives but the nurses are not friendly." There was generally a negative attitude towards contraceptives among the adolescents across all focus group discussions. *"All contraceptives are for mature people, only p2 is for young people since most will make us old, we know they prevent pregnancy but I feel too young to use them and can make me grow fat and undesirable."*

The male condom was the most known by the adolescents, however the female condom on the other hand was not popular. *"I have never heard of the female condom let alone see it, I would like to use it"* the adolescents in the FGD had low knowledge on the two permanent methods. The once daily pill was popular among the married/relationship adolescents because it was inexpensive and readily available. The herbal pill was also common among some adolescents," the *herbal pill was most convenient as it is a once-a-month pill eliminating chances of forgetting"* the morning after pill was also very popular since it was available in most chemists. Some adolescents preferred this method as it gave a three-month period of protection and was discrete.

Were the least popular among the adolescents in the focus group discussion. Its access was majorly in government hospitals and most feared them. *"I fear that the coil might be harmful for me and lead to*

Table 4.4: Results for intrapersonal determinants associated with adolescent pregnancy

Variables	*B*	SE	Z	Sign.	Exp(B)	95% CI
Low knowledge contraceptives	0.0143	0.0176	0.8125	0.063	0.98	0.3451,1.2910
High Sexual intention	0.4821	0.3641	1.3240	*0.018	2.01	-0.4583, -0.076
Positive Attitude towards adolescent pregnancy	0.3217	0.1741	1.8488	0.623	2.56	0.0907, 1.9424
Low behavior control	0.3104	0.1951	0.2597	*0.041	3.98	-0.9001,-0.8810
Low perceived ability	0.3711	0.2319	1.6002	*0.017	2.58	-0.0012,-0.0006
Low subjective norms	-0.2211	0.1056	-2.0937	*0.001	0.59	-0.0395,-0.7093

Notes $p<0.05$ *significant; $R^2= 0.92$

4.4 To establish Interpersonal Determinants Associated with Adolescent Pregnancy in Igembe North sub-County, Kenya

A logit regression was used to elicit interpersonal determinants associated with adolescent pregnancy. The dependent variable was adolescent pregnancy which was regressed against all interpersonal determinants. Potential multi collinearity was assessed using variance inflation factors and found to be 1 indicating no multi collinearity among the independent variables. The best fitting model explained 90% of the variance (R squared was 0.90).

Living with parents, married parents, university education, communication with parents on reproductive health issues and religiosity had negative coefficients indicating that one-unit increase in any of them will lead to decreased chances of adolescent pregnancy.
All the listed factors were associated with adolescent pregnancy except substance use by family and religiosity.

All the variables had an odds ratio of more than one except having had communication with parents about reproductive health issues (OR=0.53, p=0.01) and religiosity (OR= 0.32, p value=0.23) which were instead protective. All variables were associated with adolescent pregnancy except religiosity and substance use by family.

The interpersonal factors that determine adolescent pregnancy were: living with a husband (OR=14.91, p= 0.01) meaning living with a husband was 15 times more likely to result in adolescent pregnancy than living with parents, living with a single/separated parent (OR=2.42, p=0.01) was two times more likely to lead to adolescent pregnancy than two parent homes. Members in the focus group discussion from single parent homes reported that living with a single parent left them with a lot of unsupervised time when the parent goes to work. This is different from when two parents are present. One participant opined that, *"whenever my mother goes to work, I look for my friends and plan how to spend our day which could be dangerous if my friends are of bad influence."*
Participants reported on the need to have both parents*, "the father acts as the disciplinarian and the mother the softer one."*

Maternal education level (primary) (*OR=2.39, p=0.01*), living with a sibling who had experienced adolescent pregnancy (*OR=2.13, p=0.03)* was two times more likely to lead to adolescent pregnancy than with a sibling without a child, participants reported that those with sibling who had adolescent pregnancy motivated them to get pregnant too. *"I admired how my sister would be treated well since she had a child. She was well taken care of and would*

not do tiresome household chores." They further felt like the parents loved their sibling's babies and thought that they were lenient. "*my mother and grandmother were always loving the kids of my sister and I felt like they would not mind if I got my own kid"*

Communication with parents on reproductive health issues (OR=0.53; *p=0.01)* meaning communication with parents was protective against adolescent pregnancy. Participants in Focus group discussion indicated that they did not communicate with parents on reproductive health issues. One participant indicated that, "*discussions on sex are left to aunties who rarely discuss sex related issues."*

Participants reported that their parents were bound by the culture, *"Discussing sex related issues is a taboo in the meru culture"* and peer pressure (OR=4.23; *p=0.03)* was 4times more likely to lead to adolescent pregnancy than the reverse. Participants in the FGD reported that peer pressure was a major problem influencing them to make pregnancy decision, participant(FG1) reported *"Having sex with your boyfriend is seen as an achievement."* Others were influenced negatively to have children *"My friend told me how she was taken care of at home better than when she didn't have a child and I wanted it also."* Results were presented in table 4.5.

Table 4.5: Results for interpersonal determinants associated with adolescent pregnancy

Adolescent pregnancy	*Coefficient*	SE	Z	P-value	OR	95% CI
Live with husband	0.0411	0.026	.5808	0.01	14.91	5.81,16.23*
Parents marital status Single/separated	-0.0732	0.0321	2.2803	0.01	2.42	1.12,18.95*
primary education	0.4817	0.2560	1.7328	0.01	2.39	1.23,3.48*
Living with sibling who had adolescent pregnancy	0.0651	0.0412	1.5801	0.03	2.10	1.22,5.23*
Communication with parents on RH	-0.9560*	0.453	-2.1104	0.01	0.53	3.12,13.64*
Peer pressure	0.5471	0.270	2.0262	0.03	4.23	2.22,10.98*
Substance use by family	0.7530	0.542	1.3893	0.52	1.93	0.43,1.94
Religious	-0.231*	0.211	-1.0948	0.32	0.23	0.55,1.55

Notes: p<0.05 *significant; R squared= 0.90

CHAPTER FIVE
DISCUSSION

5.1 Prevalence of Risky Sexual Behavior

Three in five adolescent girls in Igembe North subcounty had practiced risky sexual behavior, with 38 percent of them having had their sexual debut before 14 years of age. The observed early age at sexual debut among majority of the participants shows that adolescents are at an increased risk of adverse effects of risky sexual behaviour, including early pregnancy, disrupted schooling and early marriage. The high prevalence in Igembe North could be amplified due to extraneous factors in the environment which also instigate school drop-outs in the area.

The risky sexual behaviours observed in this sample included: early sexual debut, multiple sexual partners and lack of condom use (among a few adolescents). Risky sexual behavior among adolescent girls in this community was largely associated with the individual's personal (sexual intentions) and interpersonal experiences (peer pressure, permissive and/or absente parents). In Kenya the prevalence of risky sexual behaviour is 50%, with a mean age of 18 at sexual debut (KDHS, 2022; Ssewanyana et. al., 2019) . The most common types of risky behaviours nationally include early age of sexual debut, multiple number of sexual partners, low condom use, transactional sex, intergenerational sex and drug abuse which were consistent with findings of this study. However, they show varying clustering by type across counties (MOH, 2018). The prevalence in this study is consistent with a crossectional study carried out in Kilifi, Kenya to investigate the occurrence of risky sexual behavior and association with psychological wellbeing among adolescents 12-17years found 13% participants had experienced risky sexual behavior (transactional sex,sexual violence, intergenerational sex, early sexual debut and condom use/nonuse) (Ssewanyana *et. al.,* 2019). Similarly, (in respect to prevalence of adolescent pregnancy), a comparative cross-sectional study conducted in Ethiopia, to determine the prevalence of risky sexual behavior among youth center users and non-users had an overall prevalence of 43.1%. users had 38.5% prevalence compared to non-users who had a prevalence of 47.7% (Fetene & Mekonnen, 2018), potentially as a result of exposure to interventions by youth center users. Age at sexual debut had an association with adolescent pregnancy.

5.2 Intrapersonal Determinants of Adolescent Pregnancy

5.2.1 Socio-Demographic Determinants

A majority of the participant's had primary level of education or less and only few had secondary education and above. The study also found that education level was associated with occurrence of adolescent pregnancy. It can be inferred that an adolescent with primary education and below is more likely to become pregnant than an adolescent who has secondary education or more. The observed level of education among the majority adolescents means that adolescents are at an increased risk of adolescent pregnancy owing to lower level of education having a lower decision-making capacity (Nguyen *et al.,* 2019). This is consistent with Moturi, (2018) who analyzed data from KDHS 2014 on determinants of adolescent pregnancy. the study identified higher education as a protective factor against adolescent pregnancy while those with primary level education were 1.5 times more at risk of adolescent pregnancy.

The study identified marital status as a determinant of adolescent pregnancy. Around four adolescents in ten were married. Majority of those parenting/pregnant were single or separated. This is a concern as it hinders their transition through school and increases their vulnerability to socioeconomic disadvantages and consequently get involved in early marriages bringing about adolescent pregnancy. This is consistent with Ochieng *et. al*., (2019) who did a community-based case control study to determine the predictors of adolescent pregnancy in Lira district, Uganda among 13-19year olds and identified that those married were twice as likely to get pregnant. Partner violence is more likely against adolescent girl's wo are married. It is more likely that with low education and social inequities, low education and early marriage increases social disadvantages for females. Age of the adolescent was not associated with adolescent pregnancy in this study. This is not consistent with previous studies. A study in Busia Kenya identified age as a significant determinant of adolescent pregnancy. As the adolescent got older, the more the chances of getting adolescent pregnancy.

Religion in this study was not associated with adolescent pregnancy. This is not consistent with other studies that have identified religion as a contributor to adolescent pregnancy. In Yakubu *et al.,* (2018) and (Oduor *et. al.,* 2020), religion was associated with adolescent pregnancy in sub saran Africa and Nyatike, Kenya. Some religions encouraged early marriages while others were against contraception. The difference in Igembe North could be attributed to the variation in religions in the region.

5.2.2 Intrapersonal Determinants

Sexual intention was associated with adolescent pregnancy in the study. Those with a high sexual intention were two times more likely to get pregnancy in adolescence than those without. An increase in sexual intention increased the likelihood of adolescent pregnancy as it had a positive coefficient. This was consistent with a study in Narok, Kenya, that sought to identify determinants of adolescent pregnancy through analysis of KDHS 2022. The study found that sexual intention was associated with actual sexual activity. If an adolescent did not have an intention to have sexual intercourse in the future, they would not (Moturi, 2016). Evidence from around the world has indicated an association of sexual intention and actual behavior (Hubbard *et al.,* 2018). In Ethiopia, a study identified that sexual intention was actually associated with adolescent pregnancy (Dinku *et al.,* 2018). According to the theory of planned behavior (Ajzen *et al.,* 2020) intention is a proximal predictor of behavior. This explains the observation in this study that high sexual intention was associated with risky sexual behavior and adolescent pregnancy.

Low perceived behavioral control was associated with adolescent pregnancy. Those with a low perceived behavior control were 4 times more likely to get adolescent pregnancy than those with high perceived behavioral control. The more an adolescent had behavioral control, the lesser the chances of getting experiencing adolescent pregnancy. As perceived behavioral control increased the less the likelihood of adolescent pregnancy since it had a negative coefficient. Low perceived behavior control has been ranked as the highest predictor of sexual behavior in a study in sub-Saharan Africa (Yakubu & Salisu, 2018). This study was to determine the factors that are associated with adolescent pregnancy in Africa. This was also consistent with a study conducted in Tanzania that low perceived behavioral control predicted risky behavior (Albino & Stephen, 2015).

Subjective norms were associated with adolescent pregnancy in this study. Those with high subjective norms were four times more likely to get adolescent pregnancy than those with low subjective norms. The higher the subjective norms the higher the chances of getting adolescent pregnancy. Low subjective norms signal a lack of commitment to social boundaries or relative inattention to social norms and standards (Ajzen *et al.,* 2020). The observed association of subjective norms to adolescent pregnancy show that they could be at risk to peer pressure from their own peers which may predispose them to risky sexual behavior. A study carried out in Ethiopia ranked subjective norms as the highest predictor of adolescent behavior **(**Dinku *et. al.,* 2018). In a study in Harar, Ethiopia, by Dessie *et. al.,*

(2015), adolescents with poor subjective norms and didn't have discussions of sexual subjects with parents displayed poor sexual health behaviors. In a study in Busia Kenya, adolescent's poor subjective norm increased the risk of being sexually active (Bakeera-Kitaka, *et al.,* 2019).

5.3 Objective 3: To Identify the Interpersonal Determinants of Adolescent Pregnancy

Maternal level of education determined adolescent pregnancy in the study. Those with mothers who had a higher level of education were two times less likely to get pregnant than those with lesser education levels. The observed maternal level of education in this study means that the higher the level of education increases the lesser the chances of adolescent pregnancy. Parents who have better education have more social influence on their children, have more capacity to understand their children and have higher capacity to communicate with their children (Dinku *et al.,* 2018) This was consistent with similar studies Hendrick & Julie, (2020) that investigated teen mothers' educational attainment and their children's risk for adolescent childbearing which was a longitudinal study that analyzed data from national longitudinal survey for youth 1979 and prospects to 2014 to see the effect of education attainment on adolescent pregnancy. The study found that maternal level of education predicted the personal and environmental contexts during adolescence which in turn predicted risky sexual behavior and early sexual debut and hence adolescence pregnancy. This supports the phenomenon of intergenerational cycle of adolescent motherhood that result due to economic and health issues faced by them that transcends to the future generation. This could be explained that an educated mother empowers an adolescent to make better life choices including contraception. Igembe North sub county has high rates of early marriage due to miraa. It is therefore feasible that when one continues to higher education, there are better prospects for their children.

Single/separated parenting had significant influence on adolescent pregnancy. Adolescents from single parent homes were two times more susceptible to adolescent pregnancy than those from stable homes. Single parenting had a positive coefficient indicating that the more it increases the higher the chances of adolescent pregnancy. Living with a separated parent is hence significant determinant of adolescent pregnancy. This was corroborated by focus group discussants who reported that when single parents would go to work, that left them with a lot of time in their hands to engage in risky sexual behavior. In a community based cross sectional study in Woedi, Ethiopia to investigate the prevalence and factors associated with adolescent pregnancy, carried out on adolescents found that single parenting was two times

more likely to lead to adolescent pregnancy (Mabhala *et al.,* 2017). In contrast, another study of risk and protective factors as regards adolescent pregnancy in five east African countries by analyzing Domestic health survey data found that the sex of the household head did not have a significant influence on adolescent pregnancy in all the five countries (Wado *et al.,* 2019). These findings of our study could be explained by our focus group discussion as participants from single parent homes reported unrestricted time claiming that they are more prone to sexual initiation while those monitored had less time for sexual initiation. This is due to low parental control and communication about reproductive health issues among single parents. This leads to early sexual debut and engagement in risky sexual behavior.

The results of this study show that parents communicating with adolescents about reproductive health issues was associated with adolescent pregnancy. Adolescents who communicated with their parents on reproductive health issues were less likely to have adolescent pregnancy than those who did not (protective). The more the communication with parents on reproductive health issues the lesser the chances of adolescent pregnancy since it had a negative coefficient. In the Kenyan context, a descriptive study by Kiarie, (2018) in Meru County revealed that parents don't talk to their adolescent girls about sex. The reasons for this were, they thought the girls were too young, it was a taboo while others left the responsibility for other relatives. The study further revealed that 76 percent of the respondents thought that parental communication of sex and pregnancy (reproductive health) would reduce chances of becoming pregnant. Kassa *et al.,* (2018) investigated prevalence and determinants of adolescent pregnancy in Africa which was a meta-analysis of all studies in Africa published in journals. They identified that adolescents whose parents did not talk to them about reproductive health issues were three times more likely to experience adolescent pregnancy than those who talk to their children. From the study, the adolescents pointed out that their parents have never talked to them about it. This observation could be because these talks equip the adolescents with knowledge necessary. Parents also communicate their expectations to their adolescents causing a deterrent effect on them.

According to this study peer pressure was associated with adolescent pregnancy. Those who had many friends who had adolescent pregnancy were four times more likely to become themselves pregnant as opposed to those who did not have. the higher the peer pressure the higher the likelihood of adolescent pregnancy since it had a positive coefficient. The study also revealed that most adolescents first sexual experience was because of pressure from friends. One girl confessed, "my first sexual intercourse was out of curiosity since my friend

had told me she had been having sex with their boyfriend." Worldwide coercive behavior among peers is a great contributor to adolescent pregnancy. Evidence in the United States shows that adolescents regarded views by other adolescents on sexual issues in social media as a major influence of sexual intention (Litt & Stock, 2011). Further, adolescents were shown to listen more to their peers than they would do to any other person. Yakubu *et al.,* (2018) identified peer influence as a major cause of adolescent pregnancy in Sub-Saharan Africa through a survey of studies from different countries in the region. In Kenya, Marston *et al.* (2018) identified peer pressure as the leading cause of adolescent pregnancy in Nairobi's informal settlements.

Living with a sibling who had adolescent pregnancy was associated with adolescent pregnancy. Those with siblings who had adolescent pregnancy were twice as likely to get pregnant compared to those who did not. The more the adolescents lived with sibling's who had adolescent pregnancy, the more they were themselves at risk of adolescent pregnancy because of a positive coefficient. This was contrary to a study in Mexico by East *et al.,* (2009) where they found that it was protective as the siblings would see the hardships of parenting as a teen. This was also corroborated with the focus group discussants who perceived having a child as leading to better care by parents and other family members, so felt motivated to also receive this treatment. This observation in this study could be as a result of difference in culture and value put on small kids in the area.

CHAPTER SIX

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

6.1 Summary of Findings

Fifty-nine percent of adolescents had practiced risky sexual behavior. Among the intrapersonal factors that influenced adolescent pregnancy were low perceived ability, low perceived behavior control, high sexual intention and low subjective norms while living with a single parent, living with a sibling who had adolescent pregnancy, lack of communication with parents were interpersonal determinants of adolescent pregnancy. Additionally, adolescents in the FGDs identified having a sibling who had adolescent pregnancy as a motivation to have their own child as their sibling was treated better.

6.2 Conclusion

i. The observed high prevalence of risky sexual behavior- 59% of the surveyed adolescent girls in Igembe North indicates a considerable social and public health challenge.

ii. Low perceived behavioral control, sexual intentions and tendency to conform to subjective norms were the key intrapersonal drivers of risky sexual behaviors. This was compounded by low education levels occasioned by high school dropout.

iii. Adverse family environments and relationships, including living with separated/single parent, living with a sibling who had adolescent pregnancy, poor/lack of communication with parents on reproductive health issues and substance use were the key interpersonal issues that contribute to risky sexual behavior and adolescent pregnancy. Additionally, parents treated the sibling with adolescent pregnancy better. This acted as a motivation for the adolescents.

6.3 Recommendations

Programmatic

The Ministry of education and administration to develop interventions to promote delayed sexual debut

i. Director, Ministry of Education to Ensure innovative training and mentorship of the girls on importance of and behavior decisions on abstinence, contraception and using condom, correctly and consistently, in case of sexual encounters – focusing on behavioral control and intentions;

ii. Educate the girls on dangers of multiple sex partners in schools and churches

Ministry of education curriculum to emphasize on skills that empower the girls on the intrapersonal factors such as skills on decision making on sexual and reproductive health which have rarely been considered in interventions in Kenya

i. Consider integrating intrapersonal skills in programs in schools
ii. Providing safe spaces for adolescents in schools and homes

The government to ensure empowerment of mothers to talk with their girls about sex

i. The community to assist in building role models/mentoring for the adolescents in cases where the maternal level of education is low/has sibling who had adolescent pregnancy and discourage the culture of valuing kids that encourages adolescent pregnancy-since the adolescents who sired kids were treated better at home.
ii. Individual level and group level counselling Education on prevention in schools
iii. Enhance Community discussions on adolescent sexual and reproductive health issues as well as drug and substance abuse.
iv. The churches to support parent's/train parents on sexual health communication.
v. Single parents to be made aware of the effect of lack of monitoring their adolescents caused by their busy schedules and encourage them to find solutions for idle time adolescents have in their hands.

Further studies/Research: an ethnographic study to interrogate on the differing factors of adolescent pregnancy as opposed to cross sectional study.

A study to evaluate the interventions in place to address adolescent pregnancy.

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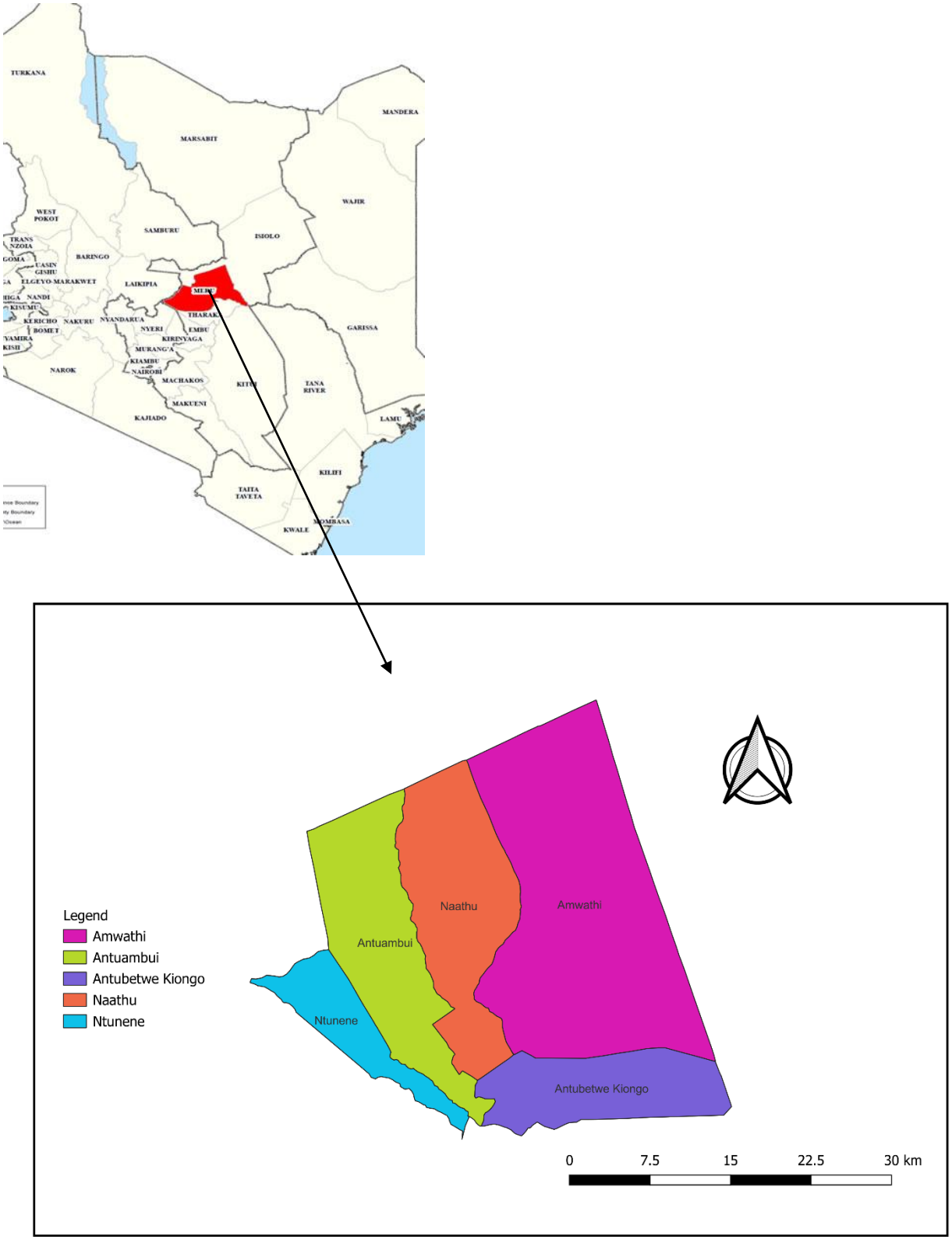
APPENDICES

Appendix 1 map of Igembe North sub-County showing Mutuati Sub County Hospital



Appendix II assent Form

Participant information sheet

Title of research study/project

Determinants of adolescent pregnancy in Igembe North Sub-county, Meru County, Kenya

Investigators -local and international collaborators:

Name	**Affiliation**
Mbae Emma Makena	Maseno university
Dr. Omemo Peter	Maseno university
Dr. Omondi Dickens	JOOUST

Purpose of the research

We realize that the number of adolescent pregnancy in igembe North sub-county is highest in Meru county. The purpose of this study is to identify the individual and immediate determinants that predict adolescent pregnancy in igembe North sub county.

Description of the research study

In the event that you accept to participate in this study, you will be required to answered a few questions based in a questionnaire and interviewed by a research assistant regarding your risky sexual behavior, individual and interpersonal determinants that predict adolescent pregnancy. The questions were asked in Kiswahili/English whichever is comfortable with the respondent. To cater for this, research assistants were individuals well versed with the local language and will translate where applicable. The questionnaire was divided into three sections: socio-demographic information, individual and interpersonal sections. This will take approximately 15minutes. This was conducted in strict adherence to the covid 19 measures of social distancing (allowing one and half meter spacing between respondent and interviewer as well as wearing of masks and sanitizing). This will also be applied during the FGDs. Should any changes be made to the study or new information made available, the participant was notified? The participant may choose not to answer any question or withdraw at any time. The data from this research study were utilized for purposes of this research only.

Potential discomforts, inconvenience, injuries harm or risks

No known risks /harm are anticipated to the study participants. In case of psychological turmoil to participants based on the questions in the questionnaire, the research assistants have trained on psychosocial counseling and will offer the necessary help.

Potential benefits

No direct benefits are attached to participation in this study. However, the results from this study were used to inform decision making by stakeholder in reproductive health in this sub county.

Confidentiality

No information on the identity of participants was published without consent.

Taking part in this research was kept confidential as no names but codes were used and data obtained will only be used for the purposes of this research only. Hard copies of the questionnaires were stored under lock and key and accessible only to the principle investigator. The interviews were conducted in spaces that allow visual and audio privacy.

Reimbursement

No payment was offered in the study.

Participation

The participant may choose not to participate in any part of the study. All participants were given a copy of signed and dated consent form to keep.

In case of further information, contact Emma Makena mbae (Principle investigator) on 0725582496

Since your ideas are important to this study, may I ask you a few questions?

Yes:

No:

If client responds ―yes, the respondent should sign and date the statement below and continue with the interview.

Sign: _____ Date of interview: _____

Site: _____

Name of interviewer: _____

In case of any complaints contact Emma Makena Mbae (Principle investigator) on 0725582496

For questions on rights of study participants, contact person is: The secretary, Maseno university ethics review committee, private bag, Maseno; telephone numbers:057-51622,0722203411,0721543976,0733230878; email address: Muerc-secretariate@maseno.ac.ke;Muerc-secretariate@gmail.com

Appendix III interview schedule guide

Questionnaire No: _____

We know that many teenage girls have had experiences such teenage pregnancy. These experiences may not have been discussed with anyone because of their sensitive nature and thinking about them makes one upset. In some circumstances they are completely forgotten and in other circumstances they are frequently brought to mind. Please try and respond to the questions as this will help find working solutions to the problem locally and nationally.

Appendix III interview schedule guide

Questionnaire No: _____

We know that many adolescent girls have had experiences such adolescent pregnancy. These experiences may not have been discussed with anyone because of their sensitive nature and thinking about them makes one upset. In some circumstances they are completely forgotten and in other circumstances they are frequently brought to mind. Please try and respond to the questions as this will help find working solutions to the problem locally and nationally.

Section 1: sociodemographic information

1. How old are you? –years old
2. Marital status
   Married single

3. Religion
   Protestant catholic
4. employment status
   employed none

5. what level of education did you attain?
   Primary
   Higher
6. age at sexual debut _____

Section 2 prevalence of risky sexual behavior

Fill as applicable

Risk	
What age did you start sexual encounters (years) {<14years}	
Number of sex partners in the past 12months	One >one
Have you used condoms(past 12months)?	
How frequent have you used condoms past 12months?	Sometimes Rarely Always
Having sex under the influence of drugs/alcohol	Yes/no
Transactional sex (sex in exchange for money) past one year	Yes/no

Section 3 :intrapersonal
Knowledge of contraceptives

Contraceptive method known	**Tick where applicable**
Modern methods	
Tubal ligation	
Vasectomy	
Pill	
IUD	
Injection	
Implants	
Male condoms	
Female condoms	
Diaphragm	
Foam	
Traditional methods	
Lactation menorrhea	
Rhythm	
Withdrawal	
Known source of contraceptives	
Yes- Government /private	
No	
Total score obtained{>7-high knowledge <7 low knowledge}	

Sexual intention

Permissive attitude

When a you get a boyfriend/if you have one already, what is the likelihood to have sex?
1.Strongly disagree 2. "Disagree" 3.neutral 4agree 5.strongly agree

Did you intend to have sex prior to your pregnancy?
1.Strongly disagree 2. "Disagree" 3.neutral 4 agree 5.strongly agree

What was the reason why you had sex with your boyfriend prior to pregnancy ?

1Parents influence
2Partner influence (he wanted a baby)
3Peer pressure to conform to others
4Economic (was looking for money)
5Own choice

Score on sexual intention_____{<4-low intention >4 high intention}

Attitude towards adolescent pregnancy

1. Pregnancy is a time for a woman to happily await the birth of a child.

1.Strongly disagree" 2. "Disagree" 3. neutral 4. agree5.strongly agree
2. Pregnancy is a time of fear and anxiety for a woman.
1.Strongly disagree" 2. "Disagree" 3. neutral 4. agree5.strongly agree
3. Pregnancy is a time of good relations in a partnership and in the family.
1.Strongly disagree" 2. "Disagree" 3. neutral 4. agree5.strongly agree
4. Pregnancy is a time of disorganization of a woman's personal life.
1.Strongly disagree" 2. "Disagree" 3. neutral 4. agree5.strongly agree

5.During pregnancy, a woman experiences many interesting maternal experiences.
1.Strongly disagree" 2. "Disagree" 3. neutral 4. agree5.strongly agree
6. Pregnancy requires a great deal of sacrifice from a woman.
1.Strongly disagree" 2. "Disagree" 3. neutral 4. agree5.strongly agree
7. Pregnancy is a time when a woman feels more valued than ever before.
1.Strongly disagree" 2. "Disagree" 3. neutral 4. agree5.strongly agree
8. Pregnancy is a difficult time for a woman—full of sacrifices.
1.Strongly disagree" 2. "Disagree" 3. neutral 4. agree5.strongly agree
Score on attitude _____{>16-positive <16-negative}

Perceived behavior control
To what extent do you believe in your ability to resist sex?
1.Strongly disagree" 2. "Disagree" 3. neutral 4. agree5.strongly agree
Do you know how to have sex?
1.Strongly disagree" 2. "Disagree" 3. neutral 4. agree5.strongly agree
I know wat is expected of me sexually?
1.Strongly disagree" 2. "Disagree" 3. neutral 4. agree5.strongly agree
Wat environment is suitable environment
which environment favors sex/should one avoid, and the ability to anticipate negative impacts
can you anticipate when a man is leading you to a place for sex?
1.Strongly disagree" 2. "Disagree" 3. neutral 4. agree5.strongly agree
Do you believe you can control /prevent a man from having sex with you?
1.Strongly disagree" 2. "Disagree" 3. neutral 4. agree5.strongly agree
Score on behavioral control _____ {>10-high behavior control, <10 low behavior control}
Perceived ability
1 I am confident that I can insist on condom use every time I have sex.
1.Strongly disagree" 2. "Disagree" 3. neutral 4. agree5.strongly agree
2It is mainly the woman's responsibility to ensure that contraception is used regularly.
1.Strongly disagree" 2. "Disagree" 3. neutral 4. agree5.strongly agree
3 I would refuse to have sex with someone who is not prepared to use a condom.
1.Strongly disagree" 2. "Disagree" 3. neutral 4. agree5.strongly agree
4 One night stands are OK
1.Strongly disagree" 2. "Disagree" 3. neutral 4. agree5.strongly agree
Score on perceived ability _____(<4- low>4 high)
Subjective norm
1.Who is the most important person in your life? Rank by giving numbers
1. parents 2. peers 3. Teachers
2.Did the one above approve of your pregnancy/would they approve of pregnancy if you were today??
1.Strongly disagree" 2. "Disagree" 3. neutral 4. agree5.strongly agree
3. did your best friend approve of your pregnancy/would your best friend approve of pregnancy?
1.Strongly disagree" 2. "Disagree" 3. neutral 4. agree5.strongly agree
4. wat is the attitude of your 1 above on pregnancy in adolescence?
1.Strongly disagree" 2. "Disagree" 3. neutral 4. agree5.strongly agree
Score on subjective norms _____ (<4-negative >4positive)
Section 4 Interpersonal factors
1 Who do you live with?
Parents/guardian

Husband

2 Parents marital status

Married

Divorced/single

Maternal education level

Primary

Above primary

Live with sibling who had adolescent pregnancy

Do you live with sibling who had adolescent pregnancy prior? Yes/no

Communication with parents on reproductive health issues

Have you ever discussed sex-related matters with your mother? If Yes/no

Peer pressure

Do you ever go to clubs or parties where young people dance? IF YES. How many times in the last month?

Number of times /Never

1.37 Do you ever go to the movies? IF YES. How many times in the last month?

Number of times Never

How many of your friends have had sexual intercourse? Would you say

1.none, 2. some, 3. a few, or 4.many?

Peer pressure yes when >3 no <3 _____

Substance use by family

Do you live with any family member who has alcoholic problems? Yes/no

Religiosity

1 How often do you usually attend religious services?

1Every day

2At least once a week

3At least once a month

4At least one a year

5Less than once a year

6Never

1How important is religion in your life?

1Very important

2Important

3Not important

Which activities do you participate in in your church

1 choir

2 youth meeting

3 ycs

3 Sunday school teacher

4 5 liturgical dancing

5 altar girl

Religiosity yes if score <8 >8 no_____

Appendix IV Focused group discussion guide

Prevalence of risky sex behavior

1.Why do you think adolescent pregnancy continues to occur in this community?

2. What are the causes of adolescent pregnancy in this community?

3. What are the consequences of adolescent pregnancy to the mother and to the child

4. What are the parental controls that need to be applied to prevent adolescent pregnancy?

5. What are the school level factors that need to be applied to prevent adolescent pregnancy?

6. What are the community level factors that need to be applied to ensure prevention of adolescent pregnancy?

7. How do you think adolescent pregnancy can be prevented?

Intrapersonal determinants

Knowledge on contraceptives

Sexual intention

Attitude towards adolescent pregnancy

Behavioral control

perceived ability

subjective norms

interpersonal factors

parent's marital status

living with husband/parents

maternal education

living with sibling who had adolescent pregnancy

communication with parents on reproductive health issues

peer pressure

substance use by family

religiosity

Appendix IV Focused group discussion guide

Prevalence of risky sex behavior

1.Why do you think adolescent pregnancy continues to occur in this community?

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4. What are the parental controls that need to be applied to prevent adolescent pregnancy?

5. What are the school level factors that need to be applied to prevent adolescent pregnancy?

6. What are the community level factors that need to be applied to ensure prevention of adolescent pregnancy?

7. How do you think adolescent pregnancy can be prevented?

Intrapersonal determinants

- Knowledge on contraceptives
- Sexual intention
- Attitude towards adolescent pregnancy
- Behavioral control
- perceived ability
- subjective norms

interpersonal factors

- parent's marital status
- living with husband/parents
- maternal education
- living with sibling who had adolescent pregnancy
- communication with parents on reproductive health issues
- peer pressure
- substance use by family
- religiosity

Appendix VII: Research permits

REPUBLIC OF KENYA

This is to Certify that Ms. Emma Makena Mbae of Maseno University, has been licensed to conduct research in Meru on the topic: Determinants of adolescent pregnancy in Igembe North subcounty, Meru county, Kenya for the period ending: 09/July/2022.

License No: NACOSTI/P/21/11433

763290

Applicant Identification Number

Director General
NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION

Verification QR Code

NOTE: This is a computer generated License. To verify the authenticity of this document,Scan the QR Code using QR scanner application.

THE SCIENCE, TECHNOLOGY AND INNOVATION ACT, 2013

The Grant of Research Licenses is Guided by the Science, Technology and Innovation (Research) Regulations, 2014CONDITIONS

1. The License is valid for the proposed research, location and specified period
2. The License any rights thereunder are non-transferable
3. The Licensee shall inform the relevant County Director of Education, County Commissioner and County Governor beforecommencement of the research
4. Excavation, filming and collection of specimens are subject to further necessary clearance from relevant Government Agencies

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REPUBLIC OF KENYA

THE OFFICE OF PRESIDENT
MINISTRY OF INTERIOR AND CO-ORDINATION OF NATIONAL GOVERNMENT

Telegrams:
Telephone:
Email: ccmeru@yahoo.com

COUNTY COMMISSIONER
MERU COUNTY
P.O BOX 703-60200
MERU

When replying please quote
REF: EDU.12/3/TY (100)
And Date:

12TH July, 2021

TO WHOM IT MAY CONCERN

RE: RESEARCH AUTHORIZATION – EMMA MAKENA MBAE ID NO.24908930

This is to inform you that Ms. **Emma Makena Mbae** of National ID No. **24908930** is authorized to carry out research within Meru county on the below mentioned topic;

"DETERMINANTS OF ADOLESCENT PREGNANCY IN IGEMBE NORTH SUBCOUNTY, MERU COUNTY."

Kindly accord her any necessary assistance she may require.

This clearance to conduct the research expires on 9th July 2022.

SARAH WANJIKU
FOR: COUNTY COMMISSIONER
MERU COUNTY

MINISTRY OF EDUCATION
State Department of Early Learning and Basic Education

Telegrams: "ELIMU" Meru
Email: cdemerucounty@gmail.com
When Replying please quote

County Director of Education
Meru County
P O Box 61
MERU

Ref: MRU/C/EDU/11/1/277

12th July , 2021

TO WHOM IT MAY CONCERN

RE: RESEARCH AUTHORIZATION – EMMA MAKENA MBAE

Reference is made to letter Ref. N0: NACOSTI/P/21/11433 dated 9th July, 2021.

Authority is hereby granted to ***MS Emma Makena Mbae*** to conduct research on ***"Determinants of Adolescent Pregnancy"*** in Igembe North Subcounty of Meru County, for a period ending 9th July, 2022.

The person undertaking this study is bound by all the ethical rules and regulations governing surveys of this nature.

Kamande Mburu
For: County Director of Education
MERU