INFLUENCE OF SCHOOL-BASED SEXUAL RISK AVOIDANCE EDUCATION ON SEXUAL BEHAVIOR AMONG ADOLESCENT GIRLS IN HOMABAY COUNTY, KENYA

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DECLARATION

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

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DEDICATION

I dedicate this thesis to my wife, Loreen Vivian Otieno and children Jesse and Beracah for their sacrificial support during the study period.

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ABBREVIATIONS AND ACRONYMS

AIDS -	Acquired Immune Deficiency Syndrome
CDC -	Center for Disease Control
ETR -	Education Training and Research
FGDs-	Focused Group Discussions
HIV -	Human Immunodeficiency Virus
HSE-	Health Service Executive
IEC -	Information Education Communication
KDHS -	Kenya Demographic Health Survey
KII-	Key Informant Interview
KNBS -	Kenya National Bureau of Statistics
MDES -	Minimum Detectable Effective Size
MOE -	Ministry of Education
MOH -	Ministry of Health
MRES -	Minimum Relevant Effective Size
NACC -	National AIDS Control Council
NACOSTI-	National Council for Science, Technology, and Innovation
NASCOP-	National AIDS and STI Control Programme
PAC-	Programme of Action for Children
SRA -	Sexual Risk Avoidance Education
SRH -	Sexual Reproductive Health
SRR -	Sexual Risk Reduction Education
STEP UP-	Strengthening Evidence Programing on Unwanted Pregnancy
STI/STD-	Sexually Transmitted Disease/Infections
UNESCO-	United Nations Educational, Scientific and Cultural Organization
UNFPA-	United Nations Population Fund
UNICEF-	United Nations Children's Fund
WHO-	World Health Organization

DEFINITION OF OPERATIONAL TERMS

Adolescent

World Health Organization identifies adolescence as the period in human growth and development that occurs after childhood and before adulthood, from ages 10 to 19.

Baseline

Baselines are data collected at the outset of a project (or an activity) to establish the pre-project conditions against which future changes amongst a target population can be measured (Save the Children, 2015).

Curriculum

It is a cohesive course of several lessons, actions, and modules used to guide Teachings (Calugan Janice, 2013).

Early sexual debut

Involvement in sexual intercourse at or before age 14 years (Durowade et al., 2017).

Multiple partners

This is serial or simultaneous engagement in sexual activities with two or more partners in a specified period (Dimbuene, Emina, & Sankoh, 2014).

School

An institution for educating children (Oxford dictionary).

Sexual Abstinence

Sexual abstinence is the practice of refraining all aspects of sexual activity for medical, psychological, legal, social, financial, philosophical, moral, or religious reasons.

Sexual Risk Avoidance Education

Sexual Risk-Avoidance (SRA) education is an approach to sex education that focuses on risk avoidance instead of Sexual Risk-Reduction (SRR) or "comprehensive sex education" when it comes to sexual activity. (Grossu & Sprigg, 2014).

High-Risk sexual behavior

Self-reported practice of at least one of the following in the last six months among sexually active girls, multiple sexual partner, inconsistent condom use and early sexual debut.

Self-efficacy

Refers to an individual's confidence in their ability to complete a task

or achieve a goal.

Sexual self-efficacy: Is one's belief in his/her ability to handle a sexual context well (Rostosky, S. S., Dekhtyar, O., Cupp, P. K., & Anderman, 2008).

Consistent condom use

Consistent utilization of condom among sexually active girls in all sexual encounters.

ABSTRACT

Adolescent sexual and reproductive health is a priority in the global agenda because of its associated negative reproductive health outcomes. It is estimated that Homabay County contributes 11.5% of adolescents aged 10-19 years living with HIV in Kenya. The fertility rate among girls aged 15-19 is also high in Homabay with a reported teenage pregnancy rate of 33% and the age-specific fertility rate of 178 births per 1000 girls. This study aimed to determine the influence of school based sexual risk avoidance education on sexual behavior in Homabay County. Using a cluster randomized control trial study design 28 schools were randomly selected from a sampling frame of 94 schools and randomly allocated to intervention and control arm of the study at a ratio of 1:1 for a period of 12 months. Using a repeat cross-sectional study design a total of 491 and 489 participants were proportionately and randomly selected from a sampling frame of 2085 participated in the baseline and evaluation surveys respectively. The data collection tools were a self-administered questionnaire, a focused group discussion guide, and key informant interview guide. For intervention, school-based sexual risk avoidance manual, self-assessment evaluation checklist, and videos were used. Quantitative data was managed in SPSS while qualitative was analyzed by thematic content analysis. Descriptive statistics was used to determine the prevalence of high-risk sexual behavior, teenage pregnancy, level knowledge, perception of risk and sexual self-efficacy. Logistic regression analysis was used to determine factors associated with sexual behavior and effect of intervention. The study found overall high-risk sexual behavior, sexual activity, early sexual debut, inconsistent utilization of condom and multiple sexual to be 62.3%,61.7%,37.5%, 33%, and 23.1% respectively among girls. Proportion of participants with a good level of knowledge on risky sexual behavior, pregnancy and HIV/AIDS were found to be 39.4%,40.4%, and 82.9% respectively while those with high perceptions of risk on pregnancy and HIV/AIDS were found to be 54.3% and 41.9% respectively and 60% had high self-sexual efficacy. Multiple sexual partner was associated with current guardians (OR 0.327, CI 0.126-0.844, P 0.021) and perception of risk on pregnancy (OR 0.327, CI 0.115-0.929, P 0.036)while inconsistent utilization of condom was associated with current guardian (OR 0.477, CI 0.242-0.940, P 0.033), position of birth (OR 0.355 CI 0.157-0.805, P 0.013) and sexual self-efficacy (OR 0.389, CI 0.188-0.806, P 0.011).Early sexual debut was associated with knowledge on pregnancy (OR 0.353, CI0.169-0.737, P 0.006) and perception of risk on pregnancy (OR 0.316, CI 0.147-0.676, P 0.003). School-based sexual risk avoidance education significantly increased knowledge on risky sexual behavior (OR 1.525, CI 1.059-2.195, P 0.023) and strength of sexual self-efficacy (OR 1.506, CI 1.021-2.221, P 0.039). The SRAE has a protective effect on knowledge on risky sexual behavior and sexual self-efficacy which directly influences sexual behavior. Therefore, Ministry of education and the stakeholders should upscale a progressive sexual risk avoidance education from primary to secondary schools.

CHAPTER ONE: INTRODUCTION

1.1 Background of the study

To date, Kenya does not have an ongoing effective and socio-culturally acceptable school-based interventions addressing the aspect of adolescent sexual and reproductive health (Division of Reproductive Health, 2015). Adolescence sexuality is a global public health concern because of its associated negative reproductive health indices (Michielsen et al., 2016). World Health Organization defines adolescents as people between 10 and 19 years of age. Globally, the total number of adolescents is estimated at 1.2 billion, representing 18% of the total world population with almost equal distribution in relation to age groups 10-14 and 15-19 years (Bongaarts, Cavanaghi, Jones, Luchsinger, McDonald, et al., 2018). It is estimated that 90% of adolescent lives in low and middle-income countries where they make up almost a quarter of the population (Bongaarts, Cavanaghi, Jones, Luchsinger, McDonald, et al., 2018). Adolescents in Sub-Saharan Africa account for 16% of the global aggregate and it also projected to increase to 23% by 2030 (PRB, 2015) while they comprise 24% of the Kenyan population estimated at 9.2 million (Labonté et al., 2015).

Sexual behavior constitutes attraction, motivation, and performance where female mostly displays an attraction to the opposite sex (Spigarelli & Medicine, 2012). Sexual behavior is determined by genetics but largely modeled by individual and environmental factors (Spielman, Dumper, Jenkins, & Lovett, 2017). Individual factors include but not limited to knowledge, attitude, self-efficacy, and intentions while environmental factors including but not limited to culture, politics, legal frameworks, and philosophical aspects of life, morality, ethics, theology, and spirituality, or religion (Spielman et al., 2017). Sexual behavior can be categorized as low risk and high-risk sexual behavior. High-risk sexual behavior is commonly defined as behavior that

increases one's risk of contracting sexually transmitted infections and experiencing unintended pregnancies which include having sex at an early age, having multiple sexual partners, having sex while under the influence of alcohol or drugs, and unprotected sexual behaviors while low risk refers to being sexually active but free from the high-risk experience's (UNESCO, 2018).These risky sexual behaviors are an interplay of community, societal and individual factors as explained in social learning theory (Bandura, 1978).

Worldwide, adolescents encounter severe challenges in their lives and overall reproductive health as a result of their sexual behavior. Adolescents are at the centre of pandemics both in terms of its spread, and in terms of the probable for changing the attitudes and behaviors that underlie sexually transmitted infections(Whitaker et al., 2016). Adolescent girls bear 70% of consequences resulting from risky sexual behaviors (Woog & Kågesten, 2017) with global analysis indicating an upward trend of HIV infection among the age 10-19 years (PRB, 2015). In 2018, 59,000-380,000 adolescents between ages 10-19 were newly infected with HIV projecting 183,000 new infections by 2030 if the trend continues (UNICEF, 2018). In Kenya, the prevalence of HIV among female ages 15 -24 was 2.61% (National AIDS and STI Control Programs (NASCOP), 2018) indicating adolescent involvement in high-risk sexual behaviors.

Adolescent pregnancy constitutes a violation of the right of the child as per the Convention on the Rights of the Child (CRC) and is a common public health problem worldwide resulting from risky sexual behavior. It is a risk to girls and an obstacle to their vital rights to education, health, life prospects. Every single day 20,000 adolescents give birth in developing countries amounting to 7.3 million births a year (Darroch, Woog, Bankole, & Ashford, 2016).Globally, adolescent pregnancy has

slightly reduced to 20.1%. However, in Sub-Saharan Africa and other developing countries, the magnitude has remained constant at 23% (Bongaarts, Cavanaghi, Jones, Luchsinger, Mcdonald, et al., 2018).There is a wide variation in adolescent pregnancy in Kenya ranging from 10% in the Central region to 22% in the Nyanza region (Kenya National Bureau of Statistics, 2015).

Adolescents are an essential target population with respect to improving global public health outcomes. There has been in existence favorable international, regional and country-specific policy and legal frameworks to promote adolescent sexual and reproductive health rights (Labonté et al., 2015).

The international legal framework significant to adolescent sexual and reproductive health rights are ; ‘‘Universal Declaration of Human Rights (1948),International Covenant on Civil and Political Rights (1966), Convention on the Elimination of All Forms of Discrimination against Women (1979), Convention of the Rights of the Child (1989),International Conference on Population and Development (1994), General Comment No 4 on Adolescent health and development in the context of the Convention on the Rights of the Child (2003), General Comment No 20 on the Implementation of the Rights of the Child during Adolescence (2016) ,Framework of actions for the follow-up to the Programme of Action of the International Conference on Population and Development Beyond 2014, Joint General Recommendation No 31 of the Committee on the Elimination of Discrimination against Women/ General Comment No 18 of the Committee on the Rights of the Child on harmful practices ’’ (UNESCO, 2018).

In Kenya these legislative frameworks include the constitution of Kenya (2010), National guideline for provision of adolescent - youth-friendly services in Kenya

(2005), National adolescent sexual and reproductive health policy amongst others (Labonté et al., 2015). However, these policy documents largely provide guideline of interventions with minimal consideration of the local social and cultural context hence it has been very difficult for stakeholders to prioritize effective interventions in addressing adolescent sexual behavior in diverse contexts.

Sex education educated can be classified as comprehensive or sexual risk avoidance education. ‘‘Comprehensive sexuality education (CSE) is a curriculum-based process of teaching and learning about the cognitive, emotional, physical and social aspects of sexuality (UNESCO, 2018). It aims to equip children and young people with knowledge, skills, attitudes, and values that will empower them to: realize their health, well-being and dignity; develop respectful social and sexual relationships; consider how their choices affect their own well-being and that of others; and, understand and ensure the protection of their rights throughout their lives’’ (UNESCO, 2018). Comprehensive sex education exposes both sexually active and inactive adolescents and young people to a full range of information about contraceptives, promotion, and provision for use as a sexual and reproductive health right (UNESCO, 2018). However, these provisions have been highly opposed globally and in Kenya on the basis of region, social and cultural grounds watering down the existing legal frameworks hence minimal progress on financing and implementation (Neef & Visscher, 2018).

‘‘Sexual Risk-Avoidance (SRA) education is an approach to sex education that focuses on risk avoidance instead of Sexual Risk-Reduction (SRR) or “comprehensive sex education” when it comes to sexual activity’’(Grossu & Sprigg, 2014). Differently, the information provided through sexual risk reduction programs can only reduce the risk while sexual risk avoidance uses the comprehensive informational approach on both

contraceptives and abstinence to avoid all the risks(Weed & Ericksen, 2019).Decades of school-based comprehensive sexual education has not shown any success as compared sexual risk avoidance education which has limited though promising result that justifies further research (Weed & Ericksen, 2019).

1.2 Problem statement

Globally, risky sexual behavior is associated with unintended adolescent pregnancy, HIV/AIDS and STIs is on an upward trend despite decades of multiple interventions. In Homabay County, about 21% of women have reported sexual debut before age 15 and 50% of women aged 20-49 years had sex by age 16 which is 9 and 2 times earlier than the national trend respectively (KNBS, 2016). An analysis of 2014 KDHS by STEP UP revealed that 54% of adolescents aged 15-19 in Homabay County have ever had sexual intercourse as compared to the National figure of 36.3% (Obare, Odwe, & Birungi, 2016). Multiple sexual practices is also high in Homabay County with only 40% of women reporting consistent use of a condom in a sexual relationship (NACC, 2018).The prevalence of pregnancy among adolescents aged 15-19 in Homabay is also estimated to be 33% which is above the National and global average figures of 18% and 23% respectively (KNBS, 2016). In addition, 31.2% have ever given birth, more than double the figure of 14.7% at the national level (KNBS, 2016) and among the highest as compared to the average global birth rate among 15–19 year olds of 49 per 1000 girls (Darroch et al., 2016) , and Africa adolescent pregnancy rate which ranges between 8% to 21.5% (Kassa, Arowojolu, Odukogbe, & Yalew, 2018). Moreover, it estimated that Homabay County contributes 11.5% of adolescents aged 10-19 years living with HIV in Kenya and has an overall HIV prevalence of 26.0% which 4.5 times higher than the national prevalence(National AIDS and STI Control Programs

(NASCOP), 2018). These statistics indicate a high involvement of the adolescent in risky sexual behavior. The drivers of Adolescent pregnancy are multiple and complex factors that range from socioeconomic disadvantage, media and others which also varies in various contexts (Alimoradi, Kariman, Simbar, & Ahmadi, 2017a). Pregnancy and childbirth complications are the second cause of death among 15 to 19-year-olds globally. Annually, 3 million unsafe abortions among girls aged 15 to 19 occur, contributing to maternal deaths and to permanent health complications (Pan American Health Organization (PAHO), Fund, & Fund, 2016).This study, therefore, determined the influence of sexual risk avoidance education on risky sexual behavior.

1.3 Justification of the study

A global review of 103 credible school-based comprehensive sex education programs revealed a compelling lack of evidence of effectiveness and recommended further research on sexual risk avoidance education to inform paradigm development (Weed & Ericksen, 2019).Sexual behavior is a significant intervention point for policymakers. There is a need and strong interest in identifying the high impact and sustainable interventions that can reduce risky sexual behavior among secondary school girls. Despite global, regional and local favorable policies and legal frameworks that promote adolescent sexual and reproductive health and rights, there is no evidence on progress to reverse the trend on consequences of risky sexual behavior among girls. There is a need to come up with evidence-based effective interventions that are implemented with careful theoretical and conceptual planning and social and cultural considerations. Addressing these gaps is imperative to advance the research literature and inform future policy inventiveness and programming decisions. The result of this study provides evidence-based information for designing effective intervention on adolescent sexual

behavior in Kenya and contributes towards the achievement of objective 3.7 of Sustainable Development Goal 3.

1.4 Research questions

a) What is the prevalence of high risk sexual behavior among adolescent girls aged 15-19 years in Homabay County?
b) What is the level of knowledge on adolescent sexual and reproductive health among adolescent girls in Homabay County?
c) What is the level of risk perception on pregnancy and HIV/AIDS among adolescent girls in Homabay County?
d) What is the level of sexual self-efficacy among adolescents' girls in Homabay County?
e) What are the factors associated with sexual behavior among girls in Homabay County?
f) What is the influence of school-based sexual risk avoidance education on the sexual behavior of adolescents?

1.5 Hypothesis

H_o –School-based Sexual Risk Avoidance Education is not effective in reducing sexual risk behavior among adolescent girls.

1.6 Objectives of the study

1.6.1 Broad Objective

To evaluate the influence of school-based Sexual Risk Avoidance Education on sexual behavior and teenage pregnancy among adolescent girls in Homabay County.

1.6.2 Specific objectives

a) To determine the prevalence of high risk sexual behavior among adolescent girls in Homabay County.

b) To assess the level of knowledge on sexual and reproductive health among adolescent girls in Homabay County.

c) To assess the level of risk perception on pregnancy and HIV/AIDS among adolescent girls in Homabay County.

d) To determine the level of sexual self-efficacy among adolescents' girls in Homabay County.

e) To determine factors associated with high risk sexual behavior among adolescent girls in Homabay County.

f) To determine the influence of school-based sexual risk avoidance education on the sexual behavior of adolescent girls.

1.7 Significance of the study

The findings of this study are useful to the Ministry of Education, Ministry of Health and other stakeholders in the development of policies and relevant intervention strategies to address sexual risk behavior among adolescent girls in Homabay County. The results of the study provide baseline data on sexual behavior which informs further research and design and interventions. The students benefited from the intervention which is likely to have a positive impact both on their sexual and reproductive health and academic performance.

1.8 Theoretical framework of the Study

Sexual behavior is manifested and often is as an outcome of multifaceted inter-play of cognitive factors, behavioral factors and environmental factors (Bandura, 1978).

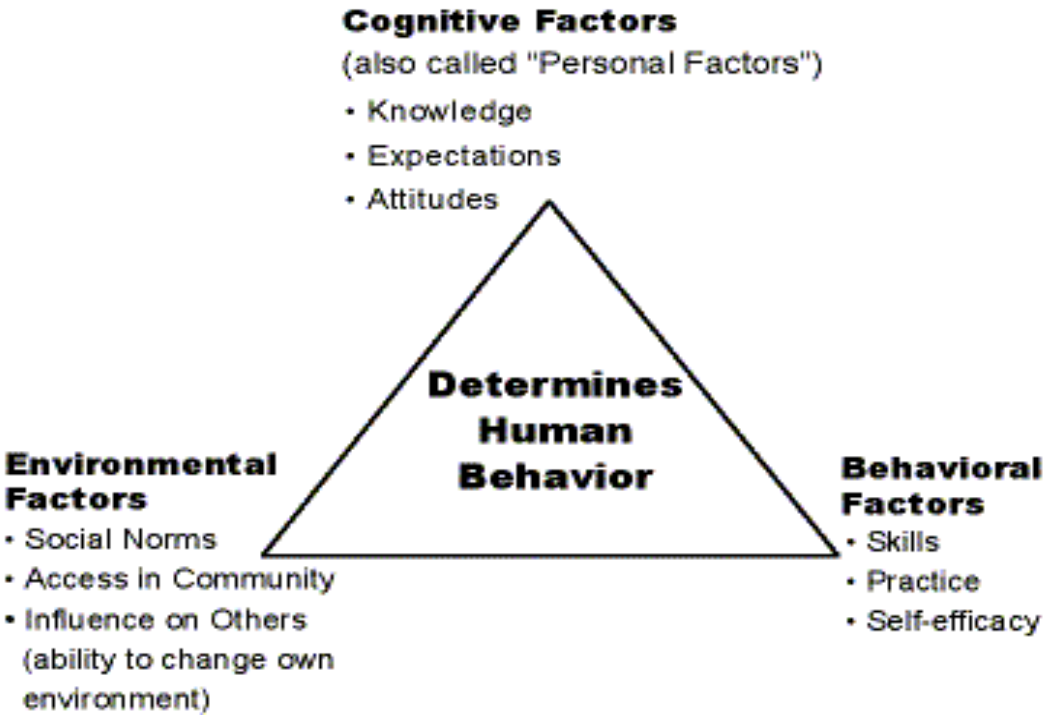

Figure 1.1Learning theory model

Within the learning theory model, ‘‘Cognitive’’ factors are individual characteristics that modulate performance such that it may improve or decline. ‘‘Behavioral’’ factors can be directly or indirectly influenced by environmental factors but directly by

cognitive factors. The learning theory approach helps to understand the logical relationship of non-modifiable and modifiable variables related to sexual behavior.

1.8 Conceptual framework of the study

The conceptual framework of the study was guided by learning theory model as it is relevant in programing health education interventions and studies targeting adolescent sexual behavior. Figure 1.1 lays the conceptual framework for this study. The school-based sexual risk avoidance education directly targeted to modify three factors namely: Knowledge, perception of risk and self-efficacy which influence sexual behavior. However, these factors are also modeled by socio-demographic, socio-cultural and socioeconomic factors which are non-modifiable factors in this study.

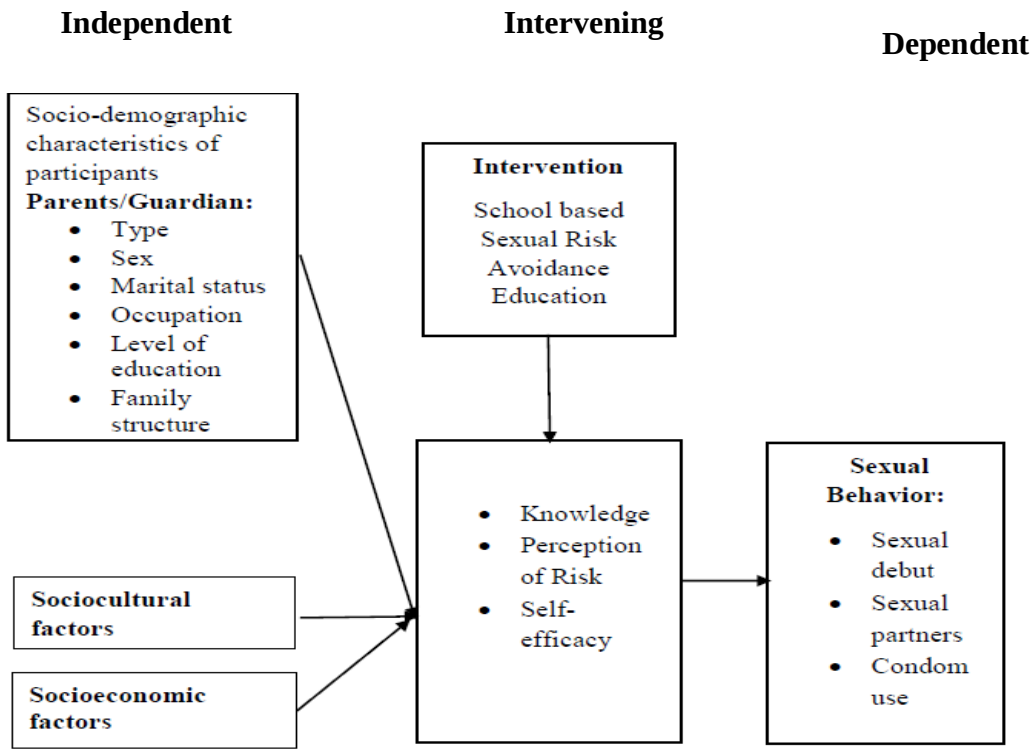

Figure 1.2: Conceptual Framework (Modified from PRECEDE Framework) (Green LSW, 1980.)

1.9 Limitation and Delimitation

Active involvement of student was limited to first and second term of the school calendar because the current examination policy minimising entry to school in third term. The sessions were also confined to lesson allocated for life skills and games time. This was a school-based study and therefore the adolescents who are out of school did not participate. The intervention was only focused to directly modify knowledge, perception of risk and sexual self-efficacy and indirectly influence sexual behavior. The Ministry of health study authorization and consent was limited the study to participant from one to three and only girls attending day schools were targeted. The characteristics of the implementing teachers varied and therefore the recruitment criteria was based on individual interest and passion on the study area. The implementers of the intervention were teachers from the enrolled schools hence enhanced sustainability and follow-up on the program beyond the study period. Moreover, the delivery of the intervention was done within the normal secondary school working calendar hence could sustainable be integrated as part of the everyday school activities.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter presents existing literature in order of study objectives. It summaries the global and local perspective of sexual behavior, knowledge, perception of risk on sexual and reproductive health, sexual self-efficacy, factors associated with sexual behavior among adolescent girls and existing sexual and reproductive interventions targeting adolescents.

2.2 Overview of Sexual risk behavior

Many adolescents engage in sexual risk behaviors which is a risk to sexually transmitted diseases (STDs) and unintended pregnancy. The low and middle-income countries account for 95% of birth among adolescents aged 15-19 years (Bongaarts, Cavanaghi, Jones, Luchsinger, Mcdonald, et al., 2018), 50% being from India, Nigeria, Democratic Republic of Congo, Brazil, Bangladesh, China, and Ethiopia (Bongaarts, Cavanaghi, Jones, Luchsinger, Mcdonald, et al., 2018).

2.2.1Global Perspectives on adolescent sexual behavior

Worldwide, most adolescents are involved in sexual activities and are at risk of sexually transmitted infections (STIs), HIV, and unintended pregnancy (Morris & Rushwan, 2015). However, global fertility rates have reduced significantly in the last decades, numerous adolescent girls between the ages of 15 and 19 have already begun bearing children, with disparities between geographic regions (UNESCO, 2018). The 2014 World Health Statistics indicate that the average global birth rate among 15 to 19-year-olds is 49 per 1000 girls, with country rates ranging from 1 to 299 births per 1000 girls (UNESCO, 2018).United States of America policy statement in 2014 outlines that 46.8% of students in grades 9–12 reported ever having sexual intercourse, with

variations by race/ethnicity (60.6% among Blacks, 49.2% among Hispanics, and 43.7% among Whites). In addition, 15.0% of students reported having had four or more sexual partners in their lifetime, again with variations according to race/ethnicity (26.1% among Blacks, 13.4% among Hispanics, and 13.3% among Whites (Woog & Kågesten, 2017).

2.2.2 Regional Perspectives on adolescent sexual behavior

Findings of studies conducted in Uganda, Rajasthan reported the prevalence of sexual activity among adolescent girls to be 11.5% (Ivanova et al., 2019) 19.4% (Palmer et al., 2017) respectively. One study conducted in Ethiopia and two in Nigeria reported prevalence of high risk sexual behavior to be 73.28% (Ali, 2017), 98.2% (Ejike, 2015) and 68.3% (Ajide & Balogun, 2018) respectively while those conducted in South Western Uganda and Tanzania reported prevalence of 15.1% (Nighty, Elizabeth, & Daniel, 2019) and 31.8% (Lwelamira, Safari, & Masanyiwa, 2016) respectively**.**

The result of the study among the youth in the Ambara region in Ethiopia estimated the mean age of initiation of sex to be 16.73±2.53 years (Tadesse & Yakob, 2015). The prevalence early sexual debut largely varies; 6 Caribbean countries 16.9% (Peltzer & Pengpid, 2015), Ethiopia 18.4% (Abebe, Addis, Asmamaw, Addisu, & Ayanaw, 2019), Nigeria 41.1% (Durowade et al., 2017), Brazil 67.8% (Ganle, Amoako, Baatiema, & Ibrahim, 2019), Malaysia 31.7 % (Aliza Lodz et al., 2019).

Studies have reported a high prevalence of inconsistent utilization of condoms among adolescent girls as documented by findings of studies in Colombia 78% (Morales et al., 2018), Cameroon 76% (Tarkang, 2014) and South Africa 47% (Muchiri, Odimegwu, & De Wet, 2017). However, multiple sexual Partner practice varies from 5.7% in

Uganda (Wroblewska et al., 2016), Malaysia 16.6% (Aliza Lodz et al., 2019), Brazil and Ghana 51% and 71.4% respectively (Ganle et al., 2019).

2.2.3 Perspective of adolescent sexual risk behavior in Kenya

Adolescent fertility and sexuality is a major public health issue in Kenya. They are estimated to constitute about 24% of the population (UN/DESA, 2017)**.** In Kenya Women in rural areas initiate sexual activity slightly earlier than their urban counterparts ((NCPD), 2016). According to the KDHS for 2014, 10.7% of female adolescent of 15-19 years had their first sexual intercourse by age 15, 36.3% had initiated sexual intercourse, 15.3% had had sex within one year before the survey. Regionally analysis of sexual initiation indicated a range between 19.0% in North Eastern to 23.3% in Nairobi within one year of the survey (KNBS, 2015). A study conducted in Nairobi and Busia Counties in Kenya indicates an overall prevalence of sexual activities with multiple partners among female students to be 14.6% with non-use of contraceptives among the majority (Mayabi, 2016).There exists a wide variation on the pattern of sexual risk behavior among adolescent in Nyanza as compared to other regions in Kenya. Another study conducted in both urban and rural set up indicted that adolescents from a rural environment were more likely to involve in sexual risk behavior as compared to their counterparts in the urban. In the same study rural women reported the lower proportion of virginity at marriage, a higher number of lifetime sexual partners and inconsistent use of condoms and that Community-level variables are significantly associated with a sexual debut(National AIDS and STI Control Programs (NASCOP), 2018).According to the KDHS 2014,the adolescent pregnancy in Homabay County for ages 15-19 is at 33% which is higher than the 22% and 18% for Nyanza region and National estimates while sexual activity is at 15.3% nationally and 23.2% in Nyanza region (KNBS, 2016).

2.3 Knowledge and perception of risk on adolescent sexual and reproductive health

Two studies conducted in Nigeria and Ethiopia reported 67.7% (Odeigah et al., 2019) and 76.86 % (Ena & Fekecha Hurissa, 2016) of the participants to be having good knowledge of risky sexual behavior. Knowledge of HIV varies across the regions. In Nigeria, two studies reported 49% (Pharr et al., 2017) and 34.3% (Ajide & Balogun, 2018) of the participant to be having good knowledge of HIV. However, findings from a study in India reported higher 78.9% (Jain, Jain, Patil, & Bang, 2016) of participants to be having good knowledge on HIV while a study in Cameroon reported more than 50% (Donatus, Sama, Tsoka-Gwegweni, & Cumber, 2018) of participants with good knowledge on pregnancy.

The perception of risk on HIV and pregnancy among adolescent girls also vary from region to region with minimal range. Findings from studies conducted in rural Cameroon and Wakiso in Uganda reported 39.4% (Tarkang, 2014) and 49.6% (Osingada, Nabasirye, Groves, & Ngabirano, 2016) of the participants to be having a high perception of risk on HIV. Two studies conducted in South Africa and in urban slums Ghana reported 11% (Maughan-Brown & Venkataramani, 2017), 26% (Nyasulu, Fredericks, Basera, & Broomhead, 2018)and 15% (Darteh, Kumi-Kyereme, & Awusabo-Asare, 2016) of participants to be having high perception of risk on HIV.

2.4 Sexual self-efficacy among adolescents

Most studies define sexual self-efficacy and the perceived ability to be in control of sexual and reproductive health decision making. A systematic review documented a wide range of high sexual safe sexual efficacy to be from 29.22%-78.49% (Tsai CC., Tang JS., Tsai TI., 2019) while different studies conducted in Soweto South Africa

reported high sexual efficacy to be 72% (Closson, Dietrich, Lachowsky, Nkala, Cui, et al., 2018) and 68.7% (Closson, Dietrich, Lachowsky, Nkala, Palmer, et al., 2018).

2.5Factors associated with adolescent sexual behavior

According to the report on the science of adolescent risk-taking factors influencing adolescent sexual behavior are broadly categorized at the micro-level and proximal levels (Institute of Medicine and National Research Council, 2011). The micro-level is environmental factors that include neighborhood, poverty, discrimination, inequality, peers, and schools while proximal levels are the adolescent individual factors (Jaccard et al., 2010). A systematic review suggests that factors contributing to high-risk sexual behavior among Iranian adolescents can be classified as personal, family, peer, school and community (Alimoradi, Kariman, Simbar, & Ahmadi, 2017b).

A systematic review of risk factors associated with risky sexual behavior in Sub-Saharan Africa, summarized a number of factors. ‘Socio-cultural, environmental and Economic factors (Peer influence, unwanted sexual advances from adult males, coercive sexual relations, unequal gender power relations, poverty, religion, early marriage, lack of parental counseling and guidance, parental neglect, absence of affordable or free education, lack of comprehensive sexuality education, non-use of contraceptives, male’s responsibility to buy condoms, early sexual debut and inappropriate forms of recreation)’’ (Yakubu & Salisu, 2018).

Individual factors; ‘‘(excessive use of alcohol, substance abuse, educational status, low self-esteem, and inability to resist sexual temptation, curiosity, and cell phone usage)’’. Health service-related factors; ‘‘(cost of contraceptives, Inadequate and unskilled health workers, long waiting time and lack of privacy at clinics, lack of comprehensive sexuality education, misconceptions about contraceptives, and non-

friendly adolescent reproductive services,) as influencing adolescent pregnancies in Sub-Saharan Africa''(Yakubu & Salisu, 2018).

2.5.1 Socio-demographic factors and adolescent risky sexual behavior

A number of studies have revealed a positive association between demographic characteristics like the level of education of parents, age of students, religion, family structure, and family size and student's sexual behaviors. Findings of a study among secondary school adolescent in Nigeria revealed that students between ages 10-14 years were 1.5 more likely to practice risky sexual behavior than those between the ages of 15-19 years (Oluwatoyin & Modupe O, 2014). A study in Nigeria found tribe and primary caregiver to significantly influence risky sexual behavior among adolescent (Oluwatoyin & Modupe O, 2014). Another study in Nigeria also reported Single-parented homes to be associated with multiple sexual partners and poverty as critical determinant of risky sexual behavior among girls (Odimegwu & Adedini, 2013).

A study in South Africa found most individual, parental, environmental, and drug abuse as the main factors that affect sexual risk behaviors like lifetime sex, recent sexual activity, and involvement with multiple sexual partners (Amoateng, Kalule-Sabiti, & Arkaah, 2014). A study in Nigeria revealed that adolescents from polygamous settings were more likely to engage in sexual intercourse (Nnebue, Chimah, Lawoyin, Ilika, & Duru, 2015). However, another study in the same country showed that Low socioeconomic background for both parents and doing income-earning contracts to be associated with sexual intercourse (Nnebue et al., 2015). A study also indicated that living with a single parent is strongly associated with adolescent sexual activities (Nnebue et al., 2015).A systematic review of African studies indicated that there was a relationship between family structure and engagement in sexual risk behavior. Low household wealth and urban residence were found to be significantly associated with

multiple sexual partners while education attainment had a week association among women in Vietnam(Son et al., 2016). Age, gender, school type, and location were significantly associated with sexual risk behavior among female students from Busia and Nairobi counties in Kenya (Mayabi, 2016).

Finding from a study in Burkina Faso indicated that adolescents living with both mother and father were less likely to have multiple sexual partners and more likely to use condoms consistently than those in other households (Yode & Legrand, 2014). There was a similar finding by Yode & Legrand who reported households with mother and father to be more protective form early sexual debut as compared to single parents (Avelar E Silva, Van De Bongardt, Van De Looij-Jansen, Wijtzes, & Raat, 2016).

2.5.2 Individual factors associated with sexual behavior

Finding from a study in China reported that adolescent girls with good knowledge on sexual and reproductive health to experience normal or late sexual debut (Li et al., 2017) similar to a study conducted in Tanzania which reported increased high risk sexual behavior among participants with poor knowledge on HIV/AIDS (Lwelamira et al., 2016). Findings from a study conducted in Ghana reported no association between HIV risk perception, early sexual debut and condom utilization and concluded that adolescents largely do not perceive themselves to be at risk of HIV infection as compared to pregnancy despite their involvement in risky sexual behavior(Afriyie & Essilfie, 2019). Report on concept analysis found that risk perception in pregnancy stimulates women's sentimental state and has a bearing on decision-making around pregnancy and childbirth (Lennon, 2016).

Findings of two studies conducted in developed countries showed a positive correlation between self-efficacy and positive attitudes towards condom utilization (Artistico,

Oliver, Dowd, Rothenberg, & Khalil, 2014) and high sexual efficacy as a strong predictor of condom utilization (Uribe Alvarado, Bahamón, Ruíz, Herrera, & Alarcón-Vásquez, 2017) .

A study conducted in Nairobi, Kenya indicated 71% of female virgins to be having a high level of mother-daughter communication (Okigbo, Kabiru, Mumah, Mojola, & Beguy, 2015).A meta-analysis of studies conducted between 1984-2014 also revealed that parental monitoring knowledge and rule enforcement was positively associated with delayed sexual intercourse, greater condom utilization and increased contraceptive use among adolescent girls (Dittus et al., 2015). Moreover, a qualitative study in a community in Western Kenya also identified sleeping arrangements as a risk factor to risky sexual behavior among adolescents (Juma, Askew, Alaii, Bartholomew, & Van Den Borne, 2014). On peer pressure, findings of a study conducted by (Peçi, 2017) reported that adolescences are probable of having sex if friends in their network and peers are mature, abuse drugs, have a more positive attitude towards childbearing and have liberal values about sex. In addition, a study conducted in Ghana reported adolescent's relationship with antisocial peers to increase early sexual debut and having more friends to be positively associated with multiple new sexual partners (Lingala & Ghany, 2016).

2.5.3 Family Support and adolescent risky sexual behavior

Adolescence is influenced by their parents' values, beliefs, and expectations of proper behavior (Blocker, Dyer, & Bean, 2014). Findings from a study in Tanzania reported sexual debut be significantly associated with parental education with an odd ratio showing the inverse proportional relationship (Laddunuri, 2013). Later sexual debut, increased condom use, a fewer sexual partner has been attributed to parental monitoring and positive parental relationship. In a study among adolescents from welfare

institutions in Malaysia, Family connectedness was found to reduce sexual risk behavior (Farid, 2014). Findings from a study in Atlanta also suggested that family connectedness, precisely weekly family dinners, and parent-child communication were significant family factors that deferred adolescent sexual behavior. (Kendall & Kendall, 2016). A systematic review of studies also pointed out that the level of parental involvement in youth activities determines their sexual behavior (Frantz, Sixaba, & Smith, 2015).Similarly, "Not living with both parents" and poor family background, were significantly associated with increased likelihood to engage in sexual activity in Nigeria (Udigwe et al., 2014).Contrary to this, findings of a study from Delta in Nigeria reported parental involvement to have a very minimal prediction on sexual risk behavior among adolescent (Ofole & Agokei, Peter, 2014).

2.5.4 Socio-cultural factors associated with adolescent sexual behavior

A report from the ACT youth center for excellence document that a number of studies globally have established that young women who tolerate cultural female gender norms are more likely to be involved in sexual risk behavior compared to their colleagues who selectively accept cultural norm related to sexual activities (Rolleri, 2013). This report concludes that there is a strong indication that girls who observe unsafe and discriminatory gender norms are at greater risk for involving in sexual risk behaviors that can lead to unintended pregnancy and sexually transmitted infections. The sociocultural influence of adolescent sexual behavior is as diverse as the dynamism nature of communities. In America the Latino gender roles –marianismo and machismo accelerate risky sexual behavior as sexuality domination and multiple sex partner is culturally acceptable for males while Latina women are expected to be docile and obedient to men (Gaioso, Wilson, Villarruel, & Childs, 2017).In a study conducted in the United Kingdom, it was found that cultural and religious dissimilarities accounted

for some pattern of risky sexual behavior among students (Chanakira, O'Cathain, Goyder, & Freeman, 2014).

2.6Adolescent sexual risk behavior interventions

In diverse contexts, various countries have adopted numerous intervention strategies to address adolescent sexual and reproductive health challenges. An intervention designed to modify relationships between emotions and behavior produced positive results by influencing sexual decision making among adolescent girls (Ford & Jaccard, 2018).The analysis of this study provided evidence of a positive effect on delayed vaginal sex, frequency of sexual activity after sexual debut and substance use before sex (Ford & Jaccard, 2018). Report from a systematic review of behavior change intervention and effectiveness on reducing risky sexual behavior in Sub Saharan Africa showed that 8 out of 17 analysis projects reported positive outcomes in both knowledge and sexual practices especially in a study with a strong peer education component. (Mwale & Muula, 2017). This study recommended further research on interventions on peer education focused interventions to substantiate their potential efficacy in sexual risk reduction among adolescent girls. An assessment of the impact of interventions on adolescent sexual health suggested that sexual and reproductive health education, counseling and contraceptive provision were effective in increasing sexual knowledge, contraceptive use and reducing adolescent pregnancy (Salam et al., 2016).

2.6.1Approaches for delivery of Adolescent Services in Kenya

The Ministry of Health in Kenya identified targeted and integrated approaches in providing adolescent reproductive health services. These services are clinical, non-clinical in nature or a mix of both and are programmed to meet the need of the youth excluding all other groups while in the integrated approach, young people obtain

services as part of the overall public, but exceptional provisions are made to make the services more suitable to young people (Ministry of Health Kenya, 2015).The Ministry further recommends minimum conditions required to adequately address the needs of adolescent. These conditions are affordability and accessibility, safe and basic range of services, privacy and confidentiality, provider competence and attitude, quality and consistency, reliability and sustainability, and inbuilt monitoring and evaluation system. These approaches have been implemented in four models with recommended essential service packages in Kenya; community based, clinical based, school based and virtual based models (NASCOP, 2016) .

2.6.2 Comprehensive sex education

Comprehensive sex education (CSE) is extensively advocated as an effective strategy to reduce risky sexual behavior and reverse the global upward trend of abortion, HIV /STI infections and unwanted pregnancy among adolescents and young people (UNESCO, 2018). It is a right-based approach strategy for advocates for youth and adolescent-friendly service that include but not limited to ‘‘Sexual and reproductive health counseling, Contraceptive counseling and provision (including emergency contraception), Abortion services, Prevention, testing and counseling services for HIV and other STIs, Prenatal and postpartum services, Sexual abuse counseling and relationship and sexuality counseling (UNFPA, 2014). This strategy has shown more evidence of failure globally and resulted in harmful effects of great magnitude than the benefits (Weed & Ericksen, 2019). Moreover, Decades of school-based comprehensive sexual education has not shown any success as compared sexual risk avoidance education which has limited though promising result that justifies further research (Weed & Ericksen, 2019).

2.6.3 Sexual risk avoidance education

Sexual risk avoidance (SRA) education offers therapeutically precise and ideally comprehensive material in methods in agreement with recognized public health models that address other youth risk practices such as smoking and drug abuse. Most studies on this intervention have been done in developed countries. A systematic review of SRAE programs in United States documented successes in reducing risky sexual behavior among adolescents (Ericksen & Weed, 2011). Results from this review indicate that student who takes part in SRA programs realize various benefits namely; "Decreased teen pregnancy, decreased incidence of STD , increased norms, attitudes and intentions to wait for sex (usually until marriage), and especially pronounced among the sexually experienced, decreased levels of sexual initiation, increased self-esteem and self-efficacy, improved refusal and assertiveness skills against sexual pressure and assault, setting personal boundaries, improved positive character qualities, such as personal responsibility, self-regulation, empathy and integrity, increased future orientation and focus on life and career goals ,increased emphasis on educational pursuits, improved parent-child communication ,enhanced protective factors against youth risk behaviors , ability to resist negative peer pressure and efficacy in building healthy relationships''.

2.7 Summary of Literature Review

In summary adolescent, sexual risk behavior cannot be underestimated due to the public health consequences as a result of unintended pregnancy and Sexually transmitted diseases including HIV AIDS. Environmental and individual factors as discussed in the literature greatly determine the sexual behavior of the adolescent. The review also indicated that the effectiveness of various interventions on sexual risk behavior varies depending on the factors in a given context. A number of research gaps have been

unearthed by this review. Firstly, most studies have focused on individual factors without emphasis on addressing other factors that contribute toward individual variables. Secondly, most studies on the effectiveness of interventions have been conducted in developed countries and therefore cannot be generalized for developing countries like Kenya. Therefore, there is no standardized interventional package that could be recommended for the rural or urban context in Kenya. This study, therefore, intends to describe the sexual behavior among adolescent girls in selected schools in Homabay County, determine factors influencing adolescent sexual risk behavior in Homabay County and influence of school-based sexual risk avoidance education on sexual risk behavior and adolescent pregnancy in Homabay County.

CHAPTER THREE: MATERIALS AND METHODS

3.1 Introduction

This chapter presents a detailed overview of the methodology that was employed to conduct the study and school-based Sexual Risk Avoidance Education interventions that was implemented by the researcher.

3.2 Research Design and Intervention

This was a two-arm cluster randomized controlled study which employed a repeat cross-sectional design to determine the effectiveness of SRAE intervention on sexual behavior among day school going adolescents' girls. The study also established the prevalence of high-risk sexual behavior among adolescent girls, determined the level of knowledge and self-efficacy on risky sexual behavior among adolescents, assessed the perception of risk on sexual and reproductive health among adolescents and determined factors associated with sexual behavior. Both quantitative and qualitative data collection approach was used in the study. The key modifiable characteristics directly targeted by the intervention were four individual factors; knowledge, perception of risk, perceived norm and self-efficacy on sexual behavior.

3.2.1 Description of Intervention

Upon conclusion of the baseline, a school-based sexual risk avoidance education intervention was implemented in the interventional group for a period of 10 months. The intervention focused on individual risk and protective factors that are related to risky sexual behavior. The interventions involved sensitization of two teachers per school on adolescent SRAE module, establishment and strengthening school health club's activities like drama, videos, role-plays and 32 indoor activities of 40 minutes each which was scheduled within the school teaching timetable in term one and two. The main topic covered by the intervention were: adolescent sexuality and pregnancy,

understanding adolescent risky sexual behavior, teenage pregnancy, risk of teenage pregnancy, risk of Sexually transmitted infections, risk for HIV/AIDS, developing abstinence sexual behavior, avoiding risky sexual behaviors. The comparison group received normal service from the MoH and other partners where available. The step by step implementation design that was followed is illustrated in figure 3.1.

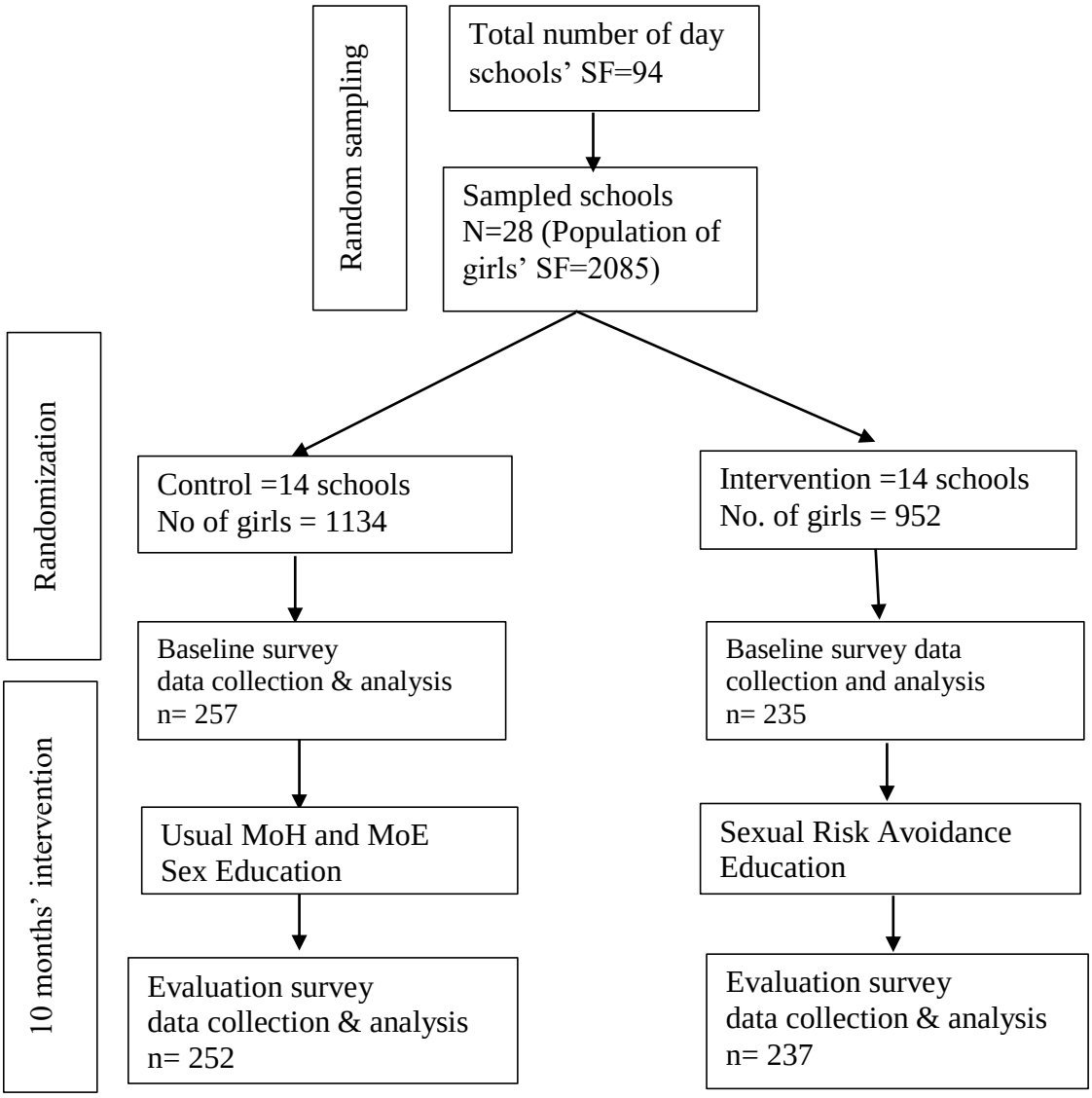

Figure 3.1 Study flow chart

3.2.1 Development of materials for intervention

The researcher developed the SRAE module in line with the Education, Training and Research Associates (ETR), WHO and MOH guidelines. The content was adopted from four sex education modules; *'Reducing Adolescent Sexual Risk:A Theoretical*

Guide for Developing and Adopting Curriculum-Based Program' (Douglas Kirby, 2011),'*Sexual and Reproductive Health Training Module for Youth Empowerment Platforms in Kenya'* (MoH, 2016)*,'Adolescent Reproductive Health and Life Skill Curriculum* (PATH Kenya and Population Council Kenya, 2006) *and 'Teacher's Guide for Sexual and Reproductive Health Life Skill for Adolescents*' (UNESCO, 2017) with strong emphasis on sexual and reproductive health life skills in the context of strong abstinence messages (Appendix 2).The training materials were reviewed by curriculum and adolescent sexual health experts in Kenya in order to enhance compliance with the acceptable standard. These tools were finalized after the integration of the information generated from the baseline surveys. The training methods involved lectures, demonstration, drama, role-play, group discussion, and student involvement through health clubs that were sexual health focused. All the activities were conducted within the respective schools of interventions.

3.3 Research Variables

The choice of variables for this study was informed by the learning theory model that assumes that the effectiveness of health promotion like safe sexual behavior can be improved through multilevel intervention packages that combine both behavioral and environmental modification strategies.

3.3.1 Dependent variable

The dependent variable was sexual behavior. The variable was dichotomized as 'high-risk or low-risk' sexual behavior. High-risk sexual behavior was defined reporting an experience of at least one the three risky sexual practices; starting sex before age 14(early sexual debut), inconsistent use of a condom, and having vaginal sex with more

than one partner (multiple sexual partners). Low-risk sexual behavior was defined as reporting no experience of any of the three risky sexual practices.

3.3.2 Independent variables

The independent variables were socio-demographic characteristics of both adolescents and their parents/guardian and socio-cultural factors and individual intermediate/modifiable factors; Knowledge, perception of risk on pregnancy and HIV/STIs, perceived norm and self-efficacy to practice safe sexual practices. All the intermediate variables were targeted by School-based sexual risk avoidance education against which the changes in risky sexual behavior were measured.

3.4 Study area

3.4.1 Location of Homabay County

The study was conducted in girls/ mixed day secondary schools in Homabay County. The county headquarter is located at 0.52° South latitude, 34.45° East longitude and 1166 meters' elevation above the sea level (Appendix 3). This county covers a geographical estimated area of 3,154.7 $km^2$with a projected population of 963,794. The area has about 285 secondary girls/mixed schools in Homabay County that are distributed in the eight sub-counties namely; Dhiwa, Rachuonyo North, Rangwe, Rachunyo East, Rachuonyo south, Mbita, Suba and Homabay sub-counties. The study sites were as detailed in appendix 3.

3.4.2 Justification of study area

Homabay County was purposively selected because of the multiple reproductive health and socioeconomic burden among adolescents. This County has a young population, 48% of the population being below age 15 years and approximately 26% being adolescents aged 10-19 years (KNBS, 2019). It estimated that Homabay contributes 11.5% of adolescents aged 10-19 years living with HIV in Kenya and has an overall HIV prevalence of 26.0% which 4.5 times higher than the national prevalence (NASCOP, 2016).The fertility rate among girls aged 15-19 is also highest in Homabay at 33% pregnancy rate and age-specific fertility rate 178 births per 1000 girls as compared to the National figure on pregnancy rate of 18% and the specific fertility rate of 96 births per 1000 girls (KNBS, 2016) . These statistics are an indication of the high involvement of the adolescent in sexual risk behavior that requires effective intervention.

3.5 Target and Study Population

The target population was adolescents' girls while the study population was all adolescent girls in form one and two from the selected girl's/mixed day secondary schools.

3.5.1 Inclusion criteria

All girls' day school which had completed at least one cycle of secondary education were legible for selection. All unmarried adolescent girls aged 15-19 years enrolled in the sampled schools irrespective of their sexual activity and pregnancy status and voluntarily consented to participate were included in the baseline and evaluation surveys.

3.5.2 Exclusion criteria

Adolescents with terminal conditions did not participate in any of the two surveys in the study. Schools on the island with unreliable means of transport were eliminated from the sampling frame.

3.6 Sampling techniques

Multistage random sampling was used in the study. Rachuonyo North and Dhiwa Sub Counties were randomly selected for the study. Cluster random sampling was used to select 14 schools in each Sub County. Using MS Excel, an equal number of schools were randomly assigned to the interventional and control groups as summarized in table 3.1 and randomization table (Appendix 4 and 5). Finally, during the actual data collection in baseline and evaluation simple random sampling was used to proportionately select individual participants from form one and two at the school level. Fifteen girls were randomly and proportionately selected to participate in the 4 FGDs while 17 key informants were purposively sampled. The 17 key informant were distributed as follows: 6 health workers, 6 teachers, and 5 chief's/District officers.

3.7 Sample Size determination and distribution

Two sub-counties were selected for the study. The sample size for this study was determined at two levels. The sample size for the schools which was the comparison and interventional group and sample size for the individual respondent from the groups to participate in the baseline and end surveys. The study adopted 30% of the 94 girl's day schools in Rachuonyo North and Dhiwa Sub-counties resulting in 28 schools hence a minimum sample size of 14 schools per group (Hemming, Girling, Sitch, Marsh, & Lilford, 2017). The minimum sample size for individual participants in the baseline and evaluation survey was determined using Pocock's formula (Pandis, 2012) for individual

participants in cluster randomized control trials at a 5% level of significance and 90% power. The individual sample size for each of the two groups is calculated as:

$N=K^*[P_1(1-P_1) + P_2(1-P_2)]$ where $\alpha = 0.05$ $\beta = 0.1$therefore K = 10.5 (value of α and β)

$$\frac{}{(P1-P_2)^2}$$

P1= 50% (Assumed Prevalence of LRSB in current interventions) and P_2 (Target successes for the intervention) = 65%. $10.5 * [0.5(1-0.5) + 0.65(1-0.65)] \div (0.5-0.65)2$*1.1 (Adjustment for non –response) = 244participants per group totaling to 488 which was proportionately distributed in the 28 schools. This sample was drawn from a total sample frame of 1065 from form one and two girls. Four focused group discussions were conducted. One consisting of 15 girls in each of the four selected schools; Samanga and Nyakech in Rachuonyo North and Odhiambo Rambo and Sigama in Ndhiwa. A total of 17 key informants were interviewed.

Table 3.1: Random assignment and Distribution of Participants

GROUP	SCHOOLS	ENROLMENT	SAMPLE SIZE
NDIWA SUB-COUNTY			
Intervention	St. Peter's Rambusi	173	44
	Gina	84	22
	Mbani	21	5
	Otange	41	11
	Ondati	46	12
	Apuoche	65	17
Total		**430**	**110**
Control	Ongako	46	10
	St. Nicasius Maranyona	38	8
	St Patrick's Ogango	95	20
	St. Lucy Odhiambo Rambo Girls	94	20
	Sigama	22	5
	Langi	105	23
	Aluor	199	43
	Oridi	205	44
Total		**804**	**173**
RACHUONYO NORTH			
Intervention	Nyakech	58	15
	Koredo	25	6
	Ongalo	53	14
	Akwakra	76	19
	Karabondi Bidii	81	21
	Samanga Lutheran	115	29
	Oyombe	33	8
	Kajiei	81	21
Total		**522**	**134**
Control	Kobala	181	39
	Kamolo	17	4
	Kodhoch	27	6
	St John Seka	45	10
	Miyuga	22	5
	St. Mary’s Nyakango	37	8
Total		**329**	**71**

3.8 Construction of Research Instruments

This study utilized a Self-administered questionnaire, a Focus group discussion guide and a Key Informant interview schedule.

3.8.1Self-administered questionnaire

To collect quantitative data on sociodemographic characteristics, key intermediate modifiable factors and risky sexual behavior, Self-administered questionnaire which adopts most questions from the Theoretical Guide for Developing and Adapting curriculum-Based program on reducing adolescent sexual risk(Coyle & Alton, 2001) and CDC adolescent and school health questionnaire and Measure Evaluation compendium indicator for sexual and reproductive health programs was used in baseline and evaluation data collection.

3.8.2Focused Group Discussion Guide

A focused group discussion guide was used to supplement information from the self-administered questionnaire. (Appendix 7). The focus topics were sexual behavior, knowledge gaps in adolescent sexual and reproductive health, perceptions, self-efficacy on sexual behavior and current interventions.

3.8.3 Key Informant Interview schedule

The Ministry of Health and WHO guidelines for school-based adolescent sexual and reproductive health services were used to develop the Key Informant interview schedule to gather more information on the sociocultural and economic factors influencing the sexual behavior of school-going adolescent girls (Appendix 8).

3.9 Pre-testing

The pre-test for the data collection tools was conducted in Pala Mixed secondary school with a sample size of 50 participants (Thomas V. Perneger, 2015) .This data was analyzed and the internal validity of the data collection tools was tested and tools were reviewed to addressed identified gaps as evidenced by the pre-resting consent form. (Appendix 9).

3.9.1Validity

Internal validity was ensured by using simple closed-ended questionnaires. External validity was enhanced by simple random assignment of school in the interventional and compression groups. The research also employed two intervention supervisors per sub county to monitor the project implementation.

3.9.2 Reliability

The reliability of the study findings was ensured by the use of standardized questions and protocol for research in sexual behavior and the researcher's personal involvement in the actual data collection process. Daily review of questionnaires was also done to ensure accuracy and consistency. The reliability of data collection tools was established with the pre-test data using Cronbach's alpha which achieved an acceptable coefficient for all the key questions used to measure intermediate modifiable factors that were directly targeted by the intervention. The results in table 3.2 demonstrates that the questionnaire was reliable to measure intermediate factors (Table 3.2).

Table 3.2 Reliability Coefficients

Variable	Number of items	Cronbach's Alpha
Knowledge of risky sexual behavior	5	0.856
Knowledge of pregnancy	4	0.611
Knowledge of HIV	5	0.712
Perception of risk on pregnancy	8	0.623
Perception of risk on HIV	8	0.707
Sexual self-efficacy	7	0.698

3.10 Data Collection Techniques

Data collection was done by the principal investigator in both baseline and evaluation surveys using a self-administered questionnaire in a private venue within the selected schools. Before the student were allowed to fill the questionnaire, the researcher provided an adequate explanation of study objectives and how to respond in the various section of the questionnaire. Focused group discussions were done with adolescent girls in an isolated and private environment within the school. This was facilitated by the principal investigator and two other research assistance. Key informant interviews were conducted at the convenience of the participants who were the teachers, MOE and MOH officers. The investigator utilized a tape recorder for both FGDs and KII which were later transcribed. The whole process adhered to the WHO ethical guidelines for studies among adolescents and young people.

3.11 Data Analysis

The baseline and evaluation data was entered, cleaned and managed in the SPSS software version23. Using the baseline data, descriptive statistics was employed to generate prevalence of risky sexual behavior, proportion on knowledge on RSB, HIV/STI, Pregnancy, level of perceived risk of Teenage pregnancy and childbearing,

HIV/AIDs/STIs and perceived sexual self-efficacy to negotiate for safe sex. The overall behavior, perception, knowledge, and self-efficacy the study participants were measured using the sum score of each outcome based on Bloom's cut-off point in the context of this study.

Sexual behavior was a composite outcome of three dichotomized variables; condom utilization within the last six months (0=consistent use,1=inconsistent use), Sexual debut (0 =Normal debut,1=Early debut), Multiple sexual partners in the last six months (0=Single partner, Multiple partners=1). A total score of 0 was considered low-risk sexual behavior while a range score of 1-3 was considered high-risk sexual behavior. Knowledge of risky sexual behavior was measured with 5 items which were dichotomized as (0 =incorrect,1=correct). A total score ranging from 0-2 for poor knowledge and 3-5 for good knowledge. Knowledge of pregnancy was measured with 4 items which were dichotomized as (0=incorrect, 1=correct). A total score total ranging from 0-2 for poor knowledge and 3-4 for good knowledge. Knowledge of HIV/AID and STI were measured using 5 items which were dichotomized as (0=incorrect, 1=correct). A total score ranging from 0-2 for poor knowledge and 3-5 for good knowledge. Perception of risk of teenage pregnancy/childbearing and HIV/AIDs and STI were both but separately measured with 8 items (0= No perception of risk and 1= Perception of risk. A total score ranging from 0-5 for the low perception of risk and 6-8 for a high perception of risk. Sexual self-efficacy was measured with 7 items asking on the ability to make decision on specific sexual behavior. For analysis, the items were dichotomized as (0 =No self-efficacy,1=self-efficacy). A total score ranging from 0-4 for low self-efficacy and 5-7 for high self-efficacy.

Logistic regression analysis was conducted to determine associated factors, the effect of intervention on study modifiable factors and risky sexual behavior. The level of

significance and Minimum Detectable Effect for the study was at $p \leq 0.05$ and 0.1 respectively. Qualitative data was analyzed by thematic content analysis and triangulated with quantitative data associated with risky sexual behavior.

3.12 Ethical consideration

The study was approved by Kenyatta University graduate school, sought ethical clearance from Kenyatta University ethics committee and research permit from NACOSTI (Appendix 10, 11 and 12). Authority to conduct the study in Homabay County was sought from the County Director of Education, County Director of Health, County Commissioner, and the respective offices at the Sub-County level (Appendix 13,14,15,16,17). School consent and permission were obtained from all school head teachers (Appendix 18) while informed consent and voluntary participation were obtained from the adolescent girls (Appendix 19). The parents/guardian were also debriefed on the study. Confidentiality was ensured throughout the study period by use of the serial numbers in the data collection tools and enhanced the privacy of any information obtained from the student by keeping the document in a lockable facility. This study was registered with the Pan African Clinical Trial Registry- (Appendix 20). More importantly, the study strictly adhered to the WHO ethical guidelines on reproductive health research involving adolescents.

3.13 Logistical Consideration

Homabay County covers an estimated area of 3,154.7 km^2 with raged terrain and poor road network. Therefore, the researcher considered elimination some schools from hard to each area from the sampling frame in the island.

CHAPTER FOUR: RESULTS

4.1 Introduction

This chapter presents the results of the study in order of objectives. Baseline data was used to determine; the prevalence of high risk sexual behavior, knowledge and perception of risk on adolescent sexual and reproductive health and strength of sexual self –efficacy and factors associated with sexual behavior while qualitative data presents additional information on the drivers of high risk sexual behavior, and associated factors. Both baseline and evaluation data was analyzed to determine the effect of school-based sexual risk avoidance intervention on sexual behavior. The study achieved 100% response rate. The administered questionnaires at baseline were; control 257 (52.2%), intervention 235 (47.8%) while at evaluation, control 252 (51.5%) and intervention 237(48. 5%).The sexual risk avoidance intervention content coverage had an average full completing rate of 29 (91%) as per the analysis of self-administered intervention monitoring tool.

4.2 Characteristics of study participants

Inferential comparison of sociodemographic variable for control group and intervention group both at baseline and evaluation using χ^2 yielded P>0.05 for all the variable indicating no significance difference between the groups both at baseline and evaluation surveys.

4.2.1 Sociodemographic Characteristics of Participants

Table 4.1 shows a comparison of sociodemographic characteristics of participants in the control and interventional arms for both baseline and evaluation surveys. The majority of the participants were aged 15-19 years; control group 241(94.5%) and 241(97.6%) while intervention group 212(91%) and 230(99.1%) at baseline and

evaluation survey respectively. More than half of the participants were living with both mother and father; control group 143(55.9%) and 135(53.8%) while intervention 130(55.3%) and 141(59.5%) at baseline and evaluation survey respectively. Most participants were mid born in order of birth in their families; control 128(50%) and 146 (58.4%) while intervention group 120(51.3%) and 142(60.2%) at baseline and evaluation survey respectively.

Table 4.1 Sociodemographic characteristics of Participants

Variable	**Category**	**Control**		**Intervention**	
		Baseline n (%)	**Evaluation n(%)**	**Baseline n(%)**	**Evaluation n(%)**
Age of participants	≤ 14	14(5.5)	6(2.4)	21(9.0)	2(0.9)
	15-19	241(94.5)	241(97.6)	212(91)	230(99.1)
Currently living with	Guardian	43(16.8)	42(16.7)	47(20.0)	35(14.8)
	Father only	7(2.7)	8 (3.2)	4(1.7)	6(2.5)
	Mother only	63 (24.6)	66 (26.3)	54(23.0)	55(23.2)
	Mother father	143(55.9)	135(53.8)	130(55.3)	141(59.5)
Position of birth	First born	74(28.9)	59(23.6)	58(24.8)	55(23.3)
	Mid born	128(50.0)	146(58.4)	120(51.3)	142(60.2)
	Last born	54(21.1)	45(18.0)	56(23.9)	39(16.5)

4.2.2 Sociodemographic characteristics of caregivers

Table 4.3 shows the comparison of sociodemographic characteristics of caregiver of the participants in control and intervention at both baseline and evaluation surveys. Almost half both female and male guardians had a primary level of education; control group 116(45.3%) and 111(44.6%) while intervention group 114(48.7%) and 102(43.2%) at baseline and evaluation survey respectively. The average proportion of primary guardians practiced farming as the main occupation; control group 133(52%) and

115(46.9%) while the intervention group is 118(50.4%) and 113(49.6%) at baseline and evaluation survey respectively. Most participants had five or more siblings; control group 156(61.2%) and 128(63.4%) while intervention group is 139(59.4%) and 148(70.5%) for baseline and evaluation survey respectively. Participants were evenly distributed in African, Catholic and Protestant religions in both groups and surveys.

Table 4.2 Sociodemographic characteristics of caregivers

Variable	**Category**	**Control**		**Intervention**	
		Baseline n (%)	**Evaluation n(%)**	**Baseline n(%)**	**Evaluation n(%)**
Level of education (Female care giver)	None	9(3.5%)	7(2.8)	7(3.0)	5(2.1)
	Primary	116(45.3)	111(44.6)	114(48.7)	102(43.2)
	Secondary	95(37.1)	87(34.9)	81(34.6)	102(43.2)
	College	24(9.4)	25(10.0)	22(9.4)	16(6.8)
	University	12 (4.7)	19(7.6)	10(4.3)	11(4.7)
Level of education (Male caregiver)	None	10(4.3)	7(3.2)	11(4.3)	6(2.9)
	Primary	101(39.6)	83(38.2)	91(39.2)	76(36.5)
	Secondary	83(32.5)	63(29.0)	77(33.2)	81(38.9)
	College	39(15.3)	42(19.4)	39(16.3)	30(14.4)
	University	21(8.2)	22(10.1)	15(6.5)	15(7.2)
Occupation of primary caregiver	Farming	133(52)	115(46.9)	118(50.4)	113(49.6)
	Business	84(32.8)	96(39.2)	83(35.5)	86(37.7)
	Employed	39(15.2)	34(13.9)	33(14.1)	29(12.7)
Number of siblings	0-4	99(38.8)	74(36.6)	95(40.6)	62(29.5)
	≥5	156(61.2)	128(63.4)	139(59.4)	148(70.5)
Religion background	None	3(1.2)	2(0.8)	6(2.6)	4(1.7)
	Muslim	6(2.3)	5(2.0)	4(1.7)	5(2.2)
	African	79(30.9)	99(40.1)	100(42.7)	95(41.3)
	Catholic	88(38.3)	95(38.5)	70(29.9)	97(42.2)
	Protestant	70(27.3)	46(18.6)	54(23.1)	29(12.6)

4.3 Sexual Behavior of Adolescent girls

4.3.1 Prevalence of high risk Sexual behavior at baseline

The study determined risky sexual behavior among school-going adolescent girls in Homabay. Figure 4.1 shows the prevalence of overall high risk sexual behavior, early sexual debut, inconsistent utilization of condom and multiple sexual partners among day school girls in Homabay County to be 129 (62.3%), (108(37.5%), 95(33%)and 51(23.1%) respectively using combined baseline data. These results were supported by qualitative information. *KI 5: 'From the counseling sessions, the girls are saying that they cannot do without sexual boyfriends and to them engaging in sexual intercourse is not a secret it's a normal life'.*

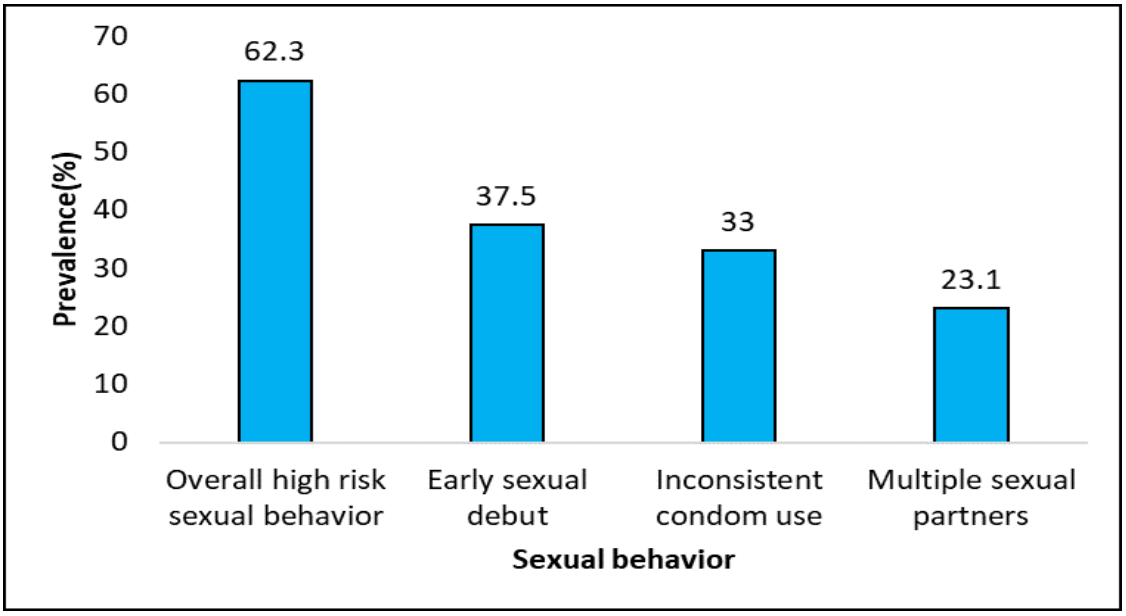

Figure 4.1 Prevalence of high risk sexual behavior

4.3.2 Comparison of prevalence of high risk sexual behavior at baseline

Table 4.3 show a comparison of sexual behavior between control and intervention group at baseline. The results reveal no significant difference between control and intervention group P>0.05.

Table 4.3 Comparison of sexual behavior at baseline

Variable	Category	Baseline		Chi square 95% CI
		Control Frequency (%)	**Intervention** Frequency(%)	
Sexual Activity	Inactive	102(39.8)	86(36.6)	χ^2 =0.547
	Active	154(60.2)	149(63.4)	P =0.460
Sexual debut	Normal	97(63.8)	83(61.0)	χ^2 =0.238
	Early	55(36.2)	53(39.0)	P =0.626
Utilization of Condom	Consistent	103(67.8)	90(66.2)	χ^2 =0.082
	Inconsistent	49(32.2)	46(33.8)	P =0.775
Sexual Partner	Single	92(78.0)	78(75.7)	χ^2 =0.155
	Multiple	26(22.0)	25(24.3)	P =0.694
Overall high risk	Low risk	42(38.9)	36(36.4)	χ^2 =0.140
	High risk	66(61.1)	63(63.6)	P =0.708

4.4 Level of knowledge on sexual and reproductive health

4.4.1 Knowledge of risky sexual behavior at baseline

The study determined the level of knowledge on risky sexual behavior, HIV /AIDS, pregnancy among adolescent girls. The study used five statements used to assess the knowledge of participant on risky sexual behavior as shown in table 4.4. Less than half of the participants correctly responded to the five statements with no significant difference between the control and intervention groups (P> 0.05).

Table 4.4 Comparison of knowledge on risky sexual behavior

Questions/statements	**Category**	**Control**	**Intervention**	**Chi square 95% CI**
		Frequency(%)	Frequency(%)	
Involvement in sexual intercourse without use of condom.	Incorrect	150(58.4)	135(57.4)	χ^2=0.043 P=0.837
	Correct	107(41.6)	100(42.6)	
Starting to practice sexual intercourse before the age of 14.	Incorrect	157(61.1)	132(56.2)	χ^2=1.226 P=0.268
	Correct	100(38.9)	103(43.8)	
Having more than one sexual partner	Incorrect	133(51.8)	129(54.9)	χ^2=0.487 P=0.485
	Correct	124(48.2)	106(45.1)	
Practicing frequent sexual activities	Incorrect	162(63.0)	142(60.4)	χ^2=0.345 P=0.552
	Correct	95(37.0)	93(39.6)	
Having sex under influence of drugs	Incorrect	174(67.7)	145(61.7)	χ^2=1.940 P=0.164
	Correct	83(32.3)	90(38.3)	

4.4.2 Knowledge of pregnancy at baseline

Four statements were used to assess the knowledge of girls on pregnancy occurrence, prevention and potential complication as shown in table 4.5. Most of the participants correctly answered the questions on pregnancy prevention, the most fertile period of the menstrual cycle and adolescent risk to maternal complication with no significant difference between the groups (P>0.05). However, all the participant answered incorrectly on the possibility of a girl getting pregnant at their first sexual intercourse.

Table 4.5Comparison of knowledge on pregnancy

Questions/statements	**Category**	**Control**	**Intervention**	**Chi square 95% CI**
		Frequency(%)	Frequency(%)	
A girl have the greatest chance of becoming pregnant in the middle of her menstrual cycle	Incorrect	101(39.3)	88(37.4)	χ^2=0.178 P=0.673
	Correct	156(60.7)	147(62.6)	
Abstinence is the safest method to prevent pregnancy.	Incorrect	38(14.8)	38(16.2)	χ^2=0.180 P=0.671
	Correct	219(85.2)	197(83.8)	
Adolescent pregnancy is a risk for maternal complication	Incorrect	91(35.4)	86(36.6)	χ^2=0.075 P=0.784
	Correct	166(64.6)	149(63.4)	

4.4.3 Knowledge of HIV/ AIDS at baseline

Table 4.6 shows that knowledge about HIV/AID is generally high among the study participants with no significant difference between the groups (P> 0.05). More than half of the participants correctly responded the statements except one asking that a person with HIV always looks emaciated or unhealthy in some way which was correctly answered by only about 30% of the participants in both groups.

Table 4.6 Comparison of knowledge on HIV/AIDS

Questions/statements	**Category**	**Control**	**Intervention**	**Chi square 95% CI**
		Frequency(%)	Frequency(%)	
It is possible to cure AIDS	Incorrect	99(38.5)	96(40.9)	χ^2=0.278
	Correct	158(61.5)	139(59.1)	P=0.598
In a HIV positive person, HIV is always present in blood, semen, and vaginal fluid	Incorrect	46(17.9)	40(17.0)	χ^2=0.066
	Correct	211(82.1)	195(83.0)	P=0.798
A person with HIV always looks emaciated or unhealthy in some way	Incorrect	178(69.3)	165(70.2)	χ^2=0.053
	Correct	79(30.7)	70(29.8)	P=0.818
People can take a simple test to find out whether they have HIV	Incorrect	41(16.0)	43(18.3)	χ^2=0.477
	Correct	216(84.0)	192(81.7)	P=0.490
A person can have HIV/AIDS and give it to other people even if the person does not look sick.	Incorrect	44(17.1)	40(17.0)	χ^2=0.001
	Correct	213(82.9)	195(83.0)	P=0.977

4.4.4 Overall knowledge on sexual and reproductive health

Figure 4.2 shows the proportion of participants with overall good knowledge on risky sexual behavior, pregnancy STI/HIV/AIDS. Composite analysis of response to questions measuring knowledge in the three areas indicate that 194(39.4%), 199(40.4%) and 408 (82.9%) of the participants had good knowledge of risky sexual behavior, pregnancy, and HIV/AIDS and STI respectively.

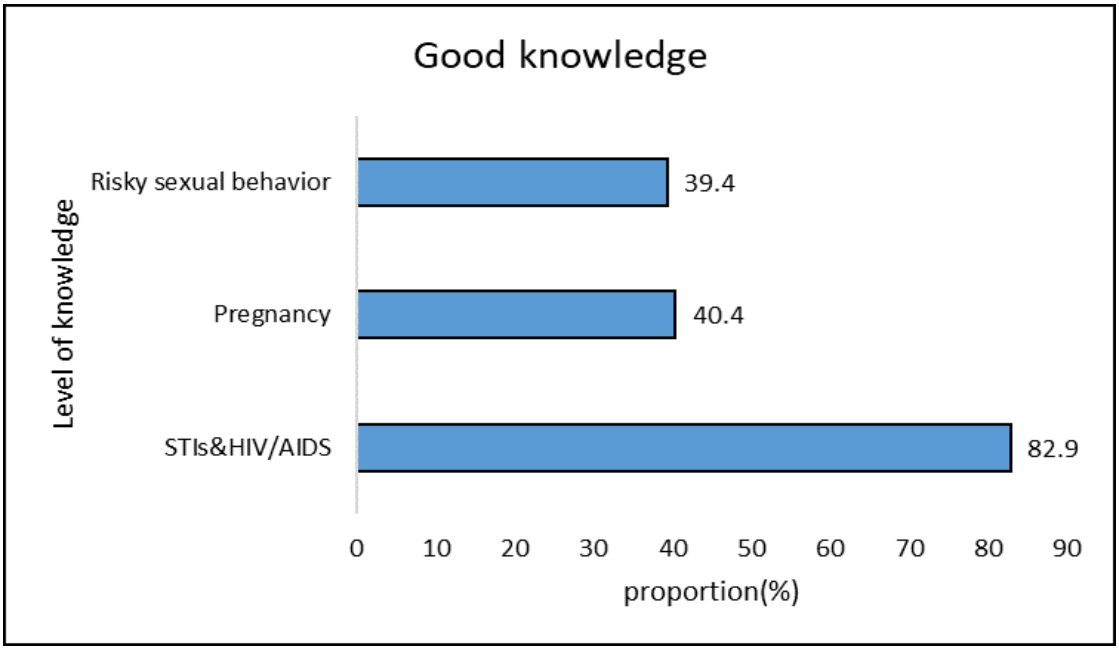

Figure 4.2 Overall sexual and reproductive health knowledge

4.5 level of risk perception on pregnancy and HIV/AIDS

4.5.1 Perception of risk on pregnancy and child bearing

The study measured perception of risk of pregnancy and child bearing among the participants using eight statement each where yes or no response was either perceived risk or no perceived risk depending on specific statements. Table 4.7 shows that most participants perceive teenage pregnancy and child bearing to as a risk to their health and their welfare with no significant difference between the groups($P > 0.05$) in all the statements.

Table 4.7 Comparison of perception of risk on pregnancy and child bearing

Questions/statements	**Category**	**Control**	**Intervention**	**Chi square**
		Frequency(%)	Frequency (%)	**95% CI**
I am not emotionally ready to be a parent	No perception of risk	39(15.2)	35(14.9)	χ^2=0.008 P=0.930
	Perception of risk	218(84.8)	200(85.1)	
Being a teen parent may make it difficult to finish school	No perception of risk	55(21.4)	43(18.3)	χ^2=0.741 P=0.389
	Perception of risk	202(78.6)	192(81.7)	
Being a teen parent would keep me from doing many things I like to do	No perception of risk	76(29.6)	68(28.9)	χ^2=0.024 P=0.877
	Perception of risk	181(70.4)	167(71.1)	
Getting pregnant at this time in my life is one of the worst that could happen to me	No perception of risk	74(28.8)	60(25.5)	χ^2=0.659 P=0.417
	Perception of risk	183(71.2)	175(74.5)	
Having a baby to care of would make me feel loved and needed	No perception of risk	46(17.9)	41(17.4)	χ^2=0.017 P=0.896
	Perception of risk	211(82.1)	194(82.6)	
If I had a baby for the first time, I would have something that is really mine	No perception of risk	76(29.6)	69(29.4)	χ^2=0.540 P=0.462
	Perception of risk	181(70.4)	166(70.6)	
If I had a baby, I would never be lonely	No perception of risk	51(19.8)	53(22.6)	χ^2=0.828 P=0.363
	Perception of risk	206(80.2)	182(77.4)	
If I had a baby my boyfriend would be more committed to me	No perception of risk	39(15.2)	29(12.3)	χ^2=0.003 P=0.959
	Perception of risk	218(84.8)	206(87.7)	

4.5.2 Perception of risk on STD/HIV

Table 4.8 shows perception of risk of STD/HIV among participants using eight statements categorised as perception or no perception depending on the responses. Most of the participant (> 50%) have perception of risk on consequences of HIV in all the eight statements with no significance difference between the groups (P>0.05).

Table 4.8 Perception of risk on STD/HIV

Questions/statements	**Category**	**Control**	**Intervention**	**Chi square 95% CI**
		Frequency (%)	Frequency (%)	
If I got an STD, I would be very embarrassed.	No perception of risk	64(24.9)	55(23.4)	χ^2=0.150 P=0.698
	Perception of risk	193(75.1)	180(76.6)	
If I got STD, I would hate to have to tell my partner.	No perception of risk	128(49.8)	109(46.4)	χ^2=0.576 P=0.448
	Perception of risk	129(50.2)	126(53.6)	
If I got incurable STD it would mess my life.	No perception of risk	76(29.6)	61(26.0)	χ^2=0.798 P=0.372
	Perception of risk	181(70.4)	174(74.0)	
If I got incurable STD, I might need to deal with it the rest of my life.	No perception of risk	117(45.5)	113(48.1)	χ^2=0.323 P=0.570
	Perception of risk	140(54.5)	122(51.9)	
If I got incurable STD, I would worry about infecting others.	No perception of risk	121(47.1)	121(51.5)	χ^2=0.954 P=0.329
	Perception of risk	136(52.9)	114(48.5)	
Getting HIV AIDS would really mess my life	No perception of risk	75(29.2)	64(27.2)	χ^2=0.230 P=0.632
	Perception of risk	182(70.8)	171(72.8)	
Getting HIV/AIDS might mean that I would have to take lots of pills the rest of my life.	No perception of risk	125(48.6)	107(45.5)	χ^2=0.475 P=0.491
	Perception of risk	132(51.4)	128(54.5)	
Getting HIV /AIDS would prevent me from doing many things I want to do	No perception of risk	154(59.9)	127(54.0)	χ^2=1.733 P=0.188
	Perception of risk	103(40.1)	108(46.0)	

4.5.3 Overall perception of risk on sexual and reproductive health

From composite analysis of combined baseline data, figure 4.3 shows minority of participants to be having high perception of risk on pregnancy and childbearing 223 (54.3%) and STI& HIV/AIDS 206(41.9%).

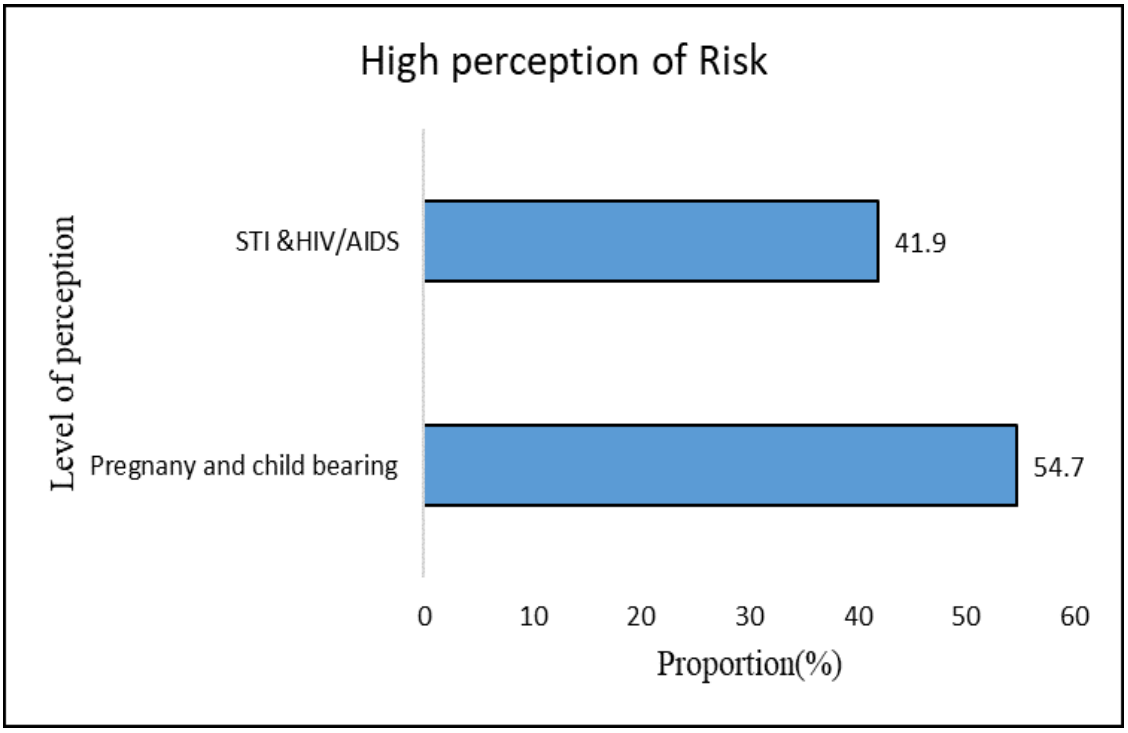

Figure 4.3 Overall perception of risk on sexual and reproductive health

4.6.1 Level of sexual self-efficacy on sexual behavior

Sexual self-efficacy was measured using seven statements as shown in table 4.9 where a positive and positive response to each statement was coded as self-efficacy and no self-efficacy respectively. Most >50% of participant had sexual self-efficacy on their sexual behavior with no significant difference between the groups P>0.05.

Table 4.9 Comparison of perception of sexual self-efficacy

Questions/statements	**Category**	**Control**	**Intervention**	**Chi square 95% CI**
		Frequency(%)	Frequency(%)	
I have the ability to abstain from sex until marriage	No self-efficacy	65(25.3)	62(26.4)	χ^2=0.076 P=0.789
	Self-efficacy	192(74.7)	173(73.6)	
Are able to avoid sex any time you do not want it even if you partner wants?	No self-efficacy	51(19.8)	59(25.1)	χ^2=1.958 P=0.162
	Self-efficacy	206(80.2)	176(74.9)	
I can discuss about sex with my teaches or reproductive health provider	No self-efficacy	68(26.5)	78(33.2)	χ^2=2.666 P=0.103
	Self-efficacy	189(73.5)	157(66.8)	
I can abstain from sex until an finished with high school	No self-efficacy	71(27.6)	64(27.2)	χ^2=0.009 P=0.922
	Self-efficacy	186(72.4)	171(72.8)	
My boyfriend cannot pressure me into having sex	No self-efficacy	63(24.5)	53(22.6)	χ^2=0.262 P=0.609
	Self-efficacy	194(75.5)	182(77.4)	
If someone I liked a lot wanted me to have sex, I am sure I could say no without hurting her feelings	No self-efficacy	72(28.0)	63(26.8)	χ^2=0.090 P=0.764
	Self-efficacy	185(72.0)	172(73.2)	
If someone I liked a lot wanted me to have sex and threatened to break up with me unless I had sex, I am sure I could say no	No self-efficacy	69(26.8)	65(27.7)	χ^2=0.041 P=0.840
	Self-efficacy	188(73.2)	170(72.3)	

4.6.2 Overall Sexual Self –Efficacy

Figure 4.4 shows the overall sexual self-efficacy from composite analysis of combined baseline data. More than half 295(60%) of the participants reported high sexual self-efficacy.

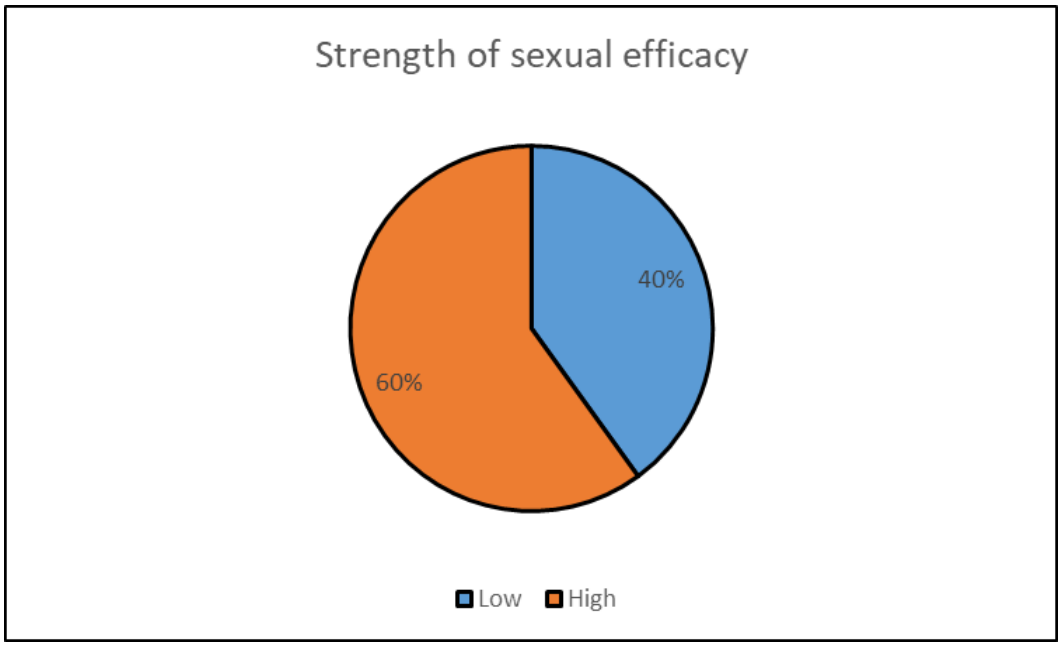

Figure 4.4 Overall level of sexual self-efficacy on sexual on behavior

4.7 Factors associated with sexual behavior at Baseline survey

The study determined sociodemographic and intermediate factors associated with sexual behaviors using logistic regression analysis and controlling for all confounding factors. Combined baseline data for both control and intervention groups for sociodemographic characteristics and segregated data for intermediate variables was used. The study targeted four intermediate factors for modification to influence the sexual behavior of girls.

4.7.1 Sociodemographic characteristics associated with sexual debut

The sexual debut was categorized as normal and early coded as 0 and 1 respectively. Table 4.10 shows the association between the demographic characteristics of participants and sexual debut. There was no significant association between sexual debut and sociodemographic characteristics of participants.

Table 4.10 Factors associated with the sexual debut at baseline

Independent variables	Category	B	S.E.	P-value	OR	95% CI OR	
						Lower	Upper
Currently living with	Relative/Guardian						
	Father only	0.556	0.347	0.109	1.743	0.883	3.439
	Mother only	1.974	1.170	0.092	7.202	0.727	7.358
	Mother and father	0.188	0.332	0.572	1.206	0.630	2.311
Female guardian level of education	None						
	Primary	0.093	1.075	0.931	1.098	0.133	9.035
	Secondary	-0.559	0.736	0.447	0.572	0.135	2.418
	College	-0.971	0.73	0.184	0.379	0.091	1.585
	University	0.759	0.813	0.351	2.135	0.434	10.5
Male guardian level of education	None						
	Primary	0.28	0.896	0.755	1.323	0.228	7.664
	Secondary	0.117	0.685	0.864	1.124	0.294	4.304
	College	0.344	0.672	0.609	1.410	0.378	5.265
	University	-0.060	0.704	0.932	0.942	0.237	3.744
Occupation of the primary guardian	Formal employ						
	Farming	-0.181	0.457	0.693	0.835	0.341	2.045
	Business	-0.107	0.476	0.821	0.898	0.353	2.283
Position of birth	Firstborn						
	Mid born	-0.395	0.390	0.312	0.674	0.314	1.448
	Last born	0.080	0.342	0.816	1.083	0.553	2.118
Religious background	African						
	Catholic	0.255	0.201	0.204	1.290	0.871	1.911
	Protestant	0.354	0.235	0.133	1.425	0.898	2.260

4.7.2 Sociodemographic characteristics associated with multiple sexual partners at baseline

Sexual partner was categorized as single and multiple coded as 0 and 1 respectively. Table 4.11 shows the sociodemographic factors associated with multiple sexual partners. Living with mother and father was significantly associated with multiple

sexual partners. Living with mother and father reduced the risk of sexual practices with multiple sexual partners (P=0.021).

Table 4.11 Factors associated with sexual partners at baseline

Independent variables	Category	B	S.E.	P-value	OR	95% CI of OR	
						Lower	Upper
Currently living with	Relative/Guardian						
	Father only	1.087	1.423	0.445	2.967	0.182	48.266
	Mother only	-0.181	0.507	0.720	0.834	0.309	2.254
	Mother and father	-1.119	0.484	0.021	0.327	0.126	0.844
Female guardian level of education	None						
	Primary	-0.635	1.033	0.538	0.530	0.070	4.012
	Secondary	0.041	1.047	0.969	1.041	0.134	8.108
	College	0.383	1.368	0.779	1.467	0.100	21.427
	University	0.611	1.416	0.666	1.842	0.115	29.560
Male guardian level of education	None						
	Primary	0.317	0.908	0.727	1.373	.232	8.137
	Secondary	0.387	0.914	0.672	1.473	.245	8.842
	College	-1.366	1.160	0.239	.255	.026	2.478
	University	-1.761	1.389	0.205	.172	.011	2.616
Occupation of the primary guardian	Formal employ						
	Farming	0.534	0.394	0.175	1.706	0.788	3.692
	Business	0.974	0.620	0.116	2.649	0.787	8.923
Position of birth	Firstborn						
	Mid born	0.097	0.441	0.826	1.102	0.465	2.612
	Last born	-0.545	0.542	0.314	0.580	0.201	1.677
Religious background	African						
	Catholic	0.037	0.426	0.931	1.038	0.450	2.393
	Protestant	0.290	0.467	0.535	1.336	0.535	3.336

4.7.3 Sociodemographic characteristics associated with condom utilization at baseline

Condom utilization was categorized as consistent and inconsistent coded as 0 and 1 respectively. Table 4.12 shows the sociodemographic factors associated with condom utilization among participants. Living with mother and father and being a last born in a family was significantly associated with inconsistent use of a condom (P= 0.033 & 0.013) respectively. The participants living with both parent and last born girls are more likely to use condoms consistently in their sexual relationship.

Table 4.12 Factors associated with condom utilization at baseline

Independent variables	Category	B	S.E.	P-value	OR	95% CI OR	
						Lower	Upper
Currently living with	Relative/Guardian						
	Father only	-1.274	1.257	0.311	0.280	0.024	3.284
	Mother only	-0.564	0.404	0.163	0.569	0.258	1.256
	Mother and father	-0.741	0.347	0.033	0.477	0.242	0.940
Female guardian level of education	None						
	Primary	0.275	0.891	0.758	1.317	0.229	7.554
	Secondary	-0.508	0.911	0.577	0.602	0.101	3.586
	College	-1.527	1.108	0.168	0.217	0.025	1.906
	University	-0.161	1.047	0.878	0.851	0.109	6.628
Male guardian level of education	None						
	Primary	-0.740	0.685	0.280	0.477	0.125	1.826
	Secondary	-0.507	0.706	0.472	0.602	0.151	2.400
	College	-0.323	0.760	0.671	0.724	0.163	3.214
	University	-0.283	0.836	0.735	0.754	0.146	3.878
Occupation of the primary guardian	Formal employ						
	Farming	0.269	0.306	0.379	1.309	0.719	2.382
	Business	0.514	0.444	0.247	1.672	0.700	3.993
Position of birth	Firstborn						
	Mid born	-0.109	0.309	0.724	0.897	0.489	1.644
	Last born	-1.035	0.417	0.013	0.355	0.157	0.805
Religious background	African						
	Catholic	-0.084	0.313	0.789	0.920	0.498	1.699
	Protestant	0.064	0.350	0.856	1.066	0.537	2.115

4.7.4 Sociodemographic characteristics associated with overall sexual behavior at baseline

Overall sexual behavior was categorized as low risk and high risk respectively coded as 0 and 1 respectively. Table 4.13 shows factors associated with overall risky sexual behavior. There was no significant association between sociodemographic characteristics and overall sexual behavior.

Table 4.13 Factors associated with overall sexual behavior at baseline

Independent variables	Category	B	S.E.	P-value	OR	95% CI OR	
						Lower	Upper
Currently living with	Relative/Guardian						
	Mother only	-0.373	0.468	0.426	0.689	0.275	1.724
	Mother and father	-0.615	0.428	0.150	0.540	0.234	1.250
Female guardian level of education	None						
	Primary	0.079	0.982	0.936	1.082	0.158	7.416
	Secondary	-0.485	1.006	0.629	0.616	0.086	4.419
	College	0.099	1.232	0.936	1.104	0.099	12.358
	University	0.916	1.461	0.531	2.499	0.143	43.803
Male guardian level of education	None						
	Primary	-0.492	0.952	0.606	0.612	0.095	3.953
	Secondary	0.075	0.977	0.939	1.077	0.159	7.307
	College	-0.108	1.044	0.918	0.898	0.116	6.950
	University	0.566	1.240	0.648	1.761	0.155	20.026
Occupation of the primary guardian	Formal employ						
	Farming	-0.028	0.354	0.937	0.973	0.486	1.945
	Business	-0.247	0.529	0.641	0.781	0.277	2.203
Position of birth	Firstborn						
	Mid born	-0.376	0.383	0.326	0.686	0.324	1.454
	Last born	-0.729	0.457	0.111	0.482	0.197	1.182
Religious background	African						
	Catholic	0.157	0.362	0.663	1.170	0.576	2.378
	Protestant	0.357	0.401	0.374	1.428	0.651	3.133

4.7.5 Intermediate factors associated with the sexual debut at baseline

Table 4.14 shows the association between intermediate factors and sexual debut. Knowledge of pregnancy and perception of risk on pregnancy and childbearing was significantly associated with the early sexual debut. Participants with Good knowledge (P=0.006) on pregnancy and higher perception of risk on pregnancy (P=0.003) are less likely to experience early sexual debut.

Table 4.14 Intermediate factors associated with the sexual debut at baseline

Intermediate variable	Category	B	S.E.	P-value	OR	95% CI OR	
						Lower	Upper
Control							
Knowledge of Risky sexual behavior	Poor						
	Good	0.365	0.364	0.316	1.440	0.706	2.940
Knowledge of pregnancy	Poor						
	Good	-1.042	0.376	0.006	0.353	0.169	0.737
Knowledge on HIV/AIDS &STI	Poor						
	Good	0.079	0.541	0.885	1.082	0.375	3.121
Perception of risk on pregnancy	Low						
	High	-0.086	0.358	0.810	0.918	0.455	1.852
Perception of risk on HIV/AIDS	Low						
	High	0.251	0.375	0.503	1.285	0.617	2.679
Sexual self-efficacy	Low						
	High	0.202	0.363	0.578	1.224	0.601	2.491
Intervention							
Knowledge of Risky sexual behavior	Poor						
	Good	0.291	0.386	0.451	1.338	0.628	2.853
Knowledge of pregnancy	Poor						
	Good	0.016	0.383	0.966	1.016	0.480	2.155
Knowledge on HIV/AIDS &STI	Poor						
	Good	-0.389	0.484	0.421	0.678	0.262	1.750
Perception of risk on pregnancy	Low						
	High	-1.154	0.389	0.003	0.316	0.147	0.676
Perception of risk on HIV/AIDS	Low						
	High	-0.057	0.395	0.885	0.945	0.436	2.047
Sexual self-efficacy	Low						
	High	0.077	0.392	0.845	1.080	0.501	2.330

4.7.6 Intermediate factors associated with sexual partners at baseline

Table 4.15 shows the association between intermediate factors and sexual partners. High perception of risk was significantly associated with multiple sexual partner's practices (P=0.036). Participants with a high perception of risk on pregnancy and childbearing had reduced the risk of practicing sexual intercourse with multiple partners**.**

Table 4.15 Intermediate factors associated with sexual partners at baseline

Intermediate variable	Category	B	S.E.	P-value	OR	95% CI OR	
						Lower	Upper
Control							
Knowledge of Risky sexual behavior	Poor						
	Good	0.706	0.480	0.141	2.026	0.792	5.187
Knowledge of pregnancy	Poor						
	Good	-0.837	0.505	0.098	0.433	0.161	1.166
Knowledge on HIV/AIDS &STI	Poor						
	Good	0.056	0.705	0.937	1.057	0.266	4.209
Perception of risk on pregnancy	Low						
	High	-1.118	0.533	0.036	0.327	0.115	0.929
Perception of risk on HIV/AIDS	Low						
	High	-0.427	0.537	0.427	0.653	0.228	1.871
Sexual self-efficacy	Low						
	High	-0.392	0.489	0.424	0.676	0.259	1.764
Intervention							
Knowledge of Risky sexual behavior	Poor						
	Good	0.376	0.492	0.444	1.457	0.556	3.817
Knowledge of pregnancy	Poor						
	Good	0.184	0.503	0.715	1.202	0.448	3.220
Knowledge on HIV/AIDS &STI	Poor						
	Good	-0.369	0.595	0.535	0.691	0.216	2.218
Perception of risk on pregnancy	Low						
	High	-0.628	0.493	0.203	0.534	0.203	1.404
Perception of risk on HIV/AIDS	Low						
	High	-0.063	0.515	0.903	0.939	0.343	2.575
Sexual self-efficacy	Low						
	High	-0.536	0.502	0.286	0.585	0.219	1.565

4.7.7 Intermediate factors associated with condom utilization at baseline

Table 4.16 shows the association between intermediate factors and condom utilization among girls. Self-efficacy was significantly associated condom utilization in both the control and interventional group (P=0.001 and P=0.041). Participants with higher self-efficacy are less likely to inconsistently use condoms in their sexual involvement.

Table 4.16 Intermediate factors associated with condom utilization at baseline

Intermediate variable	Category	B	S.E.	P-value	OR	95% CI OR	
						Lower	Upper
Control							
Knowledge of Risky sexual behavior	Poor						
	Good	0.048	0.377	0.898	1.049	0.501	2.199
Knowledge of pregnancy	Poor						
	Good	0.067	0.372	0.857	1.069	0.516	2.217
Knowledge on HIV/AIDS &STI	Poor						
	Good	1.305	0.689	0.058	3.688	0.955	14.234
Perception of risk on pregnancy	Low						
	High	-0.175	0.372	0.638	0.840	0.405	1.740
Perception of risk on HIV/AIDS	Low						
	High	0.613	0.381	0.108	1.845	0.874	3.895
Sexual self-efficacy	Low						
	High	-.943	0.371	0.011	0.389	0.188	0.806
Intervention							
Knowledge of Risky sexual behavior	Poor						
	Good	0.177	0.395	0.654	1.194	0.550	2.592
Knowledge of pregnancy	Poor						
	Good	0.554	0.404	0.170	1.741	0.788	3.844
Knowledge on HIV/AIDS &STI	Poor						
	Good	-0.657	0.486	0.176	0.518	0.200	1.344
Perception of risk on pregnancy	Low						
	High	-0.499	0.397	0.209	0.607	0.279	1.322
Perception of risk on HIV/AIDS	Low						
	High	0.048	0.411	0.907	1.049	0.468	2.350
Sexual self-efficacy	Low						
	High	-0.829	0.405	0.041	0.437	0.197	0.966

4.7.8 Intermediate factors associated with overall risky sexual behavior at baseline

Table 4.17 shows the association between intermediate factors and overall risky sexual behavior among girls using logistic regression analysis while controlling for confounders. Knowledge on pregnancy and perception of risk of pregnancy and childbearing were significantly associated with overall risky sexual behavior. Participants with good knowledge and high perception of risk were less likely to practice high-risk sexual behavior (P< 0.05). From KII and FGDs, various risk factors were identified.

Several participants strongly felt that poor parenting and sleeping arrangement is one of the major drivers of risky sexual behavior and a high teenage pregnancy rate.***KI 2:*** *‘‘The issue of parenting is a great deal, in fact, that is the most because like when you look at where is your girl sleeping so they're not so keen. you will find that they will be going to another home and even the boys or even when they're sleeping with them in the house you find out the house is too small to give secrecy even of a relationship that could be between the husband and the wife so the children will be exposed to this aspect in the very house where they stay’’.* ***‘‘****Parents are suspects of immorality and you know they do it so openly you will find that maybe the father has a relationship does not mind bringing the whatever in the home they even meet in the social classes with their children and some of the cases that I have come across you feel the morality of the parents both the mother and the father is questionable and especially where single parenting is concerned’’.*

The majority of the participants also identified poverty as one of the drivers of risky sexual behavior and teenage pregnancy.*KI 4 ‘‘One of the things that could be a driver to teenage pregnancy is, poverty could be partly driving course poverty that maybe a*

few of them maybe they can lack one or two things then they can be influenced to go into it to get that thing''

Some KIIs said peer pressure as one the risk to risky sexual behavior resulting in teenage pregnancy this also comes out across all the four FGDs with the girls.

KI 14 ''Yes another one comes here does not even have a boyfriend then in the dormitory they talk of ooh me I have a boyfriend and all that this happened when I was in Ratanga where a girl discovered that she was the only girl in that class who didn't have a boyfriend. So she went ahead and got herself a boyfriend over the holidays, yes and she became pregnant that very holiday it was very sad yeah so when she became pregnant and then we wanted to interview and find out who was responsible because we didn't expect that she could become pregnant and then the story came out that she was the only one without a boyfriend and then a friend of hers in the same class helped her to get a boyfriend yes and she became pregnant yeah so there is that peer influence not only in that way but when a girl is having so many things because the boyfriend boot another one who is poor will also want to get a boyfriend so that she can also be bought things''.

''The influence of economic activities within the surrounding like the boda-boda influence, now it's a very big problem, very big problem that leads to teenage pregnancy boda-boda carries your daughter to school then she has no 10 bobs to pay for the fare ama she has directed the fare to something else the body carries her free of charge then she pays with a different method ,it's real problem now that we have that we need to talk with the boda people and also and enlighten them enlighten them because even in Kindu during school opening days or closing you see how boda-boda people behave with them then you wonder big girls in secondary schools that should know what they're supposed to do''

Table 4.17 Intermediate factors associated with overall risky sexual behavior at baseline

Intermediate variable	Category	B	S.E.	P-value	OR	95% CI OR	
						Lower	Upper
Control							
Knowledge of Risky sexual behavior	Poor						
	Good	0.699	0.435	0.108	2.012	0.858	4.721
Knowledge of pregnancy	Poor						
	Good	-.978	0.440	0.026*	0.376	0.159	.890
Knowledge on HIV/AIDS &STI	Poor						
	Good	0.008	0.698	0.991	1.008	0.257	3.958
Perception of risk on pregnancy	Low						
	High	0.065	0.435	0.881	1.067	0.455	2.503
Perception of risk on HIV/AIDS	Low						
	High	-0.002	0.456	0.996	0.998	0.408	2.437
Sexual self-efficacy	Low						
	High	-0.733	0.438	0.094	0.480	0.203	1.134
Intervention							
Knowledge of Risky sexual behavior	Poor						
	Good	0.044	0.496	0.929	1.045	0.395	2.763
Knowledge of pregnancy	Poor						
	Good	0.595	0.490	0.225	1.813	0.694	4.734
Knowledge on HIV/AIDS &STI	Poor						
	Good	-0.298	0.648	0.646	0.742	0.208	2.644
Perception of risk on pregnancy	Low						
	High	-1.773	0.509	0.000*	0.170	0.063	.460
Perception of risk on HIV/AIDS	Low						
	High	0.654	0.516	0.205	1.923	0.700	5.284
Sexual self-efficacy	Low						
	High	-1.022	.509	0.045	.360	.133	.975

4.8 Effects of school-based sexual risk education on risky sexual behavior

There was no significant difference between the control and intervention groups at baseline in sociodemographic characteristics, intermediate factors and sexual behavior. Logistic regression analysis was conducted comparing evaluation outcomes to determine the effect of school based sexual risk avoidance education on modifiable intermediate factors and sexual behavior.

4.8.1 Effect of sexual risk avoidance education on intermediate factors

The study reported higher increase from 96(40.9% to 124(53.2%) of participants with good knowledge of risky sexual behavior in the interventional groups as compared to lower increase from 98(38.1%) to 107(43.3%) in the control group. However, there was an almost equal increase in the proportion of participants with good knowledge of pregnancy and HIV/AIDs in both the control and interventional group (table 4.18).

Table 4.18 Knowledge of sexual and reproductive health

Variable (Knowledge)	**Category**	**Control**		**Intervention**	
		Baseline n(%)	**Evaluation n(%)**	**Baseline n(%)**	**Evaluation n(%)**
Risky sexual behavior	Poor	159(61.9)	140(56.7)	139(59.1)	109(46.8)
	Good	98(38.1)	107(43.3)	96(40.9)	124(53.2)
Pregnancy	Poor	157(61.1)	79(32.4)	136(57.9)	62(26.4)
	Good	100(38.9)	165(67.6)	99(42.1)	173(73.6)
HIV/AIDs	Poor	43(16.7)	30(12.2)	41(17.4)	30(12.7)
	Good	214(83.3)	216(87.8)	194(82.6)	206(87.3)

Table 4.19 shows a comparative proportional representation of perception of risk on sexual and reproductive health among the participants in the control and interventional group at baseline and evaluation surveys. The study reported a higher increase from 94

(40%) to 112(53.1%) of participants with a high perception of risk on HIV/AIDS in the intervention group as compared to minimal increase from 112 (43.6%) to 107(47. 8%) in the control group.

Table 4.19 Level of Perception of Risk on Pregnancy, HIV /AIDS

Variable	Category	Control		Intervention	
		Baseline n(%)	**Evaluation n(%)**	**Baseline n(%)**	**Evaluation n(%)**
Pregnancy	Low	117(45.5)	84(35.6)	106(45.1)	82(36.3)
	High	140(54.5)	152(64.4)	129(54.9)	144(63.7)
HIV/AIDs	Low	145(56.4)	117(52.2)	141(60)	99(46.9)
	High	112(43.6)	107(47.8)	94(40)	112(53.1)

Figure 4.5 shows the proportional comparative representation of the level of self-efficacy in the study groups at baseline and evaluation stages. The study reported a higher increase from 143(60.9%) to 153(69.5% of participants reporting high self-efficacy in the interventional groups as compared to minimal increase from152(59.1%) to 141(60.3%) in the control group.

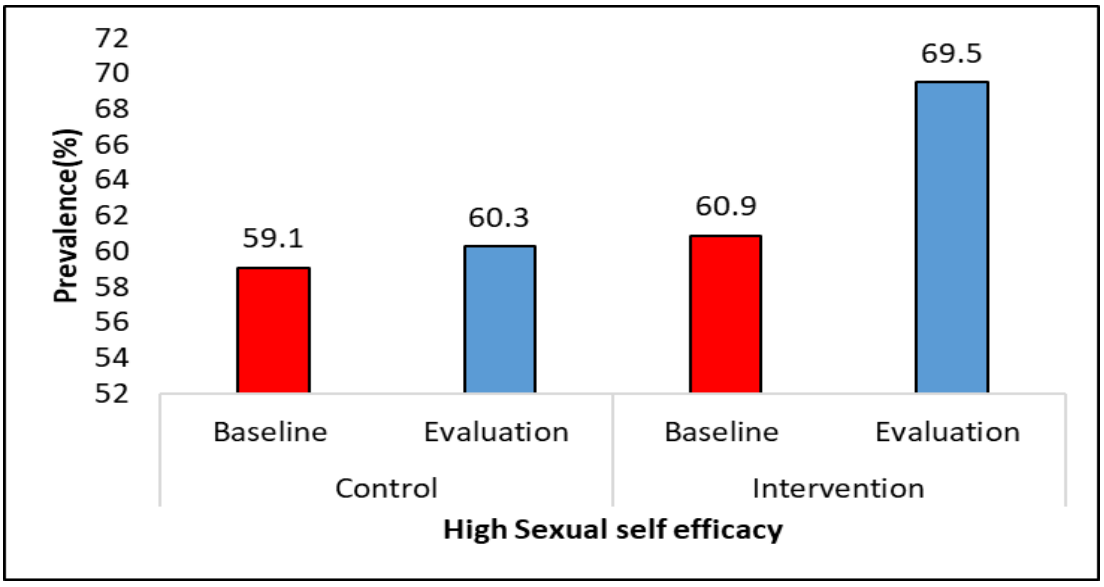

Figure 4.5 Sexual self-efficacy

Table 4.20 shows a logistic regression analysis to determine the effect of sexual risk avoidance education on intermediate factors (modifiable variables). This was done by comparing the evaluation outcomes for control and intervention groups while controlling for all the sociodemographic characteristics of participants. School-based sexual risk education significantly increased the proportion of girls with good knowledge of risky sexual behavior from 96(40.9%) to 124(53.2%), (OR 1.488, P 0.030, CI:1.039-2.133,) and high sexual self-efficacy from 143(60.9%) to 153(69.5%, (OR1.506, P 0.039, CI: 1.021-2.221). The intervention achieved a small effect size of R^2 = 0.01for both sexual self-efficacy and knowledge on risky sexual behavior.

Table 4.20 Effect of sexual risk avoidance education on intermediate factors

Intermediate factor	**Category**	**B**	**P**	**OR**	**95% C.I.**	
Knowledge of risky sexual behavior	Control (Ref)					
	Intervention	0.398	0.030*	1.488	1.039	2.133
Knowledge of HIV/STI	Control (Ref)					
	Intervention	0.047	0.864	0.954	0.555	1.638
Knowledge of pregnancy	Control (Ref)					
	Intervention	0.290	0.151	1.336	0.900	1.983
Perception of risk on HIV	Control (Ref)					
	Intervention	0.213	0.268	1.237	0.849	1.803
Perception of risk on pregnancy	Control (Ref)					
	Intervention	-0.030	0.877	-0.970	0.664	1.419
Sexual Self-Efficacy	Control (Ref)					
	Intervention	0.410	0.039*	1.506	1.021	2.221

4.8.2 Effect of Sexual Risk Avoidance Education on Sexual behavior

The comparison of prevalence of high risk sexual behaviors in the control and interventional groups both at baseline and evaluation surveys is summarized in table 4.21. There was a higher reduction of multiple sexual partners in the intervention group from 25(24.3%) to 22(20.8%) as compared to control from 26(22%) to 25(21. 9%). Generally, there was an almost equal reduction in sexual activity and an increase in the inconsistent utilization of condoms in both the control and interventional group.

Table 4.21 Comparison of Prevalence of risky sexual behavior among girls

Variable	Category	Control		Intervention	
		Baseline Freq(%)	Evaluation Freq(%)	Baseline Freq(%)	Evaluation Freq(%)
Sexual Activity	Inactive	102(39.8)	143(60.1)	86(36.6)	131(56.0)
	Active	154(60.2)	95(39.9)	149(63.4)	103(44.0)
Sexual debut	Normal	97(63.8)	117(74.5)	83(61.0)	102(70.8)
	Early	55(36.2)	40 (25.5)	53(39.0)	42(29.2)
Utilization of Condom	Consistent	103(67.8)	96(65.3)	90(66.2)	89(65.4)
	Inconsistent	49(32.2)	51(34.7)	46(33.8)	47(34.6)
Sexual Partner	Single	92(78.0)	89(78.1)	78(75.7)	84(79.2)
	Multiple	26(22.0)	25(21.9)	25(24.3)	22(20.8)

Figure 4.6 presents a comparative result on the overall prevalence of high-risk sexual behavior at baseline, evaluation in both control and interventional groups. The study showed a reduction in high-risk sexual behavior in the intervention group from 63(63.6%) to 63(61.2) and an increase in high-risk sexual behavior in the control group from 66(61.1%) to 69 (62.2%).

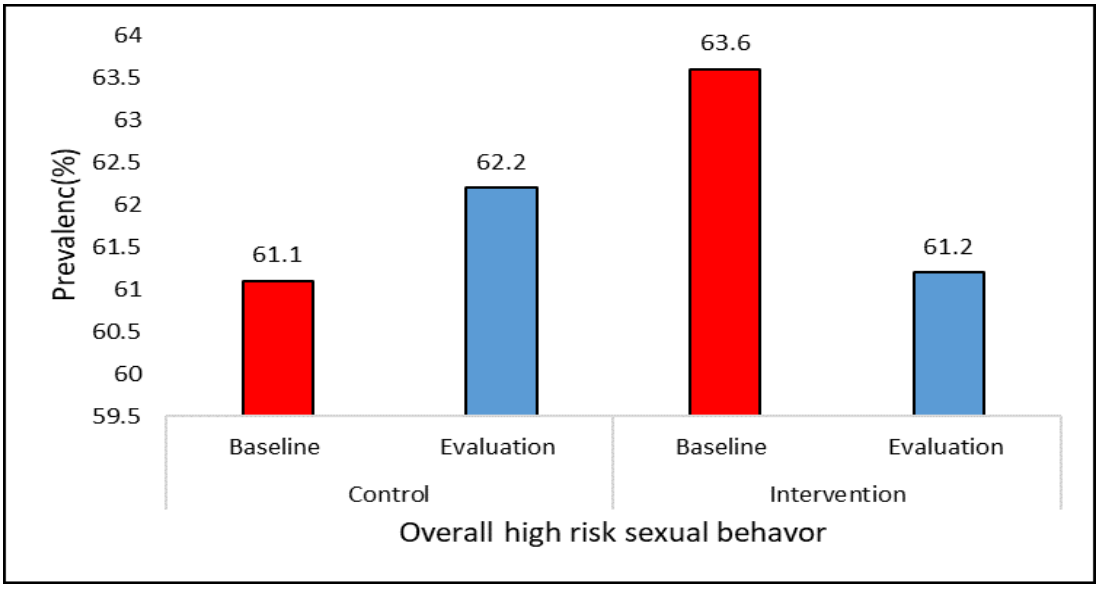

Figure 4.6 Prevalence of Risky sexual behavior

Table 4.22 shows a logistic regression analysis to determine the effect of sexual risk avoidance education on sexual behavior. This was done by comparing the evaluation outcomes for control and intervention groups while controlling for all the sociodemographic characteristics of participants. School-based sexual risk education did not have significant effect on the sexual behavior of adolescent girls. A number of interventions to address risky sexual behavior and teenage pregnancy that were proposed both by the key informants and girls during the FDGs discussion include; training of teacher on adolescent sexual and reproductive health**,** strengthening of guidance and counseling on sexual and reproductive health in schools, *family* level of sex education*KI13'' The family as a unit they need to talk to their children openly not leaving the bulk of the work to teachers because most of the parents are avoiding their duties even what they can tell the learners your teacher I will tell your teacher I will report you to the teacher that is publication so teachers are overworked apart from teaching there also handling family issues and teachers some of our teachers have also gone into teaching profession as there last result they were not born teachers because*

a teacher is one who will try to know the background of the child and see the approach to help the child so these ones here and with the world and with words in the phone it is very tricky but I want to say the blame or the rescue should be our families family levels will help us handle indiscipline and discipline cases. once the families are in control schools will be safe our schools will be safe''.

Table 4.22 Effect of Sexual Risk Avoidance education on sexual behavior

Sexual behavior	**Category**	**B**	**SE**	**P**	**OR**	**95% C.I.**	
Overall sexual behavior	Control (Ref)						
	Intervention	-0.042	0.281	0.881	0.959	0.552	1.664
Sexual Debut	Control (Ref)						
	Intervention	0.186	0.259	0.473	1.204	0.725	2.002
Multiple sexual partner	Control (Ref)						
	Intervention	-0.070	0.330	0.832	0.932	0.489	1.779
Condom utilization	Control (Ref)						
	Intervention	-0.006	0.250	0.981	0.994	0.609	1.623
Sexual activity	Control (Ref)						
	Intervention	0.168	0.187	0.367	1.184	0.821	1.707
Teenage pregnancy	Control (Ref)						
	Intervention	-0.469	0.352	0.182	0.625	0.314	1.247

CHAPTER FIVE: DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the discussion per results of every study objective, conclusion and recommendation as informed by the results.

5.2 Prevalence of Risky sexual behavior

This study reported 61.7% of participants to be sexually active which is the highest compared to findings of studies conducted in Uganda 11.5% (Ivanova et al., 2019), Nairobi and Busia County, Kenya 14.6% (Mayabi, 2016) and Rajasthan 19.4% (Palmer et al., 2017). The motivators of sexual activity vary from individual, family and environmental factors and this could result in variation in the prevalence of sexual activities reported in different studies. The different socio-cultural contexts, data collection tools, and procedures could also predict the result of a study.

This study reported a prevalence of early sexual debut to be 37.5% among the participants. This is higher than findings from studies in 6 Caribbean countries 16.9% (Peltzer & Pengpid, 2015), Northeast Ethiopia 18.4% (Abebe et al., 2019) and KDHS (KNBS, 2016). However, the prevalence is lower compared to findings of studies in Nigeria 41.1% (Durowade et al., 2017) and Brazil 67.8% (Andres et al., 2018) but almost similar findings reported in Malaysia 31.7 % (Aliza Lodz et al., 2019).The questions on early sexual debut are always answered by those who have either initiated sex neither or sexually active and the response is likely to influenced by recall bias and accurate information largely determined by the memory status of the participants. This could result in a variation of finding among studies. Sexual and reproductive health exposure could also be protective and this varies from one region to another.

This study found inconsistent condom utilization to be 33% among the participants. This is lower than findings from studies conducted in Colombia 78% (Morales et al., 2018) and Cameroon 76% (Tarkang, 2014) but almost similar to a study in South Africa 47% (Muchiri et al., 2017) (Logie et al., 2019). High consistent condom use could be attributed to the ongoing rigorous HIV/AIDs interventions in Homabay County due to the high prevalence of HIV/Aids. This variation could also be due different communication strategies about condom utilization at household, community level, and societal levels and availability of condoms for use by adolescents in various contexts.

This study reported the prevalence of multiple sexual partners to be 23.1%. This is lower than findings from studies conducted in Ghana 71.4% (Andres et al., 2018) and Brazil 51% (Ganle et al., 2019) but higher than findings from studies conducted in Uganda 5.7 % (Wroblewska et al., 2016) and Malaysia 16.6% (Aliza Lodz et al., 2019).This study measured multiple sexual partners within the last six months only and was limited to vaginal sex which may not be the case with the studies in Ghana and Brazil. The target population for this study was day school going mixed school adolescent girls who have frequent interaction with their male school mate hence a higher rate as compared to studies in Uganda and Malaysia. The study in Malaysia was also a national survey which most of the time yield lower prevalence than studies focusing on smaller geographical regions like in the case of this study.

This study found the prevalence of high-risk sexual behavior to be 62.3% which is lower than findings of studies conducted in Ethiopia 73.28% (Ali, 2017) and Nigeria 98.2% (Ejike, 2015). However, this prevalence is higher than findings of studies conducted in South Western Uganda 15.1% (Nighty et al., 2019) and Tanzania 31.8% (Lwelamira et al., 2016) but almost similar to findings of a studies conducted in Ibadan, Nigeria 68.3% (Ajide & Balogun, 2018) and 69.1% (Ali, 2017).The variation in

prevalence of participants reporting risky sexual behavior could be attributed to differences in social and geographical study settings. Moreover, the definition of what constitutes a high-risk sexual behavior and cut off points generally varies in most studies. In the case of this study, sexual behavior constitutes multiple sexual partners, inconsistent condom utilization and early sexual debut and self-reported experience of at least one of the outcomes among sexually active participants was considered to be high risk while no experience of all of them was considered low risk which is not similar in all the studies.

5.3 Level of knowledge and perception of risk on sexual and reproductive health

This section presents a discussion on the level of knowledge on risky sexual behavior, teenage pregnancy and HIV/STIs and perception of risk on pregnancy and HIV.

5.3.1 Level of knowledge on Sexual and reproductive health

The study reported 39.4% of participants to be having good knowledge of risky sexual behavior. This is lower compared to findings of studies in Nigeria and Ethiopia which reported 67.7% (Odeigah et al., 2019) and 76.86 % (Ena & Fekecha Hurissa, 2016).This study reported a higher 82.9% of participants with good knowledge on HIV and STI as compared to studies in Nigeria 49% (Pharr et al., 2017) and 34.3% (Ajide & Balogun, 2018).However, this finding is consistent with a study finding from India 78.9% (Jain et al., 2016).This study reported 40.4% of the participant to be having good knowledge of pregnancy which is lower than finding from a study in Cameroon > 50% (Donatus et al., 2018). Deference in the prevalence of good knowledge on sexual and reproductive may as a result of diverse sexual education curriculum in schools in Cameroon the variation is specific questions that were used to measure knowledge and cut off points for cauterization of knowledge as good or poor.

5.3.2 Perception of risk on HIV/AIDS

According to this study, 41.9% of participants had a high perception of risk HIV/AIDS infection. This finding is within the range of studies conducted in rural Cameroon 39.4% (Tarkang, 2014) and Wakiso, Uganda 49.6% (Osingada et al., 2016)but higher than findings of a studies in South Africa 11% (Maughan-Brown & Venkataramani, 2017), 26% (Nyasulu et al., 2018) and Urban slums of Ghana 15% (Darteh et al., 2016).The variation in findings can attribute different study contexts as the studies in Ghana and South Africa were conducted among urban adolescents while this study was rural-based.

5.4.1Sexual self-efficacy on Sexual behavior

This study reported 60% of the participants to be having high sexual self-efficacy to refuse delay and abstain from sexual activities. This is lower than two different studies conducted in Soweto South Africa 72% (Closson, Dietrich, Lachowsky, Nkala, Cui, et al., 2018) and 68.7% (Closson, Dietrich, Lachowsky, Nkala, Palmer, et al., 2018) but with the range reported by other studies 29.22 % -78.49% (Tsai CC., Tang JS., Tsai TI., 2019).Sexual efficacy could vary due to the sexual status of the study participants as some are either sexually active or inactive. Pre-existing health conditions could also influence individual sexual self-efficacy. More of this study only measured three aspects of sexual self-efficacy that could vary from study to study.

5.5 Factors associated with sexual behavior

This section presents a discussion on sociodemographic and intermediate factors associated with sexual behavior. All the confounding factors and interactions between variables were controlled during the logistic regression analysis.

5.5.1 Sociodemographic factors associated with sexual behavior

All the confounding factors and interactions between variables were controlled during the logistic regression analysis. Current guardian, level of education and occupation of guardians, family religious background and position of birth were not associated with sexual debut and overall risky sexual behavior. Inconsistently, findings of a studies form six Caribbean countries, Tanzania and Uganda reported lack of parental or guardian attachment (Peltzer & Pengpid, 2015) and family characteristics (Ugoji, 2014) and absence of neither parents (Pilgrim et al., 2014) as predictors of early sexual debut among adolescents girls. An analysis of longitudinal data for Add Health project in University of North Carolina also reported maternal dating and Parental control and permissive attitudes towards teenage sex as main predictors of early sexual debut among adolescent girls (Zeto & Stacy, 2016). This study targeted school day school going adolescent girls who spend more time in school than at home and therefore their sexual debut could likely have been influenced by school environment rather than family environment. This is supported by a systematic review and meta-analysis of randomized control trial findings which indicate higher reduction of prevalence of early sexual debut in school-based intervention as compared community and family interventions (Peterson, Donze, & Bonell, 2018) instituting that school is significantly associated with the sexual debut. This study found no association between religious background and sexual debut.

This study revealed that living with both mother and father significantly reduces sexual practice with multiple partners while inconsistent utilization of condom to be significantly reduced by both livings with mother and father and being last born in a family.These findings are both consistent with a study in Burkina Faso whose findings indicated that adolescents living with both mother and father were less likely to have

multiple sexual partners and more likely to use condoms consistently than those in other households (Yode & Legrand, 2014). Consistent with this study, Yode & Legrand also reported households with mother and father to be more protective form early sexual debut as compared to single parents. This reduction in early sexual debut could be explained by improved communication in families with both mother and father (Avelar E Silva et al., 2016).Being last born in a family is likely to expose an individual to mentorship from older siblings and there less likely to involve in early sexual activities.

5.5.2 Intermediate factors associated with sexual behavior

Knowledge of risky sexual behavior and HIV/AIDS were not associated with any of the measured sexual behaviors while having good knowledge of pregnancy was protective from the early sexual debut. This is consistent with the findings of a studies from in China(Li et al., 2017) which reported a later age of sexual debut among participant with good knowledge of sexual and reproductive health issues but inconsistent with a study in Tanzania which reported increase of high risk sexual behavior among participants with poor knowledge on HIV/AIDS (Lwelamira et al., 2016).

From the result of this study, perception of risk on HIV/AIDS was not associated with all the sexual behaviors measured while the perception of risk on pregnancy was significantly associated with sexual debut and sexual partners. Participants with the high-risk perception of pregnancy likely had to experience normal sexual debut and have a single sexual partner. These findings are in agreement with a study in Ghana which reported no association between HIV risk perception, early sexual debut and condom utilization and concluded that adolescents largely do not perceive themselves to be at risk of HIV infection as compared to pregnancy despite their involvement in risky sexual behavior (Afriyie & Essilfie, 2019).This result is supported by a report on

concept analysis which found that risk perception in pregnancy stimulates women's sentimental state and has a bearing on decision-making around pregnancy and childbirth (Lennon, 2016).

This study also found sexual self-efficacy to be significantly associated with condom utilization. Participants with high sexual self-efficacy were more likely to consistently use the condom in their sexual activities. This result is similar to the findings of a study among female student which showed a positive correlation between self-efficacy and positive attitudes towards condom utilization (Artistico et al., 2014).This study is also in agreement with (Uribe Alvarado et al., 2017) which reported high sexual efficacy to be a strong predictor of condom utilization. These results have attributed the ability of participants with high self-efficacy to negotiate for low-risk sexual activities.

The Key Informants and FGD participants identified inadequate knowledge on sexual and reproductive health services, poor parenting, sleeping arrangement, poverty, peer pressure, and socioeconomic activities along the lake and urban centers to be the drivers of risky sexual behavior and teenage pregnancy among adolescent girls. This finding is in line with a number of studies. A study conducted in Nairobi, Kenya indicated 71% of female virgins to be having a high level of mother-daughter communication (Okigbo et al., 2015).A meta-analysis of studies conducted between 1984-2014 also revealed that parental monitoring knowledge and rule enforcement was positively associated with delayed sexual intercourse, greater condom utilization and increased contraceptive use among adolescent girls (Dittus et al., 2015). Moreover, a qualitative study in a community in Western also identified sleeping arrangements as a risk factor to risky sexual behavior among adolescents (Juma et al., 2014).The findings of an evaluation on Cash Transfer program in Kenya revealed higher proportion of delayed sexual debut among adolescent in the program as compared to those not enrolled in the

program insinuating that poverty may be associated with risky sexual behavior (Handa et al., 2017)

On peer pressure, a number of studies are in agreement with this study finding. Findings of a study conducted by (Peçi, 2017) reported that adolescences are probable of having sex if friends in their network and peers are mature, abuse drugs, have a more positive attitude towards childbearing and have liberal values about sex. In addition, a study conducted in Ghana reported adolescent's relationship with antisocial peers to increase early sexual debut and having more friends to be positively associated with multiple new sexual partners.

5.6 Effect of school-based sexual risk avoidance education on sexual behavior

This section presents a discussion on the effects of SRAE on both intermediate (modifiable factors) and sexual behavior.

5.6.1 Influence of SRAE on Intermediate factors

In this study, school-based sexual risk avoidance education increased knowledge on risky sexual behavior and the strength of sexual efficacy. This was evidenced by a significantly higher proportion of participants in the interventional group reporting good knowledge on risky sexual behavior and sexual high self-efficacy to delay, refuse and abstain from sex as compared to control group after the intervention. Similarly, Meta-analysis of eight studies conducted in developing countries by USAID research project also reported significantly greater self-efficacy on sexual decision making and condom use among participants exposed to sexual education. Another study conducted in United States also reported significantly greater opportunities to practice sexual risk reduction skills and higher intentions to talk with friends, parents, and sex partners about sex and birth control, set boundaries with sex partners among secondary school

teen exposed to sex education (Jennings, Howard, & Perotte, 2014). In a systematic review of sexual risk avoidance programs, 7 out of the 18 studies reported main effects on teen abstinence at least one year after the program's completion and non-reduction on condom use(: Stan Weed, PhD; Irene Erikson, PhD; Russell Gombosi, MD; Michelle Cretella, 2018) which is similar to the findings these study findings.

Regarding knowledge of risky sexual behavior, the findings of this study are similar to a number of studies globally. A study in China reported a significantly higher score on self-reported knowledge on sexual and reproductive health among those exposed to sex education as compared to the controls (Li et al., 2017).A United States study also reported significantly higher scores on knowledge of sexual health issues among participants on sex education (Jennings et al., 2014).

5.6.2 Influence of SRAE on Sexual behavior

In this study, school-based sexual risk avoidance education slightly reduced high risk sexual behavior. This result is consistent with a finding of a systematic review of 37 sex education studies that reported reduction of risky sexual behavior ranging between 1% to 5% in a period of 6 to 30 months of intervention (De Vasconcelos et al., 2018) and contrary to a study in Nigeria where the intervention group reported less at-risk sexual behaviors than their counterparts in the control group (Esere et al., 2015).Inconsistence with this study, a meta-analysis of 63 mixed studies of comprehensive sexual education and sexual risk avoidance education reported positive effect on sexual behavior. Students who received school-based sex education interventions had significantly greater HIV knowledge, self-efficacy on sex refusal or condom use refusing sex or condom use, reduced sexual partners and sexual initiation (Fonner, Armstrong, Kennedy, O'Reilly, & Sweat, 2014). From the qualitative approach of this study, the suggested potential intervention for risky sexual behavior

was training of teaches on sexual and reproductive health, strengthening guidance and counselling in schools and family level sex education. The variation on the influence of sex education on sexual behavior could be attributed to different packages in sex education programs in terms of activities and period of intervention. This study through qualitative approach identified some factors as main predictors of sexual behavior yet they were not targeted by the intervention. These factors were inadequate sexual and reproductive health services, poor parenting and sleeping arrangement, poverty, peer pressure, and socioeconomic activities along the lake. These factors could largely hinder the positive effects of sexual risk avoidance education on the sexual behavior of adolescent girls.

5.7 Conclusion

This study was guided by the hypotheses; Ho – There is no effect of school-based sexual risk avoidance education on sexual behavior of adolescent's girls in Homabay County and aimed to establish sexual behavior among adolescents aged 15-19 years, assess level of knowledge and perception of risk on sexual and reproductive health, determine level of self-efficacy on protective sexual behavior among adolescents' girls, determine factors associated with sexual behavior among girls and determine the effects of school-based sexual risk avoidance education on sexual behavior of adolescent.

5.7.1 Sexual behavior and prevalence of pregnancy

The overall high-risk sexual behavior was 62.3% which is among the highest ever reported in a school-based study in Kenya and Sub-Sahara Africa. The prevalence of sexual activity, early sexual debut, inconsistent utilization of condom and multiple sexual partners were also high.

5.7.2 Level of knowledge, perception of risk and sexual self-efficacy

Most adolescent girls have good knowledge of HIV, poor knowledge of risky sexual behavior and pregnancy and low perception of risk on pregnancy and HIV/AIDS while an average has high sexual self-efficacy.

5.7.3 Factors associated with sexual behavior

Living with mother and father, being a last born in a family and high sexual self-efficacy reduces the risk of inconsistent use of a condom. High perception of risk on pregnancy and living with mother and father reduces the risk of multiple sexual partners. Good knowledge and high perception of risk on pregnancy reduce the risk of early sexual debut.

5.7.4Effect of school-based sexual risk avoidance education on sexual behavior

While the intervention slightly reduced high risk sexual behavior, it had a protective effect on intermediate factors; knowledge on risky sexual behavior and sexual self-efficacy. Based on social cognitive theory, sexual self-efficacy directly influences sexual behavior suggesting that more prolonged exposure to the intervention might reduce high-risk sexual behavior. Further long term intervention in an adequately resourced setting is justified.

5.8 Recommendation

In consideration of the study findings, the researcher suggests recommendations for policy direction, practice and further research.

5.8.1 Recommendation for Policy

The Ministry of Health, Ministry of education and other stakeholders should develop a school-based sexual risk avoidance curriculum for primary and secondary education since the study indicate early sexual debut and sustained risky sexual activities among

the adolescent which results to some irreversible consequences like HIV/AIDS transmission and teenage pregnancy complications.

Adolescent sexual and reproductive health training should be one of the core training objectives for primary and post-primary teachers training education. This will help not only to reduce the knowledge gap among the teachers but also trigger the interest of teachers to skilfully handle the current sexual and reproductive health challenges among adolescents.

5.8.2 Recommendation for Practice

The programming of adolescent sexual and reproductive health intervention in schools should primarily focus on increasing the perception of risk and strengthening sexual self-efficacy to directly reduce risky sexual behavior. Screening for risky sexual behavior should be regularly done at family level, school and health facilities to inform appropriate delivery of sexual and reproductive health information and case-specific intervention. At the community level, the MOH and MOE should develop a structured engagement platform for the parents/caregivers to facilitate their involvement in modelling the sexual behavior of the adolescents. Finally, there need for sustained dissemination, awareness, and advocacy at various levels on the high prevalence risky sexual behavior and teenage pregnancy to influence resource mobilization and allocation of toward adolescent sexual and reproductive health interventions.

5.8.2 Recommendation for Further research

The study suggests further research on:

- National prevalence of risky sexual behavior and associated factors
- Pathway analysis of factors associated with risky sexual behavior.

- A long-term comparative interventional study on the effects of school-based sexual risk avoidance education and school-based comprehensive sex education on sexual behavior.
- Evaluation of current policies and guidelines on adolescent sexual and reproductive health

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5.0: Appendices

Appendix 1: Adolescent Sexual and Reproductive Essential package in Kenya

Table 1.1: Models and Recommended Essential Service Package in Kenya		
Youth-Centre Based Model	**Clinical Based Model**	**School-Based Model**
Counseling Services	Counseling Services	Life skill training
Screening and treatment of sexually transmitted infections	Provision of information	Counseling services
Voluntary Counseling and Testing	Education on Reproductive Health	School health talks
Provision of information and Education on Reproductive Health	Training in livelihood and life skills	Post rape care
Availability of IEC, audio/visual materials	Availability of IEC, audio/visual materials	Linkage to clinic-based and youth center-based model
Ante and Postnatal care	Promoting community-based and school-based outreaches IEC activities	Refer for management
Comprehensive post-rape care	Provision of contraceptives	Refer for treatment and management
Provision of contraceptives	Recreational facilities	
Promoting community-based and school-based outreaches	Screening and treatment of STD and HIV/AID where applicable	
Linkage to school-based and clinic-based model	Voluntary Counseling and Testing	
	Curative services for minor illnesses including ante and postnatal care	
	Comprehensive post-rape care	
	Linkage to school-based and youth center base model	

Source: National guidelines for the provision of youth-friendly services in Kenya

Appendix 2: Sexual Risk Avoidance Education Curriculum Outline

Session 1: Adolescent sexuality and Pregnancy

Activity 1.1: Male reproductive system and sexual maturation

Activity 1.2: Female reproductive health system and sexual maturation and ovarian cycle

Session 2: Understanding adolescent risky sexual behavior

Activity 2.1: Exploring the sexual experiences of adolescents

Session 3: Teenage Pregnancy

Activity 3. 1: How pregnancy happens

Activity 3.2: Risk of becoming pregnant and follow up activities

Activity 3.3: Risks of Teenage Pregnancy

Sessions 4: Knowledge and Perception of Risk of Teenage pregnancy

Activity4.1: Identifying causes and consequences of Teenage pregnancy

Activity 4. 2: Consequences of Teenage pregnancy.

Activity 4.3: Exploring experiences of abortion

Activity 4.4: Consequences of Unsafe abortion.

Session 5: Knowledge and Perception of Risk of Sexually Transmitted Infections

Activity 5.1: Identifying common STIs

Activity 5.2: Enhancing knowledge of STIs

Activity 5.3: STD Handshake

Activity 5.4: STD Risks

Activity 5.5: Analysis of attitudes and behaviors leading to STIs

Activity 5.6: The consequences of STIs

Session 6: Knowledge and perception of Risk for HIV/AIDS

Activity 6.1: Exploring the experience of peers on HIV/AIDS

Activity 6.2: Learning how AIDS is transmitted – Risk analysis

Activity 6.3: Risky and Non –Risky Behaviors

Activity 6.4: The Sexual Network Game

Activity 6. 5: Signs and Symptoms of HIV/AIDS

Activity 6.6: Social consequences of HIV/AIDS

Activity 6.7: Video show on consequences of HIV /AIDS

Session 7: Life skills in developing Abstinence Sexual Behavior

Activity7. 1: Core life skills

Activity 7. 2: Exploring one's own knowledge of life skills

Activity 7. 3: Practicing the application of life skills

Activity 7. 4: Practicing life skills

Session 8: Self-Efficacy and Skills to avoid risky sexual behaviors

Activity8.1: Forbidden Activities

Activity8. 2: Abstinence

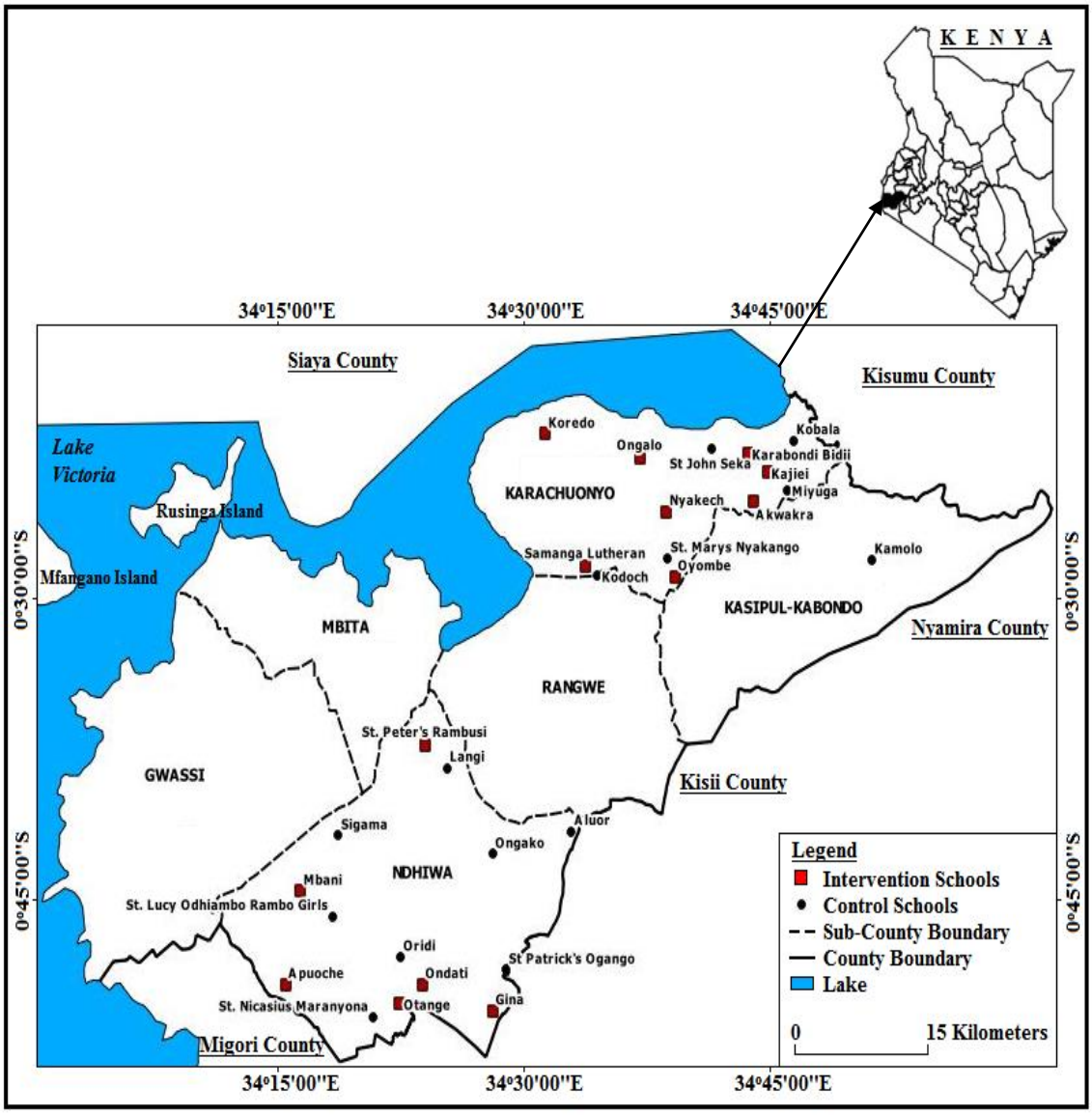
Activity8.3: Reasons to Abstain

Activity 8.4: Lines That People Use to Pressure Someone to Have Sex

Activity 8.5: Situations That May Lead to Teenage or Unintended Sex

Activity8. 6: Role playing to Enhance Refusal Skills

Appendix 3: Map of Study sites



Appendix 4: Sampling frame for Schools

	Day Mixed Schools			No	No	Sample Size
1	Ndhiwa	Jabagre Mixed	17			
2	Ndhiwa	Nyarath Mixed	21			
3	Rachuonyo North	Downhouse High School	25			
4	**Rachuonyo North**	**Koredo Mixed**	**26**			
5	Ndhiwa	Osure Mixed	29			
6	Rachuonyo North	Ong'ang Mixed	31			
7	Ndhiwa	Goyo Sec Mixed	33			
8	Ndhiwa	Wayara Mixed	35			
9	**Rachuonyo North**	**Miyuga Mixed**	**36**			
10	Ndhiwa	Andiwo Mixed	37			
11	Rachuonyo North	Bware Mixed	37			
12	**Ndhiwa**	**Mbani Mixed**	**38**			
13	Ndhiwa	Kaguria Mixed	39			
14	Ndhiwa	Got Rachar Ojode Mixed	40			
15	**Rachuonyo North**	**Kamolo Mixed**	**41**			
16	**Rachuonyo North**	**Oyombe Mixed**	**41**			
17	Ndhiwa	Nyarongi Mixed	42			
18	**Rachuonyo North**	**Kodhoch Mixed**	**49**			
19	Rachuonyo North	Ojijo Oteko Sec	50			
20	**Ndhiwa**	**Sigama Mixed**	**53**			
21	Rachuonyo North	Lieta Mixed	54			
22	**Ndhiwa**	**Apuoche Mixed**	**56**			
23	Rachuonyo North	George Ogola Owuor Mixed	56			
24	Ndhiwa	Alara Mixed	58			
25	Rachuonyo North	Masogo Mixed	58			
26	Rachuonyo North	St. Joseph Seka Mixed	60			
27	**Rachuonyo North**	**St. Mary's Nyakango**	**62**			
28	Rachuonyo North	Osodo Mixed	64			
29	**Ndhiwa**	**Ondati Girls Sec**	**65**	86	58	17

30	Rachuonyo North	Ngeta Mixed	65			
31	Rachuonyo North	Omindi Mixed	65			
32	Rachuonyo North	St. Martin’s Oluti Mixed	65			
33	**Ndhiwa**	**Otange Mixed**	**66**			
34	**Ndhiwa**	**Ongako Sec Mixed**	**66**			
35	Ndhiwa	Joshua Ojode Ndere Mixed	67			
36	Rachuonyo North	Kamser Mixed	68			
37	Ndhiwa	Kome Sec Mixed	69			
38	Rachuonyo North	Wikondiek Mixed	69			
39	Rachuonyo North	St. Alfred Alara Mixed	72			
40	Ndhiwa	St. Peter's Rarage Sec Mixed	73			
41	Rachuonyo North	Kobala Mixed	73			
42	Rachuonyo North	St. Joseph Kobuya Mixed	75			
43	Rachuonyo North	Simbi Mixed	76			
44	**Ndhiwa**	**St. Nicasius Maranyona Mixed**	**77**			
45	**Rachuonyo North**	**Nyakech Mixed**	**77**			
46	Ndhiwa	Abura Mixed	78			
47	Rachuonyo North	Kotonje Mixed	79			
48	Rachuonyo North	Kanyamfwa Mixed	80			
49	Rachuonyo North	Alaru Central Mixed	83			
50	**Ndhiwa**	**Gina Mixed**	**86**			
51	Ndhiwa	St. Phillip's Wayaga Mixed	88			
52	Ndhiwa	Wachara Mixed	92			
53	Ndhiwa	Rapedhi Sec Mixed	93			
54	**Ndhiwa**	**St Patrick's Ogango Sec Mixed**	**95**			
55	**Rachuonyo North**	**Kajiei Mixed**	**95**			
56	Rachuonyo North	Wagwe Mixed	95			
57	Ndhiwa	Unga Ojode Mixed	96			
58	Rachuonyo North	Kanam Mixed	99			

1	Rachuonyo North	Kowuor Mixed	101			
2	**Ndhiwa**	**Langi Mixed**	**104**			
3	**Rachuonyo North**	**Karabondi Bidii Mixed**	**104**			
4	Rachuonyo North	Siburi Mixed Sec	106			
5	Ndhiwa	Lwanda Kawuor Mixed	110			
6	Rachuonyo North	Kamwala Mixed	116			
7	Ndhiwa	Got Kojowi Sec Mixed	117			
8	**Rachuonyo North**	**Akwakra Mixed**	**119**			
9	Rachuonyo North	St. Joseph Miranga	125			
10	Ndhiwa	Okok Mixed Sec	128			
11	Ndhiwa	Okota Mixed Sec	135			
12	Ndhiwa	St. Paul's Nyamanga Sec	136			
13	Rachuonyo North	Gogo Mixed	138			
14	**Ndhiwa**	**Aluor Mixed**	**140**			
15	**Ndhiwa**	**St. Peter's Rambusi Mixed**	**142**			
16	Rachuonyo North	Kandiege Mixed	147			
17	Ndhiwa	Koduogo Mixed	149			
18	Ndhiwa	Ojode Pala Mixed	159			
19	**Rachuonyo North**	**Ongalo Mixed**	**161**			
20	Rachuonyo North	Omboga Mixed	169			
21	Rachuonyo North	Kendu Muslim Mixed	170			
22	Rachuonyo North	Otok Mixed	178			
23	Rachuonyo North	Adiedo Mixed	184			
24	Ndhiwa	Ototo (Bishop Okok) Sec Mixed	205		**28**	8

25	Rachuonyo North	St. Benard's Otaro Mixed	216			
26	**Rachuonyo North**	**Kobala Mixed**	**219**			
27	**Rachuonyo North**	**Samanga Lutheran Mixed**	**222**			
28	Rachuonyo North	St. Innocent Jonjo Mixed	247			
	Girls Day Schools					0
1	**Rachuonyo North**	**Karabondi Girls**	**78**			
2	Ndhiwa	Bishop Ochiel Nyagidha Girls	82			
3	Ndhiwa	Bongu Girls	95		3	1
1	**Ndhiwa**	**St. Lucy Odhiambo Rambo Girls**	**102**			
2	Rachuonyo North	St. Lucy's Girls	119			
3	**Ndhiwa**	**Oridi Girls**	**148**			
4	Rachuonyo North	Ogenya Girls	172			
5	Ndhiwa	Ratanga Girls	217	8	5	2
94				**94**	**94**	28

Appendix 5: Randomization Process

	Sub-County	Schools	Strata	No	Random #	C T
16	Rachuonyo North	Nyakech Mixed	Mixed	77	0.94993927	**T**
26	Ndhiwa	St. Peter's Rambusi Mixed	Mixed	142	0.94521937	**T**
2	Rachuonyo North	Koredo Mixed	Mixed	26	0.91096941	T
3	Ndhiwa	Gina Mixed	Mixed	86	0.89947553	T
27	Ndhiwa	Mbani Mixed	Mixed	38	0.88156709	**T**
44	Ndhiwa	Otange Mixed	Mixed	66	0.87353521	**T**
5	Rachuonyo North	Ongalo Mixed	Mixed	161	0.85558394	**T**
54	Rachuonyo North	Akwakra Mixed	Mixed	119	0.82854311	**T**
15	Rachuonyo North	Karabondi Bidii Mixed	Mixed	104	0.78926345	**T**
55	Rachuonyo North	Samanga Lutheran Mixed	Mixed	222	0.68480980	**T**
20	Ndhiwa	Ondati Girls Sec	Mixed	65	0.63666481	**T**
14	Rachuonyo North	Oyombe Mixed	Mixed	41	0.44572001	**T**
1	Ndhiwa	Apuoche Mixed	Mixed	56	0.43562001	**T**
50	Rachuonyo North	Kajiei Mixed	Mixed	95	0.40476033	**T**
4	Ndhiwa	Ongako Sec Mixed	Mixed	66	0.39513239	**C**
1	Rachuonyo North	Kobala Mixed	Mixed	219	0.38538519	**C**
45	Rachuonyo North	Kamolo Mixed	Mixed	41	0.30650619	**C**
18	Rachuonyo North	Kodhoch Mixed	Mixed	49	0.30065209	**C**
8	Ndhiwa	St. Nicasius Maranyona Mixed	Mixed	77	0.28763013	**C**
27	Rachuonyo North	Karabondi Girls	Girls	78	0.27831935	**C**
19	Ndhiwa	St Patrick's Ogango Sec Mixed	Mixed	95	0.25039982	**C**

15	Ndhiwa	St. Lucy Odhiambo Rambo Girls	Girls	102	0.204147777	C
9	Rachuonyo North	Miyuga Mixed	Mixed	36	0.136008746	**C**
4	Ndhiwa	Sigama Mixed	Mixed	53	0.117731009	**C**
33	Ndhiwa	Langi Mixed	Mixed	104	0.099487768	**C**
34	Rachuonyo North	St. Mary’s Nyakango	Mixed	62	0.053068473	**C**
12	Ndhiwa	Aluor Mixed	Mixed	140	0.04964634	**C**
22	Ndhiwa	Oridi Girls	Girls	148	0.036147041	**C**

Appendix 6: Self-Administered questionnaire

Basic Information	
Serial No.	
Sub-county	
The school (cluster)	
Group	
Form (Level of study)	
Name of Facilitator and contact	Phone contact:

Informed Consent

- You have been selected by chance from all the girls in the school for this study. The purpose of this questioner is to obtain current information on you background as well and your reproductive health wellbeing.
- If a you are uncomfortable answering any of the questions, you can skip to the next one.
- The survey is voluntary and the information that you give was be confidential. The information was being used to prepare a report anonymously and there was be no way of identifying that you gave this information.
- Please work privately, and do not share your answers with anyone even after this exercise.

Do you accept to answer the questions? (Tick appropriately)

Yes ☐ No ☐

Facilitators signature……. Date…….

INSTRUCTIONS

- This is a self-administered questionnaire and the participants should answer all the questions privately.
- Ask the facilitator for any clarification in case of need.

No	QUESTIONS	RESPONSE	SKIPS
Section 1:Socio-Demographic Characteristics			
1.1	What is your current age?	Years……	
1.2	Who do you currently live with?	Mother and father ……1 Mother only……....2 Father only ……3 Relative/Gurdian……..4	
1.3	What is the highest level of education of your guardian/parents?	(a) **Female guardian** None……1 Primary……2 Secondary……3 College ……4 University…….5 **(b)Male guardian** None ……1 Primary……....2 Secondary……...3 College……...4 University……...5	
1.4	What is the main occupation of your primary guardian?	Formal employment ……1 Farming…….2 Business……...… …3	
1.5	How many siblings are you in your family?	……..	

1.6	Which position are you in terms of the order of birth?	First born……1 Mid born……...2 Last born……...3	
1.7	What is your current religious background?	Catholic……1 Protestant…….……2 African religion……3 Muslim……4 None……5	
1.8	What average grade did you get in the last term examination?	A……1 B……2 C…….……3 D……4 E……..……5	
1.9	At what age did you start experiencing your menstrual cycle?	Years…… I have not started my menstrual cycle……99	

Section 2: Sexual Behavior **This section is asking about some sexual practice that is common among young people. Kindly share with us your own experience.**			
2.1	Have you ever had a boyfriend/ male partner?	Yes ……1 No……..2	
2.2	How would you describe your sex desire?	No sex desire……. ….1 Weak……2 Strong……...3	

2.3	How old were you when you first engaged in sexual intercourse? (a boy's penis in a girl's vagina)	**Estimate in Years**…… I have never had sex…….1	
2.4	The first time you had vaginal intercourse did you and your partner use a condom?	Yes……1 No……2 I have never had sex ……..99	
2.5	You had your first sexual encounter due to	For enjoyment…….…...1 Forced (rape)…….….2 Financial reasons……....3 Coercion…….……...4 Peer influence…….……...5 Under influence of drugs...…….…6 I have never had sex …….99	
2.6	During your life, with how many different people have you had sexual intercourse	_____number of partners I have never had sex …….99	
2.7	How often do you have sexual intercourse?	Weekly……..1 Monthly……....2 Once in every three months…….3 Once in every six months……....4 I have never had sex…….99	
2.8	Have you had sexual intercourse within the last six months	Yes……1 No……..2	

2.9	How many people have you had sex with in the last six months	_____number of partners Never had sex in last 6 months…….99	
2.10	How many times have you had sexual intercourse within the in the last 6 months	…….. Never had sex in last 6 months …….99	
2.11	What is your relationship with this person whom you last had sex?	Fiancé (Someone you intend to marry) …….1 Boyfriend ……...2 Casual acquaintance …….3 Paying client …….4 Never had sex in last 6 months …….99	
2.12	Did you and your partner use a condom in your last sexual intercourse?	Yes…….1 No……...2 Never had sex in last 6 months …….99	
2.13	In your current or most recent relationship, how regularly do you use condoms?	Always …….1 Sometimes ……...2 Never……3 Never had sex ……. …….99	
2.14	Did you use any method to prevent pregnancy in your last sexual intercourse?	Yes…….1 No……2 Never had sex……. ….99	

2.15	Which method did you use to prevent pregnancy in your last sexual intercourse? **You circle 1 or 2 for all the options provided.**	**a) Implant** Yes……. 1 No…….2 **b) Intrauterine device** Yes …….1 No……..…2 **c) Daily pills** Yes……. ….1 No……..…2 **d) Depo Provera injection** Yes……1 No……....2 **e) Condoms** Yes ……. 1 No…….2 **f) <u>Emergency contraception</u>** Yes…….1 No……2 Never had sex……99 .	
2.16	How many times have you been pregnant?	One time…….……1 Two or more times……...……2 Never been pregnant…….3	
2.17	What is your current pregnancy status?	Currently Pregnant…….1 Not pregnant…….…...2	
2.18	How many children do you have?	One…….……1 Two…….……2 Three……3 None…….4	
2.19	Was the pregnancy	What you wanted…….1 A mistake …….2 Failure of contraceptives…….…3 Never been pregnant…….4	

Section 3: Knowledge of Risky Sexual Behavior

This section is asking on what you know about the sexual behavior of your people			
Tick whether it is **true** or **false** that the following statement is **risky sexual behavior.** Let us also know if you do not know			
3.1	Involvement in sexual intercourse without the use of a condom.	True……..…. ….1 False…….…….….2 Do not know……..3	
3.2	Starting to practice sexual intercourse before the age of 14.	True……1 False……2 Do not know……3	
3.3	Having more than one sexual partner.	True…….1 False……2 Do not know……...…….3	
3.4	Practicing frequent sexual activities.	True……...….1 False…….……2 Do not know…….3	
3.5	Having sex under the influence of drugs.	True……..…1 False…….……2 Do not know…….3	
The following questions ask about what you know on pregnancy			
3.6	A girl has the greatest chance of becoming pregnant in the middle of her menstrual cycle	True…….1 False…….2 Do not know……..3	
3.7	A girl cannot get pregnant the first time she gets	True…….…….1	

	involved in sexual intercourse	False…….…….2 Do not know……..3	
3.8	Abstinence is the safest method to prevent pregnancy.	True…….…….1 False…….…….2 Do not know……..3	
3.9	Adolescent pregnancy is a risk for maternal complication	True……1 False…….2 Do not know……. 3	
The following questions ask on what you know on HIV/AIDs and STI			
3.10	It is possible to cure AIDS	True…….1 False……2 Do not know……3	
3.11	In an HIV positive person, HIV is always present in the blood, semen, and vaginal fluid.	True…….1 False……2 Do not know……3	
3.12	A person with HIV always looks emaciated or unhealthy in some way	True…….1 False…….2 Do not know……....3	
3.13	People can take a simple test to find out whether they have HIV	True…….1 False…….2 Do not know……....3	
3.14	A person can have HIV/AIDS and give it to other people even if the person does <u>not</u> look sick.	True…….1 False…….2 Do not know……....3	

Section 4:Perception of Risk		
4.1	**Perception of the consequences of pregnancy and childbearing**	

a	I am not emotionally ready to be a parent	Yes……1 No……2	
b	Being a teen parent may make it difficult to finish school	Yes……1 No……2	
c	Being a teen parent would keep me from doing many things I like to do	Yes……1 No……2	
d	Getting pregnant at this time in my life is one of the worst that could happen to me	Yes……1 No……2	
e	Having a baby to care of would make me feel loved and needed	Yes……1 No……2	
f	If I had a baby for the first time, I would have something that is really mine	Yes……1 No……2	
g	If I had a baby, I would never be lonely	Yes……1 No……2	
h	If I had a baby my boyfriend would be more committed to me	Yes……1 No……2	
4.2	**Perceived consequences of STDs and HIV/AIDS**		
a	If I got an STD, I would be very embarrassed.	Yes……1 No……2	
b	If I got STD, I would hate to have to tell my partner.	Yes……1 No……2	
c	If I got incurable STD it would mess my life.	Yes……1 No……2	
d	If I got incurable STD, I might need to deal with it for the rest of my life.	Yes……1 No……2	
e	If I got incurable STD, I would worry about infecting others.	Yes……1 No……2	
f			

g	Getting HIV AIDS would really mess my life	Yes……1 No……2	
h	Getting HIV/AIDS might mean that I would have to take lots of pills for the rest of my life.	Yes……1 No……2	
	Getting HIV /AIDS would prevent me from doing many things I want to do.	Yes……1 No……2	
Section 5:Self Efficacy on Sexual Risk Avoidance Behavior			
5.1	I have the ability to abstain from sex until marriage?	Yes……1 No……2 Not sure……3	
5.2	Are you able to avoid sex any time you do not want it even if your partner wants?	Yes……1 No……2 Not sure……3	
5.3	I can discuss sex with me teaches or reproductive health providers?	Yes……1 No……2 Not sure……3	
5.4	I can abstain from sex until am finished with high school	Yes……1 No……2 Not sure……3	
5.5	My boyfriend cannot pressure me into having sex	Yes……1 No……2 Not sure……3	
5.6	If someone I liked a lot wanted me to have sex, I am sure I could say no without hurting her feelings	Yes……1 No……2 Not sure……3	
5.7	If someone I liked a lot wanted me to have sex and threatened to break up with	Yes……1 No……2 Not sure……3	

	me unless I had sex, I am sure I could say no.		

Appendix 7: Focused Group Discussion Guide for Interventional Study on Adolescent sexual behavior

Date……. Time……. School……

Introduction

We are foremost very grateful that you are able to spare some time for this session. The session will last for at most one hour. Most issues that we want to discuss are of importance to young people like you. The discussion will be about various aspects of adolescent sexual and reproductive health.

No	Focus topic	Basic Questions/Probes	Comments
1.	Sexual risk behavior	• Probe 1:People of your age always engage in numerous activities in their free time. What are some of these activities? • Probe 2: What are some of the sexual activities they are involved in? • Probe 3: How do you think these activities can be risky • Probe 4: How do you think young girls can suffer from these activities • Probe 5: What are some of the influences that lead adolescents in the community to become pregnant? • Probe 6: What are some of the influences that prevent them from becoming pregnant?	
2.	Knowledge, attitude and behavior of adolescents	• Probe 1: Do you think there are things that drive an adolescent to get involved in these sexual risk activities • Probe 2: What is the most recommended way of avoiding pregnancy at your age? • Probe 3: Can a girl get pregnant the first time she has sex? Can a girl get pregnant if she has sex only once? • Probe 4: Do you know of any infection one can get by having sexual intercourse? What kind? • Probe 5: Have you heard about AIDS? Do you believe it exists? What is the most recommended way to prevent AIDs among adolescents?	

	Adolescent sexual health interventions	• Probe 1: How do you think these problems of risky sexual health practice can be addressed? • Probe 2: What is currently being done at the community or school level to address adolescent sexual health? • Probe 3: What do you remember to have been covered in the last year? • Probe 4: How have the issues of relationships, sex and/or abstinence ever been addressed in school? • Probe 5: If you had a question about sexual or reproductive health, what would you do? Would you talk to someone about it? If yes who would it be? If no, why not? • Probe 6: What issues on adolescent sexual health do you think should be addressed in school? • Probe 7: What ways/methodology would you like to be used when addressing these issues?	

Appendix 8: Key Informant Interview schedule for Sexual Risk Avoidance study

Serial No.	
Current Responsibility/Position	
Department/Ministry	
Level of Education	
Years of Services	

1. Are you aware of any policy or guideline on adolescent sexual and reproductive health? If yes mention any.
2. Do you have any of the schools? Verify
3. Have you attended any post-basic training on adolescent sexual and reproductive health?
4. If yes, when and where the following area covered during the training?

		Yes	No	Comments
a	Basic RH care			
b	Adolescent physical and sexual growth and			
c	development			
d	Predictors of adolescent sexual behavior			
e	Contraceptive methods, including emergency			
f	contraception			
g	HIV/AIDS			
h	Sexually transmitted infections			
I	Relationship among risk-taking behaviors (e.g.,			
j	sexual activity, smoking, drugs, alcohol)			

5. How long will the training (if a topic was covered?)
6. What adolescent sexual and reproductive health services do you provide in school? Verify data if available.
7. In the last six months, have you yourself or the school provided any sexual and reproductive health counseling to any adolescent girl?

8. Do you or the schools have protocols and guidelines for the following services?

    - Information and counseling on reproductive health, sexuality, and safe sex
    - Testing and counseling services for HIV
    - Pregnancy diagnosis
    - Referral for Treatment for STIs/RTIs
    - Care during pregnancy
    - Care during childbirth
    - Care after childbirth
    - Information and counseling on contraception, including emergency contraception
    - Information and counseling on condoms
    - Care and support to HIV-positive adolescents
    - Care and support to adolescent clients who have been physically or sexually assaulted.

9. How many have been counseled in the last six months?
10. If yes, what area do you cover during the counseling sessions? Do you have any way of documenting this?
11. Which strategy do you advocate for, I mean sexual risk reduction (use of contraceptives) or sexual risk avoidance (abstinence)
12. Would you prefer one for the other and why?

Appendix 9: Data collection tools Pre-Test at Pala Mixed in Kisumu County

PRETEST

HEAD TEACHER CONSENT FORM FOR A STUDY ON INFLUENCE OF SCHOOL BASED SEXUAL RISK AVOIDANCE EDUCATION ON SEXUAL BEHAVIOR AMONG ADOLESCENT GIRLS IN HOMABAY COUNTY, KENYA

I understand that my school's participation in this study will involve supporting the researcher in:

- Identifying a group of students to take part in his study.
- Communication with student, parents and others involved in the study
- Identifying suitable location in which to conduct the interviews.
- Planning for various intervention sessions during the school hours for a period between for 9 to 12 months.
- I understand that my school's participation in this study is entirely voluntary with no direct benefit or incentive of any kind.
- I understand that the students will also be free to withdraw themselves from this study at any time and without giving a reason.
- I understand that I must keep the identity of all students who participate confidential
- I understand that that the identity of students will be treated confidentially by the researcher.
- Understand that all information will be stored anonymously and securely.
- Understand that all information appearing in the final report will be anonymous.
- I understand that I am free to discuss any questions or comments I might have with

The researching team.

I understand that I am free to contact the Kenyatta University Ethics and Review Committee to discuss any complaints I might have.(contact *Chairman :kuerc.chairman@ku.ac.ke or kuerc.secretary@ku.ac.ke or ercku2008@gmail.com*)

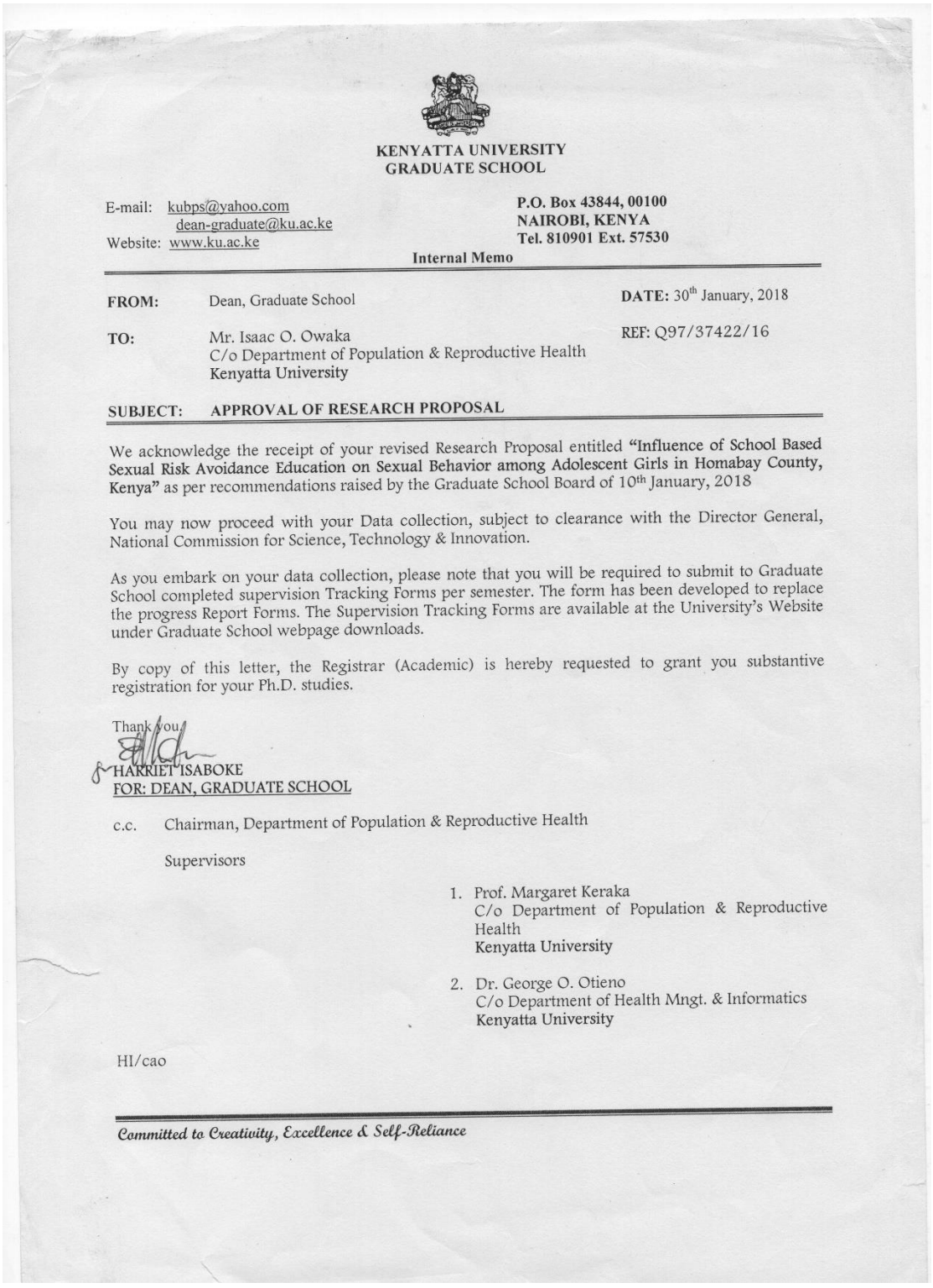
I also understand that at the end of the study I will be provided with additional information and feedback about the purpose of the study.

I, Patrick Ochuma (NAME) consent to the researcher to proceeding with this study.

Signature of Head teacher: ..... Stump PALA MIXED SEC. SCHOOL P. O. Box 38, AWASI

Date: 2/07/2015 Date: Sign:

Appendix 10: Kenyatta University Graduate School Approval



KENYATTA UNIVERSITY
GRADUATE SCHOOL

E-mail: kubps@yahoo.com
dean-graduate@ku.ac.ke
Website: www.ku.ac.ke

P.O. Box 43844, 00100
NAIROBI, KENYA
Tel. 810901 Ext. 57530

Internal Memo

FROM: Dean, Graduate School

DATE: 30th January, 2018

TO: Mr. Isaac O. Owaka
C/o Department of Population & Reproductive Health
Kenyatta University

REF: Q97/37422/16

SUBJECT: APPROVAL OF RESEARCH PROPOSAL

We acknowledge the receipt of your revised Research Proposal entitled **"Influence of School Based Sexual Risk Avoidance Education on Sexual Behavior among Adolescent Girls in Homabay County, Kenya"** as per recommendations raised by the Graduate School Board of 10th January, 2018

You may now proceed with your Data collection, subject to clearance with the Director General, National Commission for Science, Technology & Innovation.

As you embark on your data collection, please note that you will be required to submit to Graduate School completed supervision Tracking Forms per semester. The form has been developed to replace the progress Report Forms. The Supervision Tracking Forms are available at the University's Website under Graduate School webpage downloads.

By copy of this letter, the Registrar (Academic) is hereby requested to grant you substantive registration for your Ph.D. studies.

Thank you.

HARRIET ISABOKE
FOR: DEAN, GRADUATE SCHOOL

c.c. Chairman, Department of Population & Reproductive Health

Supervisors

1. Prof. Margaret Keraka
   C/o Department of Population & Reproductive Health
   Kenyatta University
2. Dr. George O. Otieno
   C/o Department of Health Mngt. & Informatics
   Kenyatta University

HI/cao

Committed to Creativity, Excellence & Self-Reliance

Appendix 11: Ethical Approval of the Study

KENYATTA UNIVERSITY
ETHICS REVIEW COMMITTEE

Fax: 8711242/8711575
Email: kuerc.chairman@ku.ac.ke
kuerc.secretary@ku.ac.ke
Website: www.ku.ac.ke

P. O. Box 43844,
Nairobi, 00100
Tel: 8710901/12

Our Ref: **KU/ERC/ APPROVAL/VOL.1** (143) Date: 20th June, 2018

Owaka Isaac Ogweno
P.O Box 79606
Nairobi

Dear Owaka,

APPLICATION NUMBER: PKU/807/I873 "INFLUENCE OF SCHOOL BASED SEXUAL RISK AVAOIDANCE EDUCATION ON SEXUAL BEHAVIOURS AMONG ADOLESCENT GIRLS IN HOMABAY COUNTY, KENYA"

1. **IDENTIFICATION OF PROTOCOL**

The application before the committee is with a research to **"Influence Of School Based Sexual Risk Avaoidance Education On Sexual Behaviours Among Adolescent Girls In Homabay County, Kenya"** received on 15th January, 2018 and discussed on 20th June, 2018.

2. **APPLICANT**
Owaka Isaac Ogweno

3. **SITE**

Homabay County, Kenya

4. **DECISION**

The committee has considered the research protocol in accordance with the Kenyatta University Research Policy (section 7.2.1.3) and the Kenyatta University Ethics Review Committee Guidelines and **APPROVED that the research may proceed for a period of ONE year from 20th June , 2018.**

5. ADVICE/CONDITIONS

xlv. Progress reports are submitted to the KU-ERC every six months and a full report is submitted at the end of the study.
xlvi. Serious and unexpected adverse events related to the conduct of the study are reported to this committee immediately they occur.
xlvii. Notify the Kenyatta University Ethics Committee of any amendments to the protocol.
xlviii. Submit an electronic copy of the protocol to KUERC.

When replying, kindly quote the application number above.
If you accept the decision reached and advice and conditions given please sign in the space provided below and return to KU-ERC a copy of the letter.

KENYATTA UNIVERSITY OFFICE OF THE CHAIRMAN
20 JUN 2018
ETHICS REVIEW COMMITTEE
P.O. BOX 43844 - 00100 NAIROBI

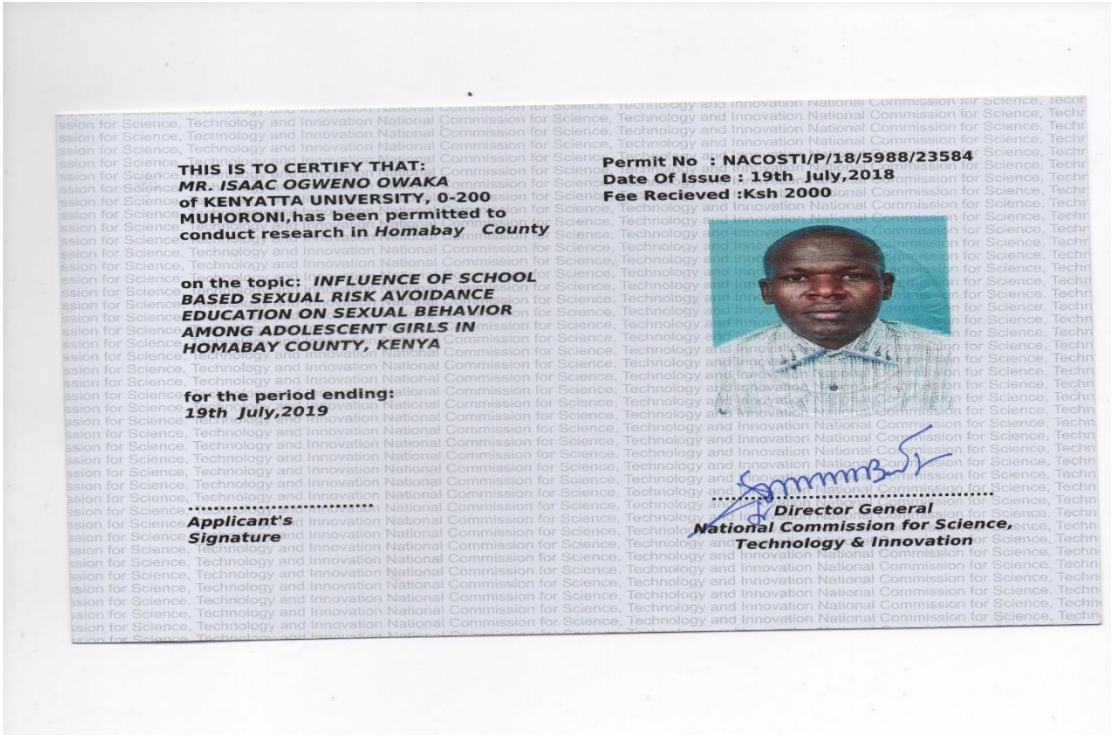
DR. TITUS KAHIGA
CHAIRMAN ETHICS REVIEW COMMITTEE

I .....Owaka Isaac.....accept the advice given and will fulfill the conditions therein.

Signature..... Dated this day of.....20/6/..... 2018.

cc.
DVC-Research Innovation and Outreach

Appendix 12: NACOSTI Research Permit



THIS IS TO CERTIFY THAT:
MR. ISAAC OGWENO OWAKA
of KENYATTA UNIVERSITY, 0-200
MUHORONI,has been permitted to
conduct research in *Homabay County*

on the topic: *INFLUENCE OF SCHOOL BASED SEXUAL RISK AVOIDANCE EDUCATION ON SEXUAL BEHAVIOR AMONG ADOLESCENT GIRLS IN HOMABAY COUNTY, KENYA*

for the period ending:
19th July,2019

.....
Applicant's Signature

Permit No : NACOSTI/P/18/5988/23584
Date Of Issue : 19th July,2018
Fee Recieved :Ksh 2000

.....
Director General
National Commission for Science, Technology & Innovation

Appendix 13: County Director of Education Research Authorization

MINISTRY OF EDUCATION

STATE DEPARTMENT OF EARLY LEARNING AND BASIC EDUCATION

Telegrams: "SCHOOLING" Homa Bay
Telephone + 254722767574
When replying please quote
cdehomabay@gmail.com

COUNTY DIRECTOR OF EDUCATION
HOMA BAY COUNTY
P.O BOX 710
HOMA BAY
DATE: 30TH JULY, 2018

REF.MOE/CDE/HBC/ADM/11/VOL.2/76

MR. ISAAC OGWENO OWAKA.
KENYATTA UNIVERSITY
P.O BOX 43844-00100
NAIROBI.

RE: RESEARCH AUTHORIZATION.

Following your application for authority to carry out research, you have been authorized to undertake research in some Sub Counties within the County on ***"Influence of school based sexual risk avoidance education on sexual behavior among adolescent girls in Homa Bay County, Kenya"*** for the period ending 19th July, 2019.

The purpose of this letter is to request you to accord the team the necessary corporation and assistance that they may require from your end.

Thank you.

COUNTY DIRECTOR OF EDUCATION
HOMA BAY COUNTY
P. O. Box 710 - 40300, HOMA BAY
Email: cdehomabay@gmail.com

MR. SHEM OMBONYO
FOR: COUNTY DIRECTOR OF EDUCATION
HOMA BAY

Cc. County Commissioner - Homa Bay

Appendix 14: County Director of Health Research Authorization

MINISTRY OF HEALTH

Telegrams: "MOH" Homa Bay
TELEPHONE: 21039
When replying please quote

MINISTRY OF HEALTH
HOMA BAY COUNTY
P.O. BOX 52
HOMA-BAY

Ref: No: **HB/CTY/RA/VOL.II/26**

30th July, 2018

TO WHOM IT MAY CONCERN

RE: RESEARCH AUTHORIZATION

This is to allow the bearer of this letter Mr. Isaac Ogweno Owaka, access to our health facilities during his research on "Influence of School Based Sexual Risk Avoidance Education on Sexual Behavior among Adolescent Girls in Homa Bay Kenya".

He is expected t`o adhere to hospital norms and regulations, and involve the Health Management team during the research period. He will share the research finding with the Ministry once it is completed.

Accord him the necessary support he may require.

Thank you.

MINISTRY OF HEALTH
DIRECTOR OF MEDICAL SERVICES
30 JUL 2018
Sign.....
P.O. Box 52-40300 HOMA-BAY

Dr. Gerald Akeche
County Director of Health (A)
HOMA BAY

Appendix 15: County Commissioner Research Authorization

THE PRESIDENCY

MINISTRY OF INTERIOR & CO-ORDINATION OF NATIONAL GOVERNMENT

Telephone: Homa Bay 22104 or 22105/Fax: 22491
E-mail-cc_homabay@yahoo.com
When replying please quote

THE COUNTY COMMISSIONER
HOMA BAY COUNTY
P. O. BOX 1 – 40300
HOMA BAY

REF: ED.12/1/VOL.III/170

30th July, 2018

All Deputy County Commissioners
HOMA BAY COUNTY

RE:RESERARCH AUTHORIZATION: MR. ISAAC OGWENO OWAKA

This is to confirm that the above named student has been authorized to carry out research on ***'Influence of school based sexual risk avoidance education on sexual behavior among adolescent girls in Homa Bay County, Kenya'*** for a period ending 19thJuly,2019 as per permit No.NASCOSTI/P/18/5988/23584 of 19thJuly,2018.

The purpose of this letter is therefore to ask you to assist him where necessary.

TOM M. AKETCH
FOR:COUNTY COMMISSIONER
HOMA BAY COUNTY

Copy to:

THE COUNTY DIRECTOR OF EDUCATION
HOMA BAY

MR. ISAAC OGWENO OWAKA √

Appendix 16: Rachuonyo North Research Authorization

MINISTRY OF EDUCATION

STATE DEPARTMENT OF EARLY LEARNING AND BASIC EDUCATION

Telegrams: "SCHOOLING" Homa Bay
Telephone + 254722767574
When replying please quote
cdehomabay@gmail.com

COUNTY DIRECTOR OF EDUCATION
HOMA BAY COUNTY
P.O BOX 710
HOMA BAY
DATE: 30TH JULY, 2018

REF.MOE/CDE/HBC/ADM/11/VOL.2/76

MR. ISAAC OGWENO OWAKA.
KENYATTA UNIVERSITY
P.O BOX 43844-00100
NAIROBI.

Authorised
31/7/2018

SUB-COUNTY DIRECTOR OF EDUCATION
RACHUONYO NORTH SUB-COUNTY
P.O. Box 195-40301, KENDU-BAY
Sign.....

RE: RESEARCH AUTHORIZATION.

Following your application for authority to carry out research, you have been authorized to undertake research in some Sub Counties within the County on ***"Influence of school based sexual risk avoidance education on sexual behavior among adolescent girls in Homa Bay County, Kenya"*** for the period ending 19th July, 2019.

The purpose of this letter is to request you to accord the team the necessary corporation and assistance that they may require from your end.

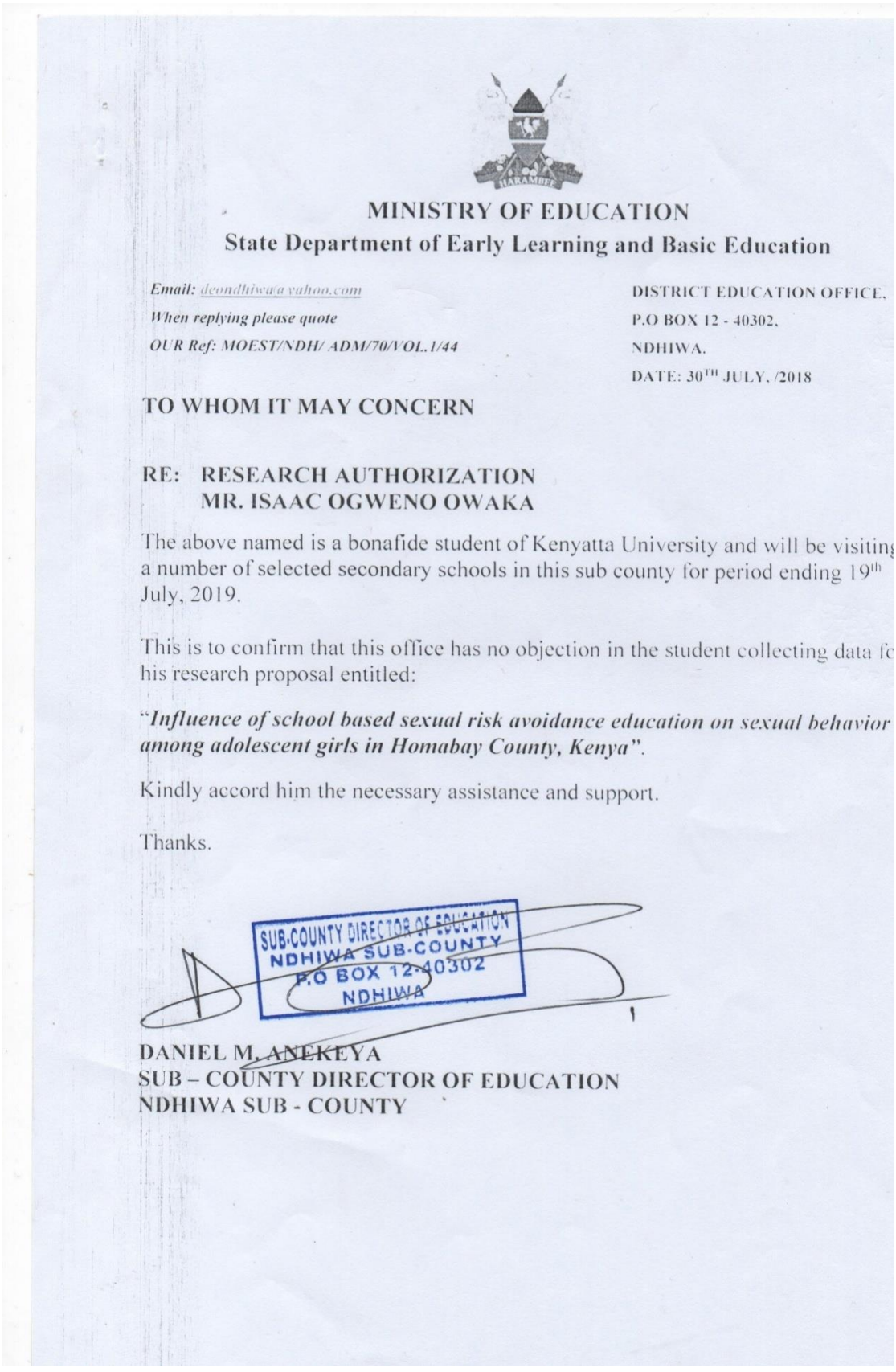
Thank you.

COUNTY DIRECTOR OF EDUCATION
HOMA BAY COUNTY
P. O. Box 710 - 40300, HOMA BAY
Email: cdehomabay@gmail.com

MR. SHEM OMBONYO
FOR: COUNTY DIRECTOR OF EDUCATION
HOMA BAY

Cc. County Commissioner - Homa Bay

Appendix 17: Ndhiwa Research Authorization



MINISTRY OF EDUCATION
State Department of Early Learning and Basic Education

Email: deondhiwa'a yahoo.com
When replying please quote
OUR Ref: MOEST/NDH/ ADM/70/VOL.1/44

DISTRICT EDUCATION OFFICE,
P.O BOX 12 - 40302,
NDHIWA.
DATE: 30TH JULY, /2018

TO WHOM IT MAY CONCERN

RE: RESEARCH AUTHORIZATION
MR. ISAAC OGWENO OWAKA

The above named is a bonafide student of Kenyatta University and will be visiting a number of selected secondary schools in this sub county for period ending 19th July, 2019.

This is to confirm that this office has no objection in the student collecting data fo his research proposal entitled:

"*Influence of school based sexual risk avoidance education on sexual behavior among adolescent girls in Homabay County, Kenya*".

Kindly accord him the necessary assistance and support.

Thanks.

SUB-COUNTY DIRECTOR OF EDUCATION
NDHIWA SUB-COUNTY
P.O BOX 12-40302
NDHIWA

DANIEL M. ANEKEYA
SUB – COUNTY DIRECTOR OF EDUCATION
NDHIWA SUB - COUNTY

Appendix 18: Sample Head teacher Consent form

Head teacher Consent form

Study Title: *Influence of School Based Sexual Risk Avoidance Education on Sexual Behaviour Among Adolescent Girls in Homabay County*

, Kenya

I understand that my school's participation in this study will involve supporting the researcher in:

- Identifying a group of students to take part in his study.
- Communication with student, parents and others involved in the study
- Identifying suitable location in which to conduct the interviews.
- Planning for various intervention sessions during the school hours for a period between 9 to 12 months.

I understand that my school's participation in this study is entirely voluntary with no direct benefit or incentive of any kind.

I understand that the students will also be free to withdraw themselves from this study at any time and without giving a reason.

I understand that I must keep the identity of all students who participate confidential

I understand that that the identity of students will be treated confidentially by the researcher.

Understand that all information will be stored anonymously and securely.

Understand that all information appearing in the final report will be anonymous.

I understand that I am free to discuss any questions or comments I might have with the researching team.

I understand that I am free to contact the Kenyatta University Ethics and Review Committee to discuss any complaints I might have.(contact *Chairman :kuerc.chairman@ku.ac.ke or kuerc.secretary@ku.ac.ke or ercku2008@gmail.com*)

I also understand that at the end of the study I will be provided with additional information and feedback about the purpose of the study.

I, ..BELIA M. ONJAKA..... (NAME) consent to the researcher to proceeding with this study.

Signature of Head teacher: ..... Stump.....

Date: 3/9/2018.....

PRINCIPAL
KAMOLO MIXED SECONDARY SCHOOL
* 03 SEP 2018 *
P. O. BOX 16 - 40301,
KENDU BAY .

Appendix 19: Adolescent Assent form

This Assent Form is for Secondary school-going adolescents aged 15-19 years in Homabay County and who I am requesting to partake in this study. The title of my research is ‘‘*Effectiveness of school-based sexual risk avoidance education on risky sexual behavior among adolescent's girls in Homabay County, Kenya''* The principal investigator is Owaka Isaac, a Ph.D. student at Kenyatta University

Instructions:

The Assent Form in two sections:

- Information part (provides details about the study)
- Certificate of Assent (for acceptance signature if you agree to participate)

You will be provided with a complete form

PART I: Information Sheet

Introduction

My name is _____ and we are conducting a study that asks about sexual and reproductive health of adolescent. I am going to provide information about the study and request your participation in this study. You are free to consult anybody before making a decision to participate in the study. If there are words that you don't understand, kindly ask me to stop and explain. Our team would much grateful for your participation.

Purpose of the research

The study will be determining the effectiveness of school-based Sexual Risk Avoidance Education on sexual behavior among adolescents aged 15-19 years in Homabay County. The outcome of the study will be useful in informing policy direction and programming of intervention to reduce the consequence of risky sexual behavior in Homabay County.

Type of Research Intervention

This research will involve self-administered questions that you will guide to answer by ticking for yourself the options that are true to you and also allowed to skip the questions you are not comfortable to answer.

Participant selection

We are requesting you to participate in this study because you are a student in this school.

Voluntary Participation

Participation in this study is completely voluntary. Whether to participate or not is you right. Whether you choose to participate or not, your normal learning in the school will not be interfered with. If you choose not to participate in this study, your learning experience will be as usual but will tell you more about it later. You may change your mind later and stop participating even if you agreed earlier.

Duration

The study session will take between 30 to 45 minutes to complete

Risks and Side Effects

We are inquiring on very private and personal issues, which you may feel uncomfortable to answer. You have not compelled to answers all the questions or participate in the study. In case you do not respond to some questions, owe nobody apology or explanation.

Benefits

There will not receive anything beneficial, however, your response is will help us find out more about risky sexual behavior in Homabay County.

Reimbursements

There will be no compensation for participating in the study

Confidentiality and Sharing the Results

The information that we collect from this study will be kept confidential. Any information about you will have a number on it instead of your name. Only the researchers will know what your number is and we will lock that information up with a lock and key. It will not be shared with or given to anyone.

Right to Refuse or Withdraw

You do not have to take part in this research if you do not wish to do so and refusing to participate will not affect your learning in any way. You will still have all the benefits that you would otherwise have in the school. You may stop participating in the research at any time that you wish without losing any of your rights as a student.

Who to Contact

If you have any questions you may ask them now or later, even after the study has started. If you wish to ask questions later, you may contact *Owaka Isaac (Principle investigator) on Cell phone: 025870089, Email:owakaros@yahoo.com*

This study has been reviewed and approved by Kenyatta University Ethics Review Committee (KU-ERC), which is a committee whose task it is to make sure that research participants are protected from harm. If you wish to find about more about the KU-ERC, contact *Chairman: kuerc.chairman@ku.ac.ke or kuerc.secretary@ku.ac.ke or ercku2008@gmail.com*Permission has also been granted by the National Council for Science and Technology (NCST).

You can ask me any more questions about any part of the research study if you wish to. Do you have any questions?

PART II: Certificate of Consent

The facilitator has taken through the foregoing information and all issues of concern have been adequately addressed and therefore voluntarily:

Accept ☐
Decline ☐

To participate in the study**.**

Statement by the researcher/person taking consent

The potential participant has been truthfully taken through the information sheet, and to the best of my capability ensured the participant understanding that the following will be done:

1.

2.

3.

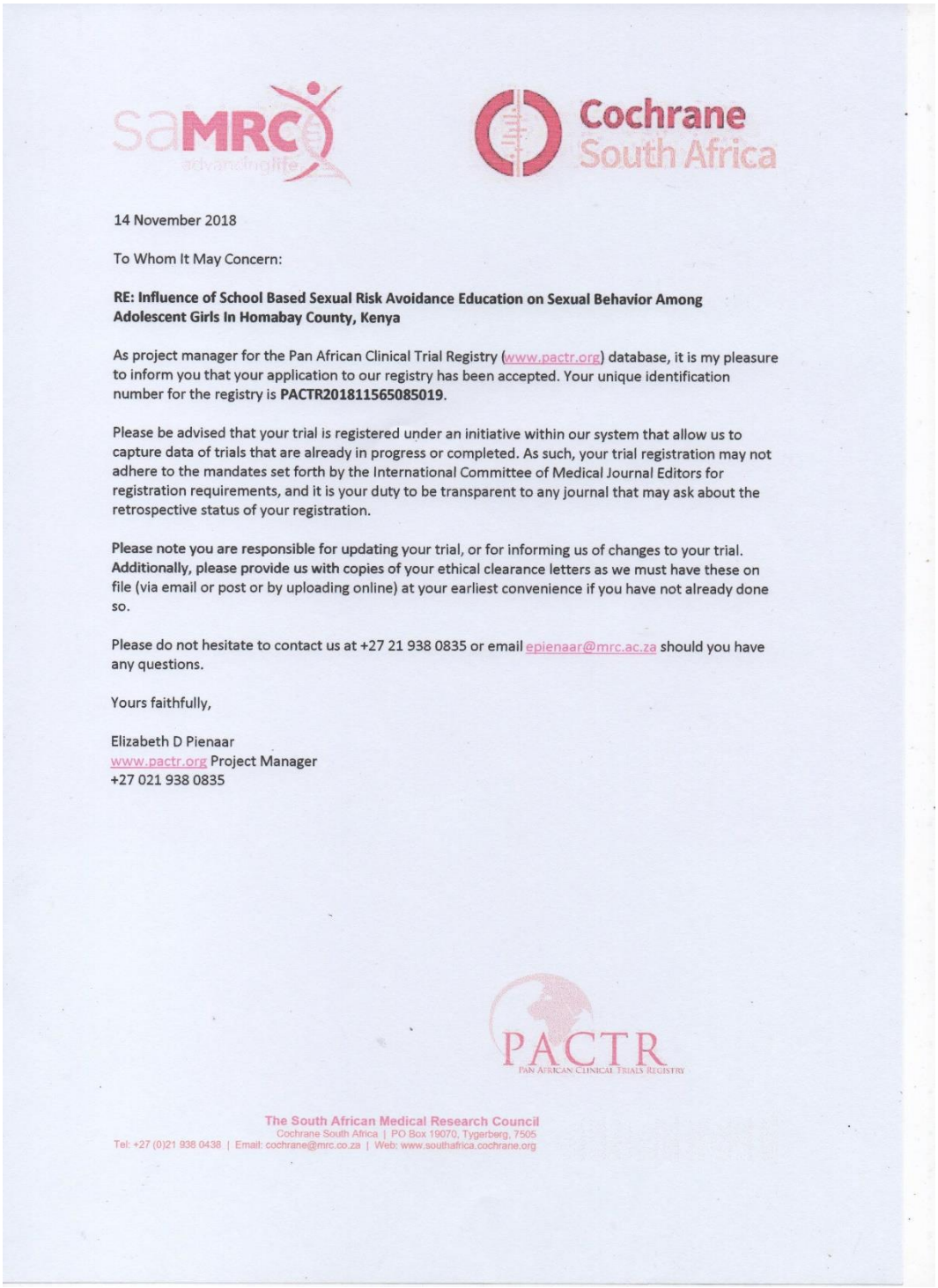
I certify that the respondent will give a chance to raise issues on the study, and all of them were adequately addresses to the best of my knowledge. I certify that the respondent has not been compelled into giving consent, and the consent has been given freely and willingly.

A copy of this ICF has been provided to the participant.

Name of facilitator_____ Signature……
Date _____

Day/month/year

Appendix 20: Clinical Trial Registration



14 November 2018

To Whom It May Concern:

RE: Influence of School Based Sexual Risk Avoidance Education on Sexual Behavior Among Adolescent Girls In Homabay County, Kenya

As project manager for the Pan African Clinical Trial Registry (www.pactr.org) database, it is my pleasure to inform you that your application to our registry has been accepted. Your unique identification number for the registry is **PACTR201811565085019**.

Please be advised that your trial is registered under an initiative within our system that allow us to capture data of trials that are already in progress or completed. As such, your trial registration may not adhere to the mandates set forth by the International Committee of Medical Journal Editors for registration requirements, and it is your duty to be transparent to any journal that may ask about the retrospective status of your registration.

Please note you are responsible for updating your trial, or for informing us of changes to your trial. Additionally, please provide us with copies of your ethical clearance letters as we must have these on file (via email or post or by uploading online) at your earliest convenience if you have not already done so.

Please do not hesitate to contact us at +27 21 938 0835 or email epienaar@mrc.ac.za should you have any questions.

Yours faithfully,

Elizabeth D Pienaar
www.pactr.org Project Manager
+27 021 938 0835

PACTR
PAN AFRICAN CLINICAL TRIALS REGISTRY

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