CAPSTONE PRACTICUM REPORT

Sexual and reproductive health: Educating young adult freshmen on safe sex practice.

By

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Submitted in Partial Fulfillment of the Requirements for the

Master of Science in Global Health Delivery

University of Global Health Equity

Capstone Practicum

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Date: May18th 2018

DECLARATION

I, Jehoshaphat Muzungu, hereby declare that the practicum capstone thesis has been written by me without any external unauthorized help, that it has been neither presented to any institution for evaluation nor previously published in its entirety or in parts. Any parts, words, or ideas in the thesis, however limited, that are quoted from or based on other sources, have been acknowledged as such without exception.

Signature: Date: May 18th 2018

DEDICATION

This practicum capstone thesis is dedicated to all the people that have tenaciously worked to bring about sexual and reproductive health equity in Rwanda.

ACKNOWLEDGEMENT

I am grateful to Dr. Akiiki Bitalabeho and Ms. Jenae Logan, my supervisors who have guided me through this process. I'm also so much grateful to Dr. Rex Wong who set the direction for this study, and was of great help at every stage of executing this practicum project. His advice made this practicum easier and every piece of it was of great value.

My classmates of the MGHD class of 2018 at the University of Global Health Equity (UGHE) have been awesome; it was an honor to attend class with you.

ABSTRACT

Young adults are at great risk of sexual and reproductive health problems such as negative peer influence, substance abuse, lack of enough sexual and reproductive knowledge, lack of access to enough sexual and reproductive services including contraceptives like condoms, and a lack of an environment that enables free expression on sexuality. Understanding the level of sexual and reproductive health knowledge among young people contributes to the control and prevention of negative sexual and reproductive health outcomes including the contraction of STIs/HIV/AIDS, unwanted pregnancies, and unsafe abortion. It also reduces stigma around the utilization of reproductive health services by young adults, and hence encourages open and free access to contraceptive methods.

This study utilized a pre- and post- intervention design to assess the impact of sexual and reproductive health education on the level of knowledge of safe sex practice among young adult freshmen students of the academic year 2017/2018 of IPRC-South, Huye district, Rwanda. A structured questionnaire with closed-ended questions was used to assess the knowledge level of the participants both for the pre- and post intervention tests. Education on sexual and reproductive health, but especially safe sex practice was offered to the participants as the intervention for two weeks. Each class of study participants was taught for two hours on the three topics of the questionnaire: HIV/STIs, Family planning and contraception and sex practices. A hand out containing the correct answers to the questionnaire and other educational materials used during the intervention were provided to the study participants.

Pre- and post- test scores were calculated, and descriptive statistics were used to present the student demographic data using frequencies and percentages. Associations between respondents'

gender, department, sexual activity and religion to the knowledge scores were assessed. All statistical tests were conducted using Microsoft word Excel.

The study found the respondents' overall average pre-intervention knowledge score of 65.4%, which was low. However, the overall average knowledge increased to 83.8%, after the intervention. It was observed that the study participants had high levels of sexual and reproductive health knowledge on the sections of STIs/HIV/AIDS and Family planning & contraception, but had poor knowledge on sex practices; which may be attributable to the lack of consistent sexual and reproductive education programs for the young adults.

The study recommends consistent investment in sexual and reproductive education as it increases sexual and reproductive knowledge, which in turn reduces negative sexual and reproductive health outcomes such as unsafe abortion, unwanted pregnancies, contraction of STIs/HIV/AIDS and others. It is important for the administration of IPRC-South to not only invest in consistent education programs on sexual and reproductive health but also to consider investment in students' sexual and reproductive health in order to increase access to services, including access to contraceptives like condoms, and free counseling and testing.

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CHAPTER ONE: INTRODUCTION

Background

The study was conducted at the Integrated Polytechnic Regional Center – South (IPRC-South), Huye district, Rwanda. IPRC-South is a legally established government institution that acts as the Workforce Development Authority (WDA) base for implementation of Technical and Vocational Education and Training (TVET) in the southern province of Rwanda. Anecdotal evidence showed that the students of IPRC-South perhaps did not have enough information about safe sex practice. Over the past two years, a number of students became pregnant, some contracted infections potentially through sexual activities, and one student died from what was suspected to be a sexually transmitted infection (STI).

Investment in access to sexual and reproductive health services is of great benefits such as saving lives and also reducing government expenditure on maternal and adolescent health (World Health Organization, 2017). Measuring the level of knowledge and attitudes about the practice of safe sex among young adult students can inform IPRC-South how to prioritize their investment in reproductive health services and care for their students.

Prevalence of STIs among young adults in Rwanda

The overall prevalence of STIs among the young adults (defined by the United Nations as people between 15 and 24 years) in Rwanda was 10.8% in 2014 (National Institute of Statistics of Rwanda, 2014), which is high. Inadequate reproductive health knowledge and limited understanding about sexual and reproductive health services and practices, in addition to alcohol and substance abuse, predispose young people to risky sexual behaviors (Ministry of Health,

2015). It is particularly important to measure the knowledge about safe sex practice among young adults because it is at this age that they experience immense sexual experimentation, sex initiation and marriage (Ministry of Health, 2015; Fathalla, M. et al. 2015; National Institute of Statistics of Rwanda, 2014 Blum, K., et al 2009;Simona R., et al, 2009). Young adults are more vulnerable to STIs due to their sexual behaviors as well as challenges of limited options and limited access to reproductive health services like counseling and testing (Ministry of Health, 2015). Understanding the level of knowledge may contribute to the control and prevention of STIs, unwanted pregnancies and HIV/AIDS, reduce stigma around the utilization of reproductive health services by young adults, and hence encourage open and free access to contraceptive services and thus also help in controlling population growth (Ministry of Health, 2015; Brieger, W.R., et al, 2001; Jejeebhoy, 2015; National Institute of Statistics of Rwanda, 2014; Ancheta, R. et al, 2005).

Problem Statement

The level of knowledge about safe sex practice among young adult freshmen of IPRC-South is unknown but presumably low.

Objectives

To measure the safe sex practice knowledge level among young adult freshmen of IPRC-South by February 2018.

To increase the knowledge about safe sex practice among young adult freshmen of IPRC-South by March 2018.

Justification

The study was conducted in the southern province of Rwanda, Huye district at the Integrated Polytechnic Regional Center – South (IPRC-South). IPRC-South offers Technical and Vocational Education and Training (TVET) to mostly young adult Rwandans having technical and vocational education backgrounds from especially technical high schools. IPRC-South has a student population of about 1500 students between the age of 18 and 40 years old; with a ratio of girls to boys of 1:4. A significant number of the students board on campus in single sex dormitories in very close proximity while others board off campus in rented private rooms where some co-inhabit. Young adult students need to be equipped with consistent and accurate information on how to protect themselves from contracting HIV/STIs, unwanted pregnancies and other negative sexual and reproductive health outcomes. This study aimed at increasing knowledge levels of safe sex practice among young adult freshmen students of IPRC-South but also to utilize the findings of the study to make recommendations to the authorities at IPRC-South on what to prioritize as investment in reproductive health services and care for the young adult student population at IPRC-South. The study also sought to provide relevant information to other stakeholders on where to focus energy for future reproductive health education and trainings for young adults.

Organization of the dissertation

This report consists of five chapters. Chapter one contains the general introduction to the study, gives a brief background to the study, the statement of the problem and the objectives of the study. Chapter two explores the available literature on the subject of sexual and reproductive health and especially on safe sex practices. Chapter three discusses the methods used for the

study. It describes in detail the study design, the methods and research tools used and how the data were analyzed. Chapter four shares the results of the study, which are presented in form of tables and graphs. The results are combined from the pre and post intervention of the study. Chapter five is the discussion of the results where the results are explained in relation to the cited literature. Chapter six contains the conclusions made out this study and the recommendations of this study.

CHAPTER TWO: LITERATURE REVIEW

Reproductive Health

Reproductive health is "a state of complete physical, mental and social well being and not merely the absence of disease or infirmity, in all matters relating to the reproductive system and to its functions and processes" (Ministry of Health, 2015). Sexual and reproductive health services include family planning, maternity care, safe abortion, prevention and treatment of STIs and HIV, comprehensive sexuality education, and protection of sexual and reproductive rights (Fathalla, 2015; Govender, et al, 2015; Matasha, E., et al, 1998). In order to maintain sexual and reproductive health, people must be educated and empowered to protect themselves from STIs including HIV and also have access to affordable and acceptable contraception methods of their choice (United Nations Population Fund, 2016).

A review of literature on risk and protective factors that affect adolescent reproductive health in developing countries found that young adults in developing countries are disproportionately affected by negative sexual and reproductive health outcomes (Blum, K., et al 2009). In many developing countries, early marriage and childbearing, unintended childbearing, gender disparities, lack of health awareness programs and services are common (Jejeebhoy, S., et al 2015). Sub-Saharan Africa has the highest HIV prevalence with an estimated 22.5 million people living with HIV in 2011 and a large number of children younger than 15 years with HIV, the lowest contraceptive prevalence rate in the world, the lowest percentage of people with comprehensive correct knowledge of HIV, the highest teenage (15–19 years) fertility rate, the highest maternal mortality rate, and the lowest antenatal care coverage in the world (Marie-Anne Van Stam, et al, 2014). About 19–20% of young women aged 20–24 in developing countries

initiated childbearing before they were aged 18, and many of their pregnancies were unintended (Blum, K., et al 2009). Worldwide, young adults and adolescents are generally uninformed or misinformed about their bodies, sexuality and health promoting behaviors, with just 42% of adolescents in Asia and Sub Saharan Africa displaying ample knowledge of HIV (Jejeebhoy, S., et al 2015).

A study on providing comprehensive health services for young key populations found that young adults with less reproductive health education are less familiar with what constitutes safe sex practice, resulting in lower uptake of sexual and reproductive health services (Delany-Moretlwe, S., et al, 2015). Schools are well placed to deliver sexual and reproductive health education to compliment sexual and reproductive health care found outside of schools (Delany-Moretlwe, S., et al, 2015). Sexual and reproductive education helps young people to increase self esteem and develop life skills that encourage responsible decision making and behaviors through equipping them with more accurate information about human development, reproductive health and information about child birth and STISs/HIV (UNFPA, 2016). Comprehensive sexual and reproductive education does not lead to earlier sexual activity or riskier sexual behaviour(UNFPA, 2016).

Risky/Unsafe sex practices

Most young adults between ages 18 and 24 years with lower levels of education, knowledge and risk perception are more likely to exhibit risky sexual behaviors such as unprotected sex (Delany-Moretlwe, S., et al, 2015). Globally, condom use is inconsistent and varies widely across countries (Blum, K., et al, 2009). Contraceptive use including condoms, among adults in North America was 59% - 75% in 2015 (United Nations, 2015) while condom use in Sub-Saharan Africa was

approximately 20% for men and 10% for women in 2012 (Jukes, M., et al, 2012). Use of condoms was less than 5% among married girls aged 15–19 in South East Asia, Sub-Saharan Africa and South Asia (Blum, K., et al, 2009). The Rwanda Ministry of Health suggested the inability to access condoms in schools was contributing to risky sexual behavior among young adults (Ministry of Health, 2015), leading to unintended pregnancies, contraction of HIV/STIs and illegal abortions (Worku, et al., 2004; Blum K et al., 2009; Chatterji, M., 2005).

Many social and cultural factors including communication taboos on sexuality, exchanging sex for gifts, and inability to negotiate protective behaviors when in relationships with older partners all put young people at greater risk of sexual and reproductive health problems (Jukes, M., et al 2012; National Institute of Statistics of Rwanda, 2014; Remes, P. et al, 2010; Stavrou, 2004). A study in the U.S. by Ancheta et al, showed that communication between parents and young adults around sexuality and reproductive health was insufficient, resulting in lower self-efficacy to negotiate safer sex practice (Ancheta, R., et al, 2005). Other factors like male peer pressure not to use condoms and alcohol and substance abuse also contribute to unsafe sex practices (Remes, P. et al, 2010). It was reported that young people have many misconceptions surrounding the use of condoms, for example: many believe condoms reduce pleasure, condoms get stuck in the female reproductive tract or that condoms prevent pregnancy but not HIV infection (Ministry of Health, 2015; Remes, P. et al, 2010). It has become common knowledge that young adults especially females use condoms mainly for contraception rather than for prevention of STIs or HIV (Ancheta, R., et al, 2005). The Rwanda Demographic and Health Survey of 2014 found that condoms are the most known form of contraception among young people, recognized by 99% of young people (National Institute of Statistics of Rwanda, 2014).

Exploitative relationships with older companions expose young people to unsafe sexual practices. In 2008 in South Africa, 27.6% of young poor women in school engaged in transactional sexual relationships with men more than five years older than them where they exchanged sex for opportunities to gain attention (Madlala, L., et al, 2003; Chatterji, M., 2005; Jukes, et al., 2012; Sallar, A.M., 2009). Young adults who have insufficient knowledge on reproductive health, family planning and effective use of contraceptives like condoms are more likely to engage in multiple partners, pre-marital or extra-marital sexual relations to (Delany-Moretlwe, S., et al, 2015; Blum, K., et al 2009;Simona R., et al, 2009; Jukes, M., et al 2012; Blum, K., et al 2009).

Safe sex practices

Many methods that included raising awareness about one's HIV/STIs status and that of their sexual partner, having single sex partner, and abstinence were proposed to promote sexual and reproductive health (National Institute of Statistics of Rwanda, 2014; Ministry of Health, 2015; Brieger, W.R., et al, 2001; Jejeebhoy, 2015). Consistent use of condoms during intercourse is by far the most widely recommended method and many programs have suggested condoms should be provided as a matter of priority (Bachorik, A., et al, 2015; Ministry of Health, 2015; National Institute of Statistics of Rwanda, 2014; Sinead Delany-Moretlwe, et al, 2015; Blum, K., et al, 2009; Germain, A., et al, 2015). In Portugal, schools are even required by law to have condoms available through vending machines (Kismödi, E., et al, 2015).

Sexual and reproductive education for young adults can reduce unintended pregnancies, delay sexual debut, and reduce sexual risk taking (Kismödi, E., et al, 2015). There were 71% of unmarried young adults that were sexually active in Rwanda by 2014 (National Institute of

Statistics of Rwanda, 2014). A randomized controlled trial in Nigeria and Ghana found that peer education about sexual and reproductive health among sexually active adolescents led to increased knowledge, increased use of contraceptives, increased willingness to buy contraceptives and increased self-efficacy in contraceptive use (Brieger, W.R., et al, 2001). Other studies also found reproductive health education can delay first sex experience, reduce the number of young adults having multiple sex partners, increase in practicing pregnancy prevention and increase in the practice of protected sex (Mba, C. I., et al 2007; Hendriksen, E.S., et al, 2007). The Rwanda health demographic survey found that 68.8% of young adults had comprehensive knowledge about HIV/AIDS while 99.9% had heard of HIV/AIDS (National Institute of Statistics of Rwanda, 2014). A study in Tanzania also found that reproductive education in schools did not increase sexual activity among adolescents (Obasi, A. I., et al, 2006). However, one study found that early reproductive health education from parents was associated with having more sexual partners among young female adolescents because most parents' education efforts were mostly reactive to the increasing sexual risk behavior of their children (Ancheta, R., et al, 2005).

Sexual and reproductive health services in Rwanda

Access to sexual and reproductive health services for adolescents and young adults is generally limited across Sub Saharan Africa (Jejeebhoy, et al, 2015), but such services are provided in all health facilities in Rwanda (Ministry of Health, 2015). In Rwanda, even health facilities with a religious background, which cannot provide such services within their premises, have set up access points for these services outside of their premises (Ministry of Health, 2015; Govender, et al, 2015). Many young adults in Rwanda still consider reproductive health services as only permissible to adult and married people despite the availability of such services (Ministry of Health, 2015; Basinga, P., et al, 2012).

While education about reproductive health services maybe available in schools, there is no effective and sustainable interventions for out of school young adults, the lack of enough youth friendly services and products in health facilities, youth centers and schools can contribute to a higher prevalence of STIs in rural areas (Ministry of Health, 2015; Kismödi, E., et al, 2015).

Gap in literature

Most cited studies on this topic have been conducted among adolescents between the age of 12 and 19 (South African Department of Health, 2012). Furthermore, studies on sexual and reproductive health education are mostly conducted among the general population and with emphasis on STIs and HIV/AIDS. This study however, aimed to document the impact of sexual and reproductive health education on the level of knowledge of safe/risky sex practices among young adult college freshmen aged 18-24 years of IPRC-South. There is no such study as this that was found conducted on college students.

CHAPTER THREE: METHODS

Setting

The study was conducted at the Integrated Polytechnic Regional Center – South (IPRC-South). IPRC-South is a legally established government institution that acts as the Workforce Development Authority (WDA) base for implementation of Technical and Vocational Education and Training (TVET) in the southern province of Rwanda. IPRC-South is located in Butare sector, Huye district, Rwanda; and is mandated to offer TVET programs and supervise and coordinate all TVET institutions in the Southern Province of Rwanda. IPRC-South has a student population of about 1500 students, ages 18 to 40 years, with a female: male ratio of 1:4.

Design

This study utilized a pre- and post-intervention design to assess the impact of sexual and reproductive health education on the level of knowledge of safe sex practice among freshmen students of the academic year 2017/2018 of IPRC-South. The pre-test was conducted in December 2017 and the post-test was conducted at the end of March 2018 after the intervention. The intervention was conducted for two weeks in March 2018.

Sample

The sample for this study was freshmen of the academic year 2017/2018 of IPRC-South pursuing technical education for the award of advanced diploma in a technical trade. All other students who were not freshmen or aged 25 years or above, were excluded from the study. This is because 18-24 years is the age range to which most freshmen belong.

There were 360 freshmen students that participated in the pre-intervention test in order to obtain the baseline data on safe sex practice knowledge. Sexual and reproductive education on safe sex practice was given as an intervention to all freshmen classes by March 2018 and was followed by a post-intervention test to measure the increase in safe sex practice knowledge. The intervention was provided to all the enrolled freshmen from all departments: Information and Communications Technology (ICT), Electrical and Electronics Engineering (EEE), Construction Engineering, Crop production, Veterinary technology and Mechanical Engineering.

Measure(s)

The study measured baseline and post-intervention sexual and reproductive health knowledge among young adult freshmen students of IPRC-Sooth, as well as the percentage of sexual and reproductive health knowledge change from pre- to post- intervention.

Data collection Method

Data was collected after obtaining consent from the administration of IPRC-South. The principal investigator introduced the research topic and the objective of the study to all participants during their class time. Written consent were obtained from those willing to participate in the study. The principle investigator was available to address any questions before consent was signed. After

obtaining consent from the study participants, the pre-test was administered in December 2018 using a questionnaire to obtain baseline knowledge levels. The same questionnaire was used during the post intervention test, which was conducted at the end of March 2018; to measure the knowledge increase after the intervention was administered.

Data collection tools

A structured questionnaire with close-ended questions was used to assess the knowledge level of the participants. The same questionnaire was used in both pre- and post-test. The questionnaire was developed and administered in English. The questionnaire contained 25 true or false questions that were formulated based on the available literature and grouped into three sections:

1. Family planning & contraception
2. STIs/HIV/AIDS
3. Safe/risky sex practices

All questions were worth one point (no partial credit awarded) and the final score, considered the knowledge level, was presented as a percentage of correct answers out of the 25 questions. The questionnaire was first tested using non-freshmen respondents who were not part of the sample population. In order to uphold confidentiality, and to ensure that the data was not identifiable no names or any other identifiers were collected. The questionnaire only collected the demographics of gender, age and religion. No participant profiles were collected.

Data collectors

Two research assistants who were colleagues of the principal investigator assisted in distributing and collecting questionnaires. A one-day training on the objectives of the study, the relevance of the intervention, the informed consent process, and upholding the privacy and confidentiality of the study participants and data, was provided to the research assistants by the principal investigator. A professional counselor (a licensed clinical psychologist) with experience about HIV/STIs prevention among the young adults delivered the intervention, which she co-designed with the principal investigator.

Data management

The principal investigator aggregated the data in Microsoft excel for analysis. The collected data was not identifiable and was safely stored in a computer protected with a strong password. The collected data shall be stored for ten years.

The Intervention

Education on sexual and reproductive health, but especially safe sex practice was offered to the participants as the intervention. The intervention took two weeks. Each class of participants received the intervention in their last afternoon session everyday, and was taught for two hours on the three topics of the questionnaire: HIV/STIs, Family planning and contraception and sex practices. One day after receiving the intervention, each class was given a post-intervention test. A hand out containing correct answers to the questionnaire, plus other educational materials that were used during the intervention were all provided to the study participants after the post-test. There was a space of two months between the pre-test and the intervention and just one day

between the intervention and the post-test. The big space of time between the pre-test and the intervention was because the students had gone on recess between January and February 2018.

Data Analysis procedure

Descriptive statistics were used to present the student demographic data as frequencies and percentages. Microsoft excel was used to analyze the mean difference between the overall pre- and post-intervention knowledge scores of the respondents and the knowledge scores of each section of knowledge. The knowledge scores of each gender, department, respondents' sexual activity and religion were also analyzed.

CHAPTER FOUR: RESULTS

A total of 378 freshmen students from the departments of Information and Communications Technology (ICT), Electrical and Electronics Engineering (EEE), Construction, Mechanical Engineering, Crop production and Veterinary Technology of IPRC-South were enrolled in the pre-test before an intervention was conducted to measure the safe sex practice knowledge level among young adult freshmen of IPRC-South. 360 participants meeting the inclusion criteria completed the pre-test while 341 participants meeting the inclusion criteria completed the post-test after receiving the intervention. Post-intervention data was collected to measure the impact of the intervention.

More than three quarters of the participants in the pre-test were male (n=280, 78.0%) while the rest were female (n=80, 22.0%). During the post-test, the number of males dropped to 256 (75.0%) while the number of females slightly increased to 85 (25.0%). Less than a half of the respondents (n=151, 42.0%) reported they were sexually active during the pre-test. However, the number of respondents that reported they were sexually active more than doubled after the intervention (n=310, 91.0%). The number of participants from each religion slightly increased between the pre and post intervention data. There was also a slight change in the number of respondents from the different departments between the pre and post intervention tests.

Table 1 shows the demographic characteristics of the participants.

Table 1: Demographic characteristics of the participants

CHARACTERISTIC	Pre-test N (%)	Post-test N (%)
SEX		
Male	280 (78%)	256 (75%)
Female	80 (22%)	85 (25%)
SEXUAL ACTIVITY		
Active	151 (42%)	310 (91%)
Not Active	209 (58%)	31 (9%)
RELIGION		
Adventist	58 (16%)	52 (15%)
Anglican	30 (8%)	27 (8%)
Catholic	169 (47%)	174 (51%)
Other	103 (29%)	88 (26%)
DEPARTMENT		
Construction	60 (17%)	71 (21%)
Crop	55 (15%)	31 (9%)
EEE	93 (26%)	75 (22%)
ICT	57 (16%)	63 (18%)
Mechanical	30 (8%)	35 (10%)
Veterinary	65 (18%)	66 (19%)

Table 2 presents the average knowledge scores according to the demographic characteristics of the study participants.

Table 2: Average knowledge scores according to demographic characteristics of the participants

CHARACTERISTICS	Pre-intervention n (% mean)	Post-intervention n (% mean)	Mean difference
SAMPLE SIZE	360	341	N/A
SEX			
• Male	280 (66.6%)	256 (84.3%)	17.7%
• Female	80 (63.8%)	85 (83.1%)	19.3%
SEXUAL ACTIVITY			
• Active	151 (66.3%)	310 (83.6%)	17.3%
• Not Active	209 (65.1%)	31 (84.3%)	19.2%
RELIGION			
• Adventist	58 (65.0%)	52 (84.3%)	19.3%
• Anglican	30 (62.3%)	27 (83.9%)	21.6%
• Catholic	169 (66.7%)	174 (84.2%)	17.5%
• Other	103 (66.6%)	88 (82.9%)	16.3%
DEPARTMENT			
• Construction	60 (65.0%)	71 (84.8%)	19.8%
• Crop	55 (69.4%)	31 (83.9%)	14.5%
• EEE	93 (63.4%)	75 (82.3%)	18.9%
• ICT	57 (61.5%)	63 (84.4%)	22.9%
• Mechanical	30 (61.0%)	35 (78.6%)	17.6%
• Veterinary	65 (73.0%)	66 (86.8%)	13.3%

The overall average knowledge score increased from 65.4% pre-intervention to 83.8% post-intervention.

Of all the subsections of sexual and reproductive health knowledge, participants had the highest knowledge of STIs/HIV/AIDS (compared with family planning & contraception or sex practices). Both pre and post knowledge scores on HIV/AIDS/STIs were highest among the three categories. In the pre-test, study participants scored an average of 75.3% on knowledge of STIs/HIV/AIDS, which increased to 87.2% after the intervention. Participants had moderate knowledge of family planning and contraception with a knowledge score of 61.4% pre-intervention, and it significantly increased to 81.9% after the intervention. Knowledge of sex practices had the lowest score of 59.6%, and it significantly increased to 82.0% after the intervention.

Table 3 shows the average knowledge scores per section for both the pre and post-test.

Table 3: Combined average Pre & Post test scores by Department

Knowledge scores	Pre-test (% mean)	Post-test (% mean)	Change
• Overall	65.4%	83.8%	18.4%
• Family planning & Contraception	61.4%	81.9%	20.5%
• STIs/HIV/AIDS	75.3%	87.2%	11.9%
• Sex practices	59.6%	82.0%	22.4%

The figure 1 below compares the overall average knowledge scores between the pre and post-tests in each department.

Figure 1: Combined averages of Pre/Post test scores by Department

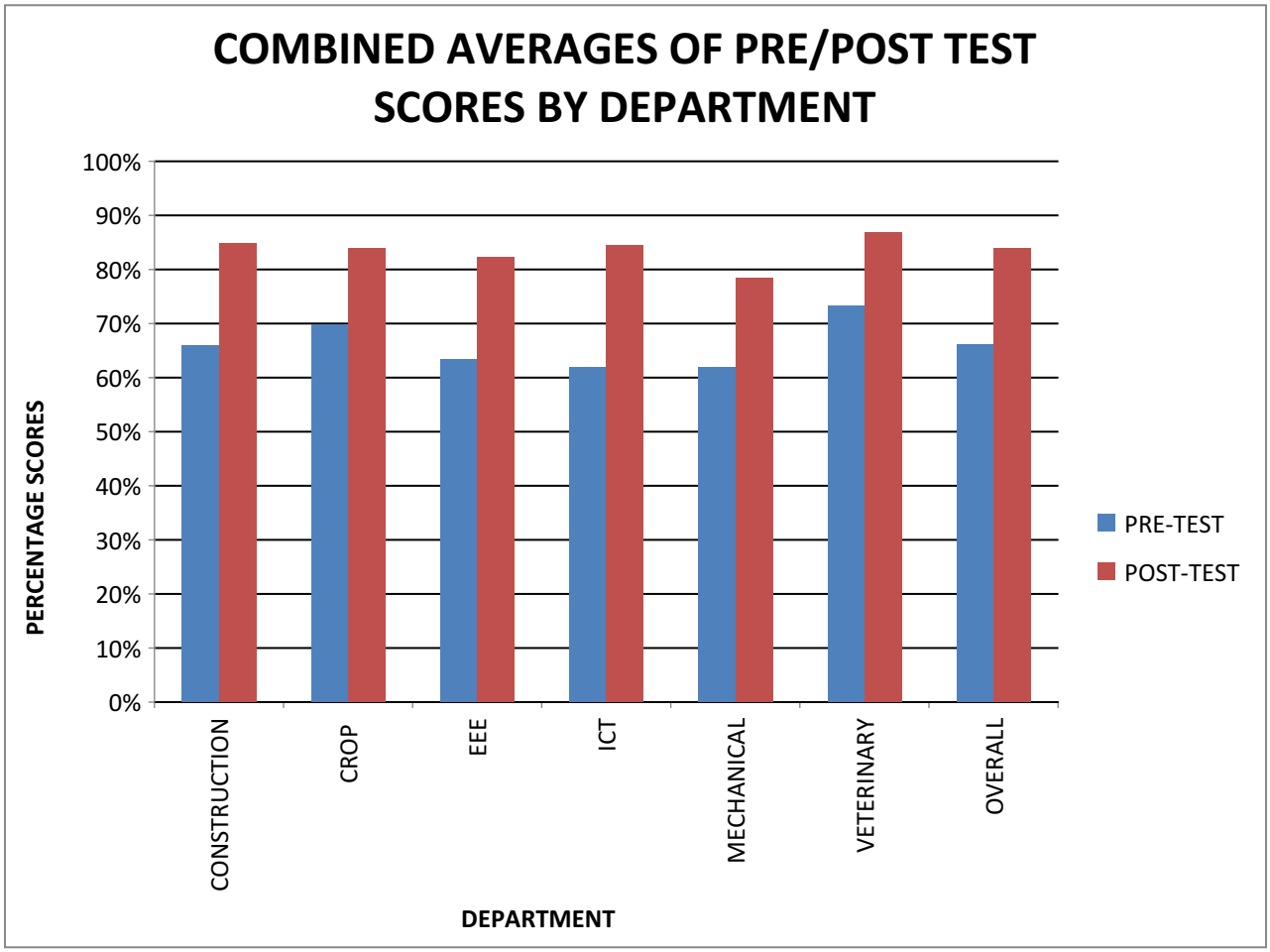
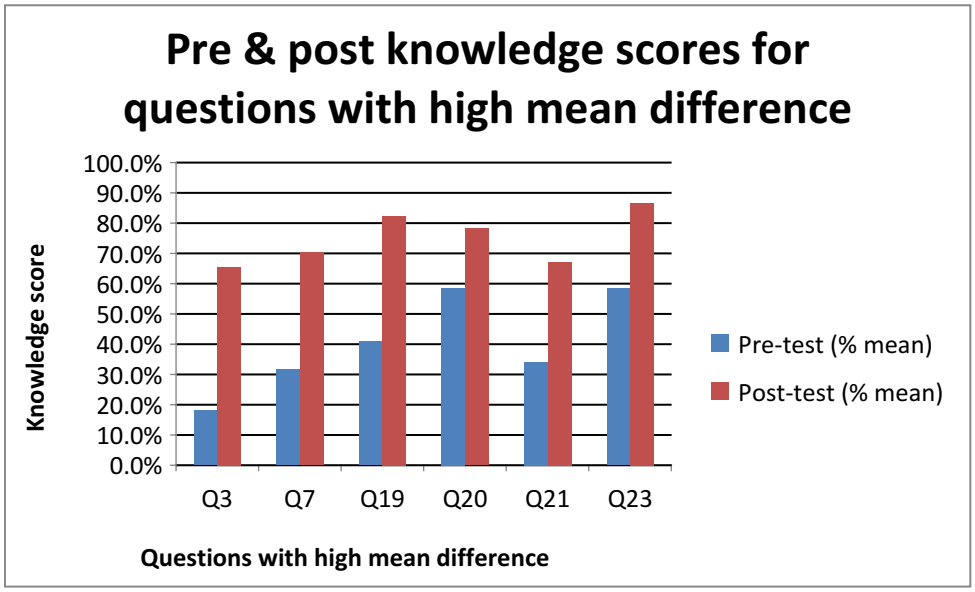


Table 4: Pre & post knowledge scores per question

Question scores	Pre-test (% mean)	Post-test (% mean)	Mean difference
Q1	80.6%	90.40%	9.8%
Q2	78.3%	89.50%	11.2%
Q3	18.1%	65.4%	47.4%
Q4	61.4%	79.7%	18.3%
Q5	58.6%	74.1%	15.5%
Q6	74.4%	87.8%	13.4%
Q7	31.7%	70.3%	38.7%
Q8	91.9%	91.6%	-0.3%
Q9	72.4%	84.3%	11.9%
Q10	83.9%	87.8%	3.9%
Q11	69.7%	90.7%	21.0%
Q12	78.1%	84.0%	6.0%
Q13	78.9%	89.5%	10.6%
Q14	85.0%	89.0%	4.0%
Q15	91.1%	90.7%	-0.4%
Q16	67.2%	85.2%	18.0%
Q17	63.3%	78.8%	15.5%
Q18	67.8%	82.0%	14.2%
Q19	40.8%	82.3%	41.4%
Q20	58.6%	78.2%	19.6%
Q21	34.2%	67.2%	33.0%
Q22	66.7%	77.6%	10.9%
Q23	58.3%	86.6%	28.3%
Q24	75.3%	87.2%	11.9%
Q25	64.7%	87.5%	22.8%

Figure 2 below shows pre and post knowledge scores for questions with high mean difference.

Figure 2: Pre & post knowledge scores for questions with high mean difference



KEY

Q3: Friends should be the main source of information on sexual and reproductive health.

Q7: Sexually transmitted Infections (STIs) are genetic diseases that can be spread from one person to another.

Q19: Having multiple sexual partners is a risky sex practice.

Q20: Using unreliable birth control methods like the withdrawal method is a risky safe practice.

Q21: Masturbation is a risky sex practice.

Q23: Non-penetrative sex is a safe sex practice.

CHAPTER FIVE: DISCUSSION

Discussion

The overall average knowledge of the participants increased by 18.4% from 65.4% in the pre-test to 83.8% in the post-test. This means that sexual and reproductive health education increases sexual and reproductive knowledge. Brieger et al. (2001) found a similar trend that sexual and reproductive health education among sexually active young people not only led to increased knowledge, but also increased use of contraceptives, increased willingness to buy contraceptives, increased self-efficacy in contraceptive use and increased awareness about STIs and HIV/AIDS. Increase in sexual and reproductive knowledge leads to delay of sexual debut, reduces the number of unintended pregnancies, and reduces sexual risk taking (Kismödi, E., et al, 2015).

The study participants had more knowledge on STIs/HIV/AIDS than family planning & contraception or sex practices. In both the pre and post-test, the study participants had more knowledge on STIs/HIV/AIDS than on other components of sexual and reproductive health. This is probably because past education efforts have focused more on prevention of STIs/HIV/AIDS as the most critical component of sexual and reproductive education for adolescents and young adults (Marie-Anne Van Stam, et al, 2014). The Rwanda Demographic and Health Survey of 2014 found that while 99.9% of young adults have heard of HIV/AIDS, only 68.8% had comprehensive knowledge about HIV/AIDS (National Institute of Statistics of Rwanda, 2014), including family planning and contraception and safe sex practice. After the intervention was implemented in this study, the average STIs/ HIV/AIDS knowledge score increased by 11.9% to 87.2%.

Respondents had moderate knowledge about family planning and contraception with 61.4% average score pre-intervention, which significantly increased by 20.5% to 81.9% post-intervention. This could suggest that young adults have been undereducated about family planning and contraception. Condoms have been the most common method of contraception among young people in Rwanda (National Institute of Statistics of Rwanda, 2014) and as such, condoms have been understood more as a method for contraception than for prevention of STIs or HIV (Ancheta, R., et al, 2005). Education on other family planning and contraception methods provides alternatives to condoms, and therefore makes young people to have choice of methods of contraception.

Respondents had the lowest knowledge level related to sex practices, with an average knowledge score of 59.6% pre-intervention, which significantly increased by 22.4% to 82.0% after the intervention. A study in South Africa showed that young adults do not have comprehensive knowledge on what constitutes safe sex (Delany-Moretlwe, S., et al, 2015). Some young adults because of cultural and religious beliefs and influences broadly misunderstand sex practices known to be safe such as the use of condoms or masturbation (Shefer, T., et al, 2012). For example, only 34.2% of the respondents considered masturbation a safe sex practice at the pre-test, which only increased to 67.2% after the intervention. Only 74.4%% of the respondents considered condoms as a method of contraception other than for prevention of STIs/HIV/AIDS, which only increased to 87.7% after the intervention. This means that young adults lack adequate knowledge on family planning and contraception methods. Resistance from religious institutions toward the use of condoms as a method of contraception may also reinforce misunderstandings of condom use as a method of contraception. The Catholic Church for example, has openly opposed the use of condoms as a method of contraception in the past, which makes a number of

young adults to consider condom use more for the purposes of prevention of STIs/HIV/AIDS than for contraception (Ferrari, 2011). Transactional sex and certain birth control methods were other sex practices misunderstood by young adults. Only 64.7% of young adults in this study considered transactional sex a risky sex practice, which increased to 87.5% after the intervention while only 58.6% considered the use unreliable birth control methods such as the withdrawal method to be a risky sex practice, which increased to 78.2% after the intervention.

This study found that participants had high levels of sexual and reproductive knowledge on STIs/HIV/AIDS and family planning & contraception, but have poor knowledge of proper practices. This may be due to the lack of regular and consistent sexual and reproductive health education programs among young adults of reproductive age on practicing safe sex. Consistent sexual and reproductive education may raise awareness among young people about the negative sexual and reproductive health outcomes such as unwanted pregnancies, unsafe abortion, contraction of STIs and HIV/AIDS and others.

Males had higher average sexual and reproductive knowledge in both the pre-test (66.6%) and post-test (84.3%) than females who scored an average of 63.8% and 83.1% in the pre and post-test respectively. Traditional gender roles that give men more cultural dominance on sexuality than the women cause young women to shy away from sexuality matters. However, females had a higher knowledge increase (19.3%) between the pre and post-test compared to the knowledge increase among males (17.7%).

Only 42.0% (n=151) of the respondents reported they were sexually active at the time of the pre-test. However, the number of respondents who reported they were sexually active after the intervention more than doubled to 91.0% (n=310). This could have been due to social desirability

bias toward answering the question with what the respondents thought was the right answer than what was true about them during the pre-test. After the intervention, respondents may have felt more comfortable to reveal their sexual behavior. This shows there is increased sexual activity among young adults in college and hence the need to put up stronger mechanisms for the prevention of STIs/HIV/AIDS among college going young people. Sexually active respondents had a higher sexual and reproductive knowledge score (66.5%) than the sexually not active (65.3%) at the time of the pre-test. However, the sexually not active respondents had a slightly higher average knowledge score (84.3%) than the sexually active (83.6%) after the intervention, compensating for the earlier knowledge deficit among the sexually not active. Sexually not active respondents were more likely to be the most focused and more engaged through asking of questions during the delivery of the intervention.

Across religions, average knowledge scores were similar between the pre-test and the post-test. However, Anglicans had the highest knowledge increase between the pre-test and post-test (21.6%), followed by Adventists (19.3%), Catholics (17.5%) and Other religions (16.3%). The term “other religions” includes all the other Christian denominations such as the Pentecostals, Evangelicals, Baptists, Jehovah’s witnesses plus the five Muslim respondents that were found among the study participants. Religion plays a role in the dissemination of sexual and reproductive knowledge among young adult congregants through church sermons, youth seminars and debates. For example, the Catholic Church’s controversial opposition to the use of condoms as a method of contraception (Ferrari, 2011) has created a platform for debate among young adults of different denominations, which has stimulated peer sexual and reproductive health education among young people although the debates may not be entirely accurate. This might explain why in the pre-test, 82% of the respondents reported that friends should be the

main source of information on sexual and reproductive health, and 58.6% of the respondents viewed masturbation as a risky sex practice.

The educational background of the respondents may have impacted their level of sexual and reproductive knowledge. In the pre-test, departments where the respondents have had prior exposure to biological education, that is, Veterinary technology and Crop production, had higher sexual and reproductive health knowledge scores (73.0% and 69.4% respectively) than departments where respondents have had no prior exposure to biological education, that is to say, 61.0% for Mechanical engineering, 61.5% for ICT, 63.4% for EEE and 65.0% for Construction. These scores considerably increased after the intervention to 78.6% for Mechanical Engineering, 84.4% for ICT, 82.3% for EEE, 84.8% for Construction, 83.9% for Crop production and 86.8% for Veterinary technology. However, ICT had the highest knowledge increase between the pre and post-test (22.9%), followed by Construction (19.8%), EEE (18.9%), Mechanical (17.6%), Crop (14.5%) and Veterinary (13.3%).

Limitations of the study

One of the limitations of this study was that the impact of the intervention was assessed one day after the intervention, which means the knowledge conveyed to the respondents might have been still fresh in the minds of the respondents.

Another limitation of this study is that by study design, the research tool did not identify the study participants which made it impossible to match a single participant's pre-test score to their post-test score and thus making it difficult to track individual progress or even to prove the statistical significance of the study findings using the required data analysis methods such as the paired T-test since the data was not paired. Also, given the vast knowledge taught about sexual and reproductive in general, the questionnaire only tested knowledge increase on the selected areas of HIV/AIDS/STIs, family planning & contraception and sex practices.

There was social desirability bias from the respondents. While answering sensitive questions such as whether they were sexually active or not, most respondents' responses could be biased toward what they thought was the right answer than what was true about them personally. This explains why only 42.0% of the respondents reported they were sexually active during the pre-test, but after the intervention the number of sexually active respondents skyrocketed to 91.0%.

Finally, this study did not assess the impact of the increase in safe sex practice knowledge on the change in sexual behavior among the participants. A mere increase in knowledge about safe sex practice does not guarantee that there will be change in the participants' sexual behavior. Therefore, this study could be followed up with another study to assess the impact of the increased safe sex practice knowledge on the change in sexual behavior.

CHAPTER SIX: CONCLUSION

Conclusion

From the study results, it can be observed that young adult students at IPRC-South have high levels of sexual and reproductive knowledge on STIs/HIV/AIDS than Family planning & contraception or safe sex practices. Students have poor knowledge of safe sex practice. However, provision of regular sexual and reproductive health education could improve the level of knowledge of sexual and reproductive health. Regular education on the practice of safe sex among college going young adults increases knowledge on the practice of safe sex.

Future further extensions of this project

In future, this study can be built upon to determine the impact of sexual and reproductive health education, and the resulting changes in sexual and reproductive knowledge, on sexual behavioral change of young adults in college.

Recommendations

This study recommends that IPRC-South administration provides regular and consistent sexual and reproductive health education programs with particular emphasis on safe sex practice to the young adult students of IPRC-South. Regular sexual and reproduction health education increases sexual and reproductive knowledge, which in turn reduces negative sexual and reproductive health outcomes such as unsafe abortion, unwanted pregnancies, contraction of STIs/HIV/AIDS and others (Kismödi, E., et al, 2015; Mba, C. I., et al 2007; Hendriksen, E.S., et al, 2007). It is important for the administration of IPRC-South to invest in regular and consistent sexual and reproductive health education efforts for their young adult student population for at least once per semester. The administration of IPRC-South should also consider serious investment in sexual and reproductive health for their young adult student population in order to increase access to sexual and reproductive services such as provision of free and increased access to contraceptives like condoms, and free counseling and testing.

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APPENDICES

Appendix 1: Research tool

Dear respondent,

This survey is testing knowledge levels about safe sex practices among young adult freshmen of IPRC-South. It will take approximately 20 minutes to complete and the information obtained will be kept confidential. You are allowed to skip any question and may stop at any time.

1. Your age_____years
2. Your gender (Tick your gender)

   □ Male □ Female

3. Religion (Tick your religion)

□ Catholic □ Pentecostal □ Seventh Day Adventist □ Muslim

□ Anglican

□ Others (Please specify) _____

Tick in the True box where the statement is True, or in the False box where the statement is False.

		True	False
	Section A:		
A1	Providing information, education and counseling on healthy human sexuality is a component of sexual and reproductive health.	□	□
A2	Pregnancy prevention and child spacing are not part of family planning.	□	□

A3	Friends should be the main source of information on sexual and reproductive health.	□	□
A4	Family planning is for married couples only.	□	□
A5	Prevention and treatment of unsafe abortion is part of sexual and reproductive health.	□	□
A6	Condoms are not a method of contraception.	□	□
	SECTION B:		
B1	Sexually transmitted Infections (STIs) are genetic diseases that can be spread from one person to another.	□	□
B2	Acquired Immunodeficiency Syndrome, AIDS is caused by the Human Immunodeficiency Virus, HIV.	□	□
B3	Treatment of reproductive tract infections and STIs is a component of sexual and reproductive health.	□	□
B4	Discharge, strong odor, itching of the vagina or of the penis, and pain during intercourse or urination; are symptoms of STIs.	□	□
B5	Chlamydia, Hepatitis B and C, Syphilis, Genital Herpes, and HIV/AIDS are some commonly known STIs.	□	□
B6	Cancers, skin disorders and upper respiratory tract infections are examples of sexually transmitted diseases.	□	□
B7	STIs or HIV/AIDS can be transmitted through needles and syringes, genital secretions, breast milk, and in utero transmission among others.	□	□
B8	Counseling on safer sexual behavior and providing information on STIs reduces the risk of HIV/STIs infections.	□	□

B9	Abstinence, mutual fidelity and using condoms are the safest methods for prevention of HIV/STIs.	□	□
	SECTION C:		
C1	Are you sexually active?	□	□
C2	Having unprotected sex is a risky sex practice.	□	□
C3	Ignorance of your HIV/AIDS or STIs status is a safe sex practice.	□	□
C4	Abstinence is a safe sex practice.	□	□
C5	Having multiple sexual partners is a risky sex practice.	□	□
C6	Using unreliable birth control methods like the withdrawal method is a risky sex practice.	□	□
C7	Masturbation is a risky sex practice.	□	□
C8	Having a single sex partner is a risky sex practice.	□	□
C9	Non-penetrative sex is a safe sex practice.	□	□
C10	Changing sexual partners is a safe sex practice.	□	□
C11	Transactional sex is a risky sex practice.	□	□
	FOR OFFICIAL USE		
	Section score: Family planning & Contraception	/06	
	STIs/HIV/AIDS	/09	
	Sex practices	/10	
	Total Score:	/25	

Appendix 2: Consent form

PRACTICUM PROJECT INFORMATION AND CONSENT FORM

Project title: Sexual and Reproductive health: Educating young adult freshmen of IPRC-South on safe sex practices.

November – December 2017

Researcher identification

Main researcher: Jehoshaphat Muzungu

Master of Science in Global Health Delivery candidate, University of Global Health Equity

Dear participant,

You are being invited to participate in this research project because you fulfill the selection criteria for participating in this study. Before accepting to join this project, you must understand and take into consideration the contents of this form, since it contains important information to assist you in deciding whether to participate or not.

This project is being conducted as part of a core requirement for the Master of Science in Global Health Delivery at the University of Global Health Equity. The project has received required ethical approval from UGHE and complies with international ethical standards for research to be carried out in Rwanda. Permissions have also been obtained from the administration of IPRC-South.

The purpose of this project

The purpose of this project is to increase knowledge about safe sex practices among young adult freshmen of IPRC-South by January 2018.

The procedure for participation in this project

If you chose to participate, you may be required to attend education sessions about safe sex practices and in general, sexual and reproductive health education for a period of one month between November and December 2017. Using already formulated questionnaires, you will be required to provide the know information regarding reproductive health and safe sex practices both at the beginning and the end of the study.

The possible benefits of taking part in this project

Your participation will help in creating baseline data, which may be necessary for advocating for a stronger policy about sexual and reproductive health and care for young adults enrolled at IPRC-South now and in future.

Possible risks or discomforts related to taking part in this project

If you choose to participate, you will be asked to share your knowledge on sexual practices and reproductive (by selecting the options given on the questionnaire), which given its culturally sensitive nature you may find quite uncomfortable disclosing. The researcher will ensure confidentiality of the disclosed information by making sure it is not identifiable. Your

questionnaire will not carry your names on it except a code to identify it. A data analyst shall have access to your information during data analysis but will not be able to identify you.

Protection of your privacy

The information collected will be kept anonymous and confidential. It will not include any of your names and will only be accessed by the researcher. The results will be used for research purposes only and not for any other purpose. Your individual responses will at no time be shared with anyone apart from the researcher. All data will be kept safe in locked storage before analysis and later in a computer with a password, and will be destroyed after 10 years.

If I have any questions, concerns or complaints about this project, who can I talk to?

In case: 1) You have questions, concerns, or complaints, 2) You would like to talk to the project team, 3) You think the project has harmed you, or 4) You wish to withdraw from the study; please feel free to contact:

Jehoshaphat Muzungu

The Principal Researcher

kamujungu@gmail.com

Mobile: 0789771844

Testing for HIV/AIDS and/or STIs and supplies to have safe sex can be found at the C.H.U.B hospital, which is a stone's throw away. If the training causes you to have medical issues like anxiety, depression, violence and others, you may need medical or psychological support in which case feel free to contact the principal researcher or:

1. Mrs. Marie Mediatrice Uwimana

   The principal educationist

   Mobile: 0788799283

2. Mr. Felix Ndagijimana

   Medical officer IPRC-South

   Mobile: 0788352332

3. Mrs. Liberata Mukesharugo

   Matron/Female students' affairs officer IPRC-South

   Mobile: 0788836697

Participation is voluntary

It is your right to decide to participate in this project or not. If you choose to participate, you may change your mind and leave the study at any time. Refusal to participate or stopping your participation will not involve any penalty.

Statement of consent

Your signature (or finger print) below indicates you acknowledge that:

- You have understood the content of this form.
- You have had the opportunity to ask questions and received answers that were satisfactory.
- If needed, you took time to discuss this information with others to help you decide whether to participate.

- You will receive a dated and signed copy of the form.
- You agree to participate in this project.

Participant name	Signature/ finger print	Date
Researcher name/person requesting consent	Signature	Date

Appendix 3:Updated Gantt chart

Task	Responsible person	November	December	January	February	March	April	May
Do a pilot study to test the Questionnaire.	PI							
Do a pre test on the sample population.	PI and research assistants							
Intervention begins.	PI, Counselor and Research assistants							
Do a post-test.	PI and research assistants							
Data analysis	PI and data analyst							
Report writing	PI							
Result dissemination	PI							