

2020

Sexual Behavior, Contraceptive Use, and Unmet Needs Among Unmarried Teenage Women in Uganda

Lawrence Were
Walden University

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Walden University

College of Health Sciences

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Lawrence Were

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Walden University
2020

Abstract

Sexual Behavior, Contraceptive Use, and Unmet Needs Among Unmarried Teenage
Women in Uganda

by

Lawrence Were

MPH, Makerere University 2010

B-Pharm, Makerere University, 1998

Doctoral Study Submitted in Partial Fulfillment
of the Requirements for the Degree of
Doctor of Public Health

Walden University

August 2020

Abstract

At 25%, teenage pregnancy in Uganda is one of the highest in the world, and this has been mainly attributed to low contraceptive use and a high unmet need for modern contraceptives. Unmarried women aged 15 to 19 years in Uganda face unique cultural, ethical, financial, and legal barriers to the use of contraception. The purpose of this study was to investigate how sexual behavior, contraceptive use, and unmet needs among unmarried teenage women in Uganda aged 15 to 19 years are influenced by personal and environmental factors. Bandura's social cognitive theory was used as a theoretical framework for this study. Secondary data were analyzed from the Uganda Demographic and Health Survey, 2016. The study findings showed that 17.4% of unmarried teenage women were sexually active, knowledge about modern contraceptives was at 99%, modern contraceptive prevalence rate was 27.3%, unmet need for contraception was 35.5% of which 18.6% was due to discontinuation. Multinomial regression analysis showed that there were increased odds of being sexually active among older unmarried teenage women (OR = 2.351, $p = .000$), while there were increased odds of using modern contraceptives among unmarried teenage women with a higher number of living children (OR = 2.875, $p = .000$) and among those with more years of education (OR = 1.371, $p = .000$). Religion was found not to significantly affect sexual activity and contraceptive use among respondents. The findings from this study emphasize the need for increased stakeholder awareness of the factors contributing to early sexual activity, the use of modern contraceptives, and the unmet need for contraceptive use among sexually active unmarried teenage women.

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Dedication

This project is dedicated to the two women who have shaped my life. My wife Julian Nantume, my constant companion who has encouraged me for more than 20 years to continue pursuing my education amidst the hustles of meeting the daily demands of the family and has always been the biggest supporter of my career development. To my mother, Mrs. Phanice Agoola along with my late father Mr. Paulo Were: This is for you because you laid a solid academic foundation. To my five children: Joshua, Marilyn, Ruth, Aaron & Isaiah for the sacrifice of resources and time that that were meant for you, especially as you are growing into young men and women. The final person this capstone is dedicated to is my late uncle Mr. Justus Baraza Mudibo, who always referred to me as 'professor' even when I was still a teenager in secondary school. Although he passed away, I know he would be very proud to see me complete my doctoral studies.

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For my Walden University cohort from Uganda: Dr. Imelda Musana, Dr. Sarah Nahalamba, and Dr. Simon Peter Mayanja thank you for your support and encouragement for the past five years. For my colleagues within the public health field, I appreciate the encouragement to further research in an understudied area in public health.

Table of Contents

List of Tables	v
List of Figures	viii
Section 1: Foundation of the Study and Literature Review	1
Introduction.....	1
Problem Statement	1
Purpose of the Study	3
Research Question(s) and Hypotheses.....	4
Theoretical Foundation for the Study	6
Nature of the Study	9
Literature Search Strategy.....	10
Review of the Literature Related to Key Variables and/or Concepts.....	10
Sexual Activity Among Teenage Girls	11
Teenage Pregnancy: Prevalence, Determinants, and Consequences	12
The Demand for Family Planning Among Teenage Women	14
Contraception, Unmet Needs, and Marital Status.....	15
Contraception and Age	16
Contraceptive Use and Household Wealth	17
Contraceptive Use and Education Status	17
Contraceptive Use and Residence.....	18
Contraceptive Use and Number of Surviving Children.....	18
Desired Fertility and Contraceptive Use.....	18

Contraception and Religion	19
Contraception and Discontinuation.....	19
Contraception, Exposure to Mass Media and Knowledge Among Adolescents	20
The Effect of Community and Health Systems or Services on Contraceptive Use	21
Barriers to Contraceptive Use.....	22
Definition of Terms.....	23
Assumptions.....	26
Scope and Delimitations	27
Significance, Summary, and Conclusions	27
Section 2: Research Design and Data Collection	29
Introduction.....	29
Research Design and Rationale	29
Methodology	30
Study Area/Population	30
Sampling and Sampling Procedures	30
Inclusion and Exclusion Criteria.....	32
Sample Size.....	32
The Justification for the Effect Size, Alpha Level, and Power Level Chosen.....	33
Procedure for Gaining Access to the Dataset	35

Instrumentation and Operationalization of Constructs	36
Data Cleaning Procedures.....	37
Threats to Validity and Ethical Procedures	40
Validity Concerns	40
Ethical Procedure	40
Summary	40
Section 3: Presentation of the Results and Findings.....	41
Introduction.....	41
Research Questions and Associated Hypotheses.....	41
Data Collection of Secondary Data Set	44
Results of the Study	45
Summary of Descriptive Characteristics of the Sample Population.....	45
Bivariate Analysis.....	69
The Chi-Square Test and Bivariate Logistics Regression	69
Multivariate Analysis.....	77
Multinomial Logistics Regression Analyses	77
Summary	83
Section 4: Application to Professional Practice and Implications for Social	
Change	86
Introduction.....	86
Interpretation of the Findings.....	90

General Issues and Sexual Activity, Contraceptive Use, and Unmet Need	
for Contraception	91
Individual/Demographic Factors	92
Socioeconomic Factors	94
Barriers to Contraceptive Use.....	98
Analyze and Interpret the Findings in the Context of the Theoretical and/or	99
Conceptual Framework.....	99
Limitations of the Study.....	102
Recommendations.....	103
Implications for Professional Practice and Social Change	104
Professional Practice	104
Positive Social Change	105
Conclusion	107
References.....	108
Appendix A: ICI Approval to Download DHS Data	127
Appendix B: ICF Approval to Download DHS Data	127
Appendix C: UBOS Oversight and Data Use Agreement	128
Appendix D: WALDEN University IRB Approval Granted, Conditional Upon	
Partner Approval.....	131
Appendix E: Certificate of Completion-Ethics and Compliance Training-CITI.....	133

List of Tables

Table 1. Operationalization of Variables	38
Table 2. Variables and Statistical Tests To Be Conducted.....	39
Table 3. Current Marital Status.....	46
Table 4. Recent Sexual Activity Among Unmarried Teenage Girls	47
Table 5. Ever Forced To Perform Unwanted Sexual Acts.....	47
Table 6. The Person Who Forced the Respondent Into the First Sexual Act	48
Table 7. Age Distribution of the Sexually Active Teenagers	48
Table 8. Respondents by Region	49
Table 9. Type of Place of Residence	50
Table 10. Respondent Currently Working.....	50
Table 11. Education in Single Years.....	51
Table 12. Educational Attainment	51
Table 13. Literacy Levels of Respondents.....	52
Table 14. Household Wealth Index Combined.....	52
Table 15. Respondents' Religion.....	53
Table 16. Sex of Household Head	53
Table 17. Relationship to the Household Head	54
Table 18. Use of the Internet.....	56
Table 19. Knowledge of Family Planning Methods	56
Table 20. Ever Used Anything or Tried to Delay or Avoid Getting Pregnant	57
Table 21. The Ideal Number of Children.....	57

Table 22. Number of Living Children	58
Table 23. Contraceptive Intention.....	58
Table 24. Intention To Use Contraceptives and the Number of Living Children.....	59
Table 25. Current Contraceptive Use by Method Type	59
Table 26. Current Contraceptive Method Among Sexually Active Unmarried Teenage Girls	61
Table 27. Last Source of Contraceptives for Current Users	62
Table 28. Unmet Need for Contraception Among Participants	62
Table 29. Intention To Use and Unmet Need for Contraception	63
Table 30. The Pattern of Contraceptive Use Among Unmarried Teenage Girls	66
Table 31. Reason for Not Using a Contraceptive Method.....	67
Table 32. The Last Method Discontinued in the Last 5 Years	67
Table 33. Reason of the Last Discontinuation	68
Table 34. Case Processing Summary From SPSS for Recent Sexual Activity and Categorical Variables.....	71
Table 35. Association Between Sexual Activity and Categorical Demographic and Socioeconomic Factors	72
Table 36. Association Between Contraceptive Use and Personal, Behavioral, and Environmental Factors	74
Table 37. Unmet Need for Contraception and Demographic and Socioeconomic Factors.....	76
Table 38. Unmet Need * Reason of Last Discontinuation Cross Tabulation	77

Table 39. Predictors' Unique Contribution to Sexual Activity ($N = 4,014$).....	80
Table 40. Multinomial Logistics Regression Model for Predictors of Sexual Activity Among Sexually Active Teenagers	81
Table 41. Predictors' Unique Contribution to the Use of Modern Contraceptives ($N = 700$).....	81
Table 42. Multinomial Logistics Regression Model for Predictors of Using Modern Contraceptives Among Unmarried Teenage Girls	82
Table 43. Predictors' Unique Contribution Unmet Need for Spacing ($N = 700$)	83

List of Figures

Figure 1. Bandura’s (1989) theory of reciprocal causation	7
Figure 2. First sex and first contraceptive use among girls aged 15-49 years in Uganda	11
Figure 3. G* power analysis	34
Figure 4. G*power analysis findings for a sample of 4,014 participants	35
Figure 5. G*power analysis findings for a sample of 700 participants	35
Figure 6. Registration with the DHS Program (The DHS Program, n.d)	36
Figure 7. Age distribution for the women of reproductive age.....	45
Figure 8. Distribution of respondents’ age at first sex.....	49
Figure 9. Bar chart showing the availability of different mass media channels	55
Figure 10. Bar chart showing access to family planning information through the different channels of mass media	55
Figure 11. Map of Uganda showing contraceptive prevalence (%) by region	60
Figure 12. Modern contraceptive method-mix among sexually active unmarried teenagers in Uganda.....	61
Figure 13. Demand for Family Planning among sexually active unmarried teenage women aged 15-19 years in Uganda.....	64
Figure 14. Map of Uganda showing demand for family planning by region	64
Figure 15. Map of Uganda showing patterns of demand for family planning met by modern methods.....	66
Figure 16. A chart showing the reasons for discontinuing a family planning method.	69
Figure 17. Benefits of family planning	107

Section 1: Foundation of the Study and Literature Review

Introduction

In Section 1, I present the theoretical foundation of the study and review of the literature as it relates to how sexual activity, the use of modern contraceptives, and unmet needs among unmarried teenage women in Uganda are influenced by age, the age at first sex, wanted fertility, number of surviving children, residence, contraceptive discontinuation, region, religion, household wealth, exposure to media, and years of education. Modern contraceptives are family planning methods characterized by or using the most up-to-date techniques, ideas, or equipment to prevent unplanned pregnancies (López del Burgo & de Irala, 2016). I begin by making the statement of the problem, giving the purpose of the study, and reviewing the strategies that I used to search the literature, and then I provide a summary of Bandura's (1986) social cognitive theory (SCT) and explain its relevance to this doctoral study. I then show how other researchers have applied the concepts of the SCT in their studies.

Problem Statement

With a total fertility rate of 5.8 children per woman and a population growth rate of 3.2% per annum, Uganda has one of the most rapidly growing populations in the world (Uganda Bureau of Statistics [UBOS], 2016). In rural Uganda, where most of the population lives, actual fertility exceeds women's desired fertility by one or two children, a sign of the widespread unmet need for contraception, and a cultural preference for large families (Index Mundi, 2018). A woman is said to have an unmet need for contraception when she is sexually active, fecund, and desires to stop or delay childbearing, but she is

not using any method of contraception (United Nations, 2014). The pregnancy-related maternal mortality ratio in Uganda is among the highest in the world, at 368 deaths per 100,000 live births (UBOS, 2016).

In Uganda, 25% of teenagers, aged 15 to 19 years, are either pregnant or have a child (UBOS, 2016). The early age of childbearing and short birth intervals have contributed to Uganda's high maternal mortality rate (Index Mundi, 2018). Mora-Cancino and Hernández-Valencia (2015) found that children who end up as teenage mothers usually have low self-esteem and may not be able to easily decide on using contraceptives.

As many as 56% of pregnancies in Uganda are unintended, and nearly one-third of these ends in unsafe abortion, with young women being affected the most (Hussain, 2013). Contraceptive nonuse was identified as one of the predictors of pregnancy among unmarried adolescents (Gennari, 2013; Maravilla, Betts, Cruz, & Alati, 2017).

The National Strategy to end child marriage and teenage pregnancy in Uganda does not include the provision of contraception information and services to adolescents as one of the strategies to be pursued (Ministry of Gender, Labor, and Social Development-MoGLSD, 2015). The Constitution of Uganda also considers all individuals younger than 18 years as minors who are neither legally able to go for consensual sex nor able to make informed choices on contraception (Nabafu- Kimbugwe, 2017).

Family planning programming for sexually active teenagers in Uganda is therefore confronted with a host of cultural, ethical, and legal dilemmas that require

a comprehensive sexual and reproductive health program if they are to be effectively addressed (Renzaho, Georgeou, Kamara, & Kamanga, 2017).

Although a wealth of evidence exists on determinants of contraceptive use and unmet needs, these have largely focused on married, fecund women within the reproductive age bracket of 15 to 49 years, thereby excluding the sexually active unmarried adolescents aged 15 to 19 years old (Islam, Mostofa, & Islam, 2016; Sustainable Development Solutions Network [SDSN], n.d; Wulifan, Brenner, Jahn, & De Allegri, 2016), yet unmet need for family planning is highest among this population segment, at 45.1% compared with 28% among the married women of reproductive age (WRA) (UBOS, 2016). It was anticipated that this research would fill the information gap by focusing on the drivers of sexual activity, contraceptive use, and unmet needs among sexually active unmarried teenagers aged 15 to 19 years.

Purpose of the Study

The purpose of this study was to investigate how sexual activity, contraceptive use and unmet needs among unmarried teenage women in Uganda are influenced by (a) age, (b) age at first sex, (c) residence, (d) contraceptive discontinuation, (e) region, (f) religion, (g) household wealth, (h) years of education, (i) knowledge about family planning, (j) exposure to media, (k) characteristics of household head, (l) the number of living children, (m) wanted fertility, and (n) attempt to avoid or stop pregnancy. The identified factors can be used to inform the design of future interventions to not only prevent early sexual debuts and increase access to contraceptive information and services to those that are sexually active but also to maintain current users of modern

contraceptives on modern family planning methods of their choice, throughout their reproductive life.

Research Question(s) and Hypotheses

Research Question 1

Is there a significant association between (a) age, (b) age at first sex, (c) residence, (d) contraceptive discontinuation, (e) region, (f) religion, (g) household wealth, (h) years of education, (i) knowledge about family planning, (j) exposure to media, (k) characteristics of household head, (l) the number of living children, (m) wanted fertility, (n) attempt to avoid or stop pregnancy and sexual activity among unmarried teenage women aged 15 to 19 years in Uganda?

H₀1: There is no significant association between (a) age, (b) age at first sex, (c) residence, (d) contraceptive discontinuation, (e) region, (f) religion, (g) household wealth, (h) years of education, (i) knowledge about family planning, (j) exposure to media, (k) characteristics of household head, (l) the number of living children, (m) wanted fertility, (n) attempt to avoid or stop pregnancy and sexual activity among unmarried teenage women aged 15-19 years old in Uganda.

Ha1: There is a significant association between (a) age, (b) age at first sex, (c) residence, (d) contraceptive discontinuation, (e) region, (f) religion, (g) household wealth, (h) years of education, (i) knowledge about family planning, (j) exposure to media, (k) characteristics of household head, (l) the number of living children, (m) wanted fertility, (n) attempt to avoid or stop pregnancy and sexual activity among unmarried teenage women aged 15-19 years old in Uganda.

Research Question 2

Is there a significant association between (a) age, (b) age at first sex, (c) residence, (d) contraceptive discontinuation, (e) region, (f) religion, (g) household wealth, (h) years of education, (i) knowledge about family planning, (j) exposure to media, (k) characteristics of household head, (l) the number of living children, (m) wanted fertility, (n) attempt to avoid or stop pregnancy and the use of modern contraception among unmarried teenage women aged 15-19 years old in Uganda?

H02: There is no a significant association between (a) age, (b) age at first sex, (c) residence, (d) contraceptive discontinuation, (e) region, (f) religion, (g) household wealth, (h) years of education, (i) knowledge about family planning, (j) exposure to media, (k) characteristics of household head, (l) the number of living children, (m) wanted fertility, (n) attempt to avoid or stop pregnancy and the use of modern contraception among unmarried teenage women aged 15-19 years old in Uganda.

Ha2: There is a significant association (a) age, (b) age at first sex, (c) residence, (d) contraceptive discontinuation, (e) region, (f) religion, (g) household wealth, (h) years of education, (i) knowledge about family planning, (j) exposure to media, (k) characteristics of household head, (l) the number of living children, (m) wanted fertility, (n) attempt to avoid or stop pregnancy and the use of modern contraception among unmarried teenage women aged 15-19 years old in Uganda.

Research Question 3

Is there a significant association between (a) age, (b) age at first sex, (c) residence, (d) contraceptive discontinuation, (e) region, (f) religion, (g) household wealth,

(h) years of education, (i) knowledge about family planning, (j) exposure to media, (k) characteristics of household head, (l) the number of living children, (m) wanted fertility, (n) attempt to avoid or stop pregnancy and unmet need for contraception among unmarried teenage women aged 15-19 years old in Uganda?

H₀₃: There is no significant association between (a) age, (b) age at first sex, (c) residence, (d) contraceptive discontinuation, (e) region, (f) religion, (g) household wealth, (h) years of education, (i) knowledge about family planning, (j) exposure to media, (k) characteristics of household head, (l) the number of living children, (m) wanted fertility, (n) attempt to avoid or stop pregnancy and unmet need for contraception among unmarried teenage women aged 15-19 years old in Uganda.

H_{a3}: There is a significant association between ((a) age, (b) age at first sex, (c) residence, (d) contraceptive discontinuation, (e) region, (f) religion, (g) household wealth, (h) years of education, (i) knowledge about family planning, (j) exposure to media, (k) characteristics of household head, (l) the number of living children, (m) wanted fertility, (n) attempt to avoid or stop pregnancy and unmet need for contraception among unmarried teenage women aged 15-19 years old in Uganda.

Theoretical Foundation for the Study

Bandura's (1986) SCT formed the theoretical framework for this study. The theory posits that a greater part of an individual's knowledge acquisition is directly related to observing others within the context of social interactions, experiences, and outside media influences. By observing a role model performing a behavior and the consequences of the behavior, people remember the sequence of events to guide

subsequent behaviors or their engagement in behavior they already learned (Bandura, 1986). The SCT is premised on an understanding of risks and benefits of engaging in new behavior, developing self-efficacy, and assessing outcome expectations as influenced by the behavior (Kelder, Hoelscher, & Perry, 2015).

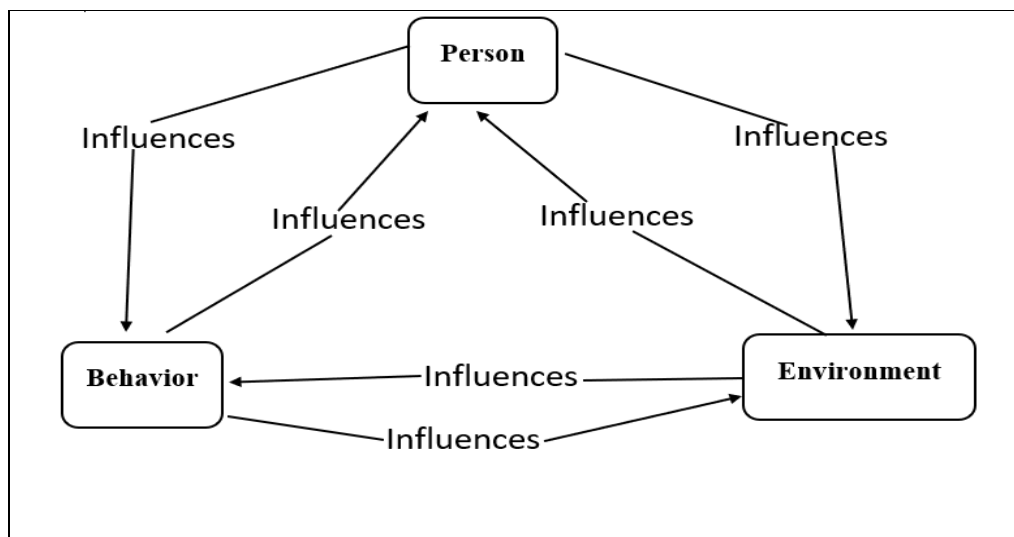


Figure 1. Bandura's (1989) theory of reciprocal causation.

According to Andersen (1995), risks and benefits of engaging in a new health behavior such as sexual activity or the use of modern contraceptives, are greatly influenced by demographic and socioeconomic factors such as age, gender, ethnicity, and the social structure, as measured by wealth index, residence or education attainment. The influence of factors that modify an individual's perceptions about the benefits or risks of engaging in a particular action such as peer or family support, availability and access to health services, which form part of the wider environment, also need to be investigated as either enablers or hindrances to a behavior change (Andersen, 1995). Interventions based

on SCT are more effective in increasing contraceptive use than any other health behavior models (Lopez, Tolley, Grimes, Chen, & Stockton, 2016).

Application of the SCT to Contraceptive Use

Here I summarized how other researchers have applied the concepts and constructs of the SCT in their previous works. The SCT has been used to predict condom use behavior to reduce sexually transmitted infections (Bel & Newhill, 2017; Snead et al., 2014; Thomas, Shiels, & Gabbay, 2014); contraceptive use among adolescents (Lopez et al., 2016); understanding barriers to contraception among young women (Baraka, Rusibamayila, Kalolella, & Baynes, 2015; Richardson, Allison, Gesink, & Berry, 2016); pregnancy intention and proper use of contraceptive methods among low-income minority women (Tonlaar & Ayoola, 2014); and sexual activity and sexual-efficacy among adolescents (Hsu, Yu, Lou, & Eng, 2015).

According to Lopez et al. (2016), some researchers use a combination of the SCT with other theoretical frameworks such as the theory of reasoned action, and the theory of planned behavior to study the intentions to change behavior. Theory of reasoned action suggests that a person's behavior is determined by his/her intention to perform the behavior and that this intention is, in turn, a function of his/her attitude toward the behavior and his/her subjective norm, whereas the theory of planned behavior is a theory which predicts deliberate behavior because behavior can be deliberate and planned (Ajzen, 1991).

Nature of the Study

The study was cross-sectional quantitative research, using secondary data, to provide clear identification of the determinants of sexual activity, contraceptive use, and unmet needs among unmarried teenage women aged 15 to 19 years old, to inform the development of interventions based on Bandura's (1986) SCT.

Dependent variables included the sexual activity, contraceptive use, and unmet need for contraception, whereas independent variables included age, residence, contraceptive discontinuation, region, religion, household wealth, characteristics of household head, years of education, number of living children, and exposure to media and identified barriers to contraception.

I followed a systematic procedure to utilize the available nationally representative secondary data in the process of inquiry (Cheng & Phillips, 2014; Melissa, 2014). The secondary data source for my study was the Uganda Health and Demographic Survey, 2016 (UBOS, 2016). Since 1984, the Demographic and Health Surveys (DHS) Program has supported more than 90 countries to collect, analyze, and disseminate accurate and nationally representative data on population, fertility, and total fertility rate (TFR), reproductive health, maternal health, child health, immunization, and child survival, HIV/AIDS; maternal mortality, child mortality, malaria, and nutrition among women and children (The DHS Program, n.d). Uganda has so far conducted four demographic and health surveys spaced 5 years apart, the most recent one having been conducted in 2016 (UBOS, 2016).

Literature Search Strategy

I conducted a literature search mainly by using many health sciences databases that I accessed through the Mywalden student portal. The databases included CINAHL & MEDLINE Combined Search, CINAHL Plus with Full Text, MEDLINE with Full Text, ProQuest Health & Medical Collection, ProQuest Nursing & Allied Health Source, PubMed, PsycINFO, and Google Scholar. I limited my search mostly to peer-reviewed articles published between 2012 and 2018 using the following search terms:

contraceptive use, contraception, teenagers, adolescents, unmarried, Uganda, contraceptive prevalence, unmet need, SCT, and in school and out of school.

I started by reading the abstracts of the articles to determine their relevance to my doctoral study before selecting them. Besides, I reviewed the references of the selected abstracts and chose those that were published in between 2012 and 2018 and were based on contraception and adolescents or teenagers, to get additional references for this literature review.

Review of the Literature Related to Key Variables and/or Concepts

Uganda population boom is attributed to the low uptake of modern contraceptives and high-unmet need for contraception, at 35% and 28% respectively, for married WRA (UBOS, 2016). If unchecked, the population increase will further strain the availability of arable land and natural resources and overwhelm the country's limited means for providing food, employment, education, health care, housing, and basic services (Index Mundi, 2018). Teenage pregnancy and short child spacing greatly contribute to the overall fertility because teenage girls start childbearing early in life, with many of them

ending up having more than seven children throughout their reproductive life, which also puts their lives at risk.

According to the PMA2020 report (2018), Ugandan women start childbearing early in their lives as shown by the high teenage pregnancy rate of 25%, and they only begin using contraceptives when they have three to four children (Figure 1).

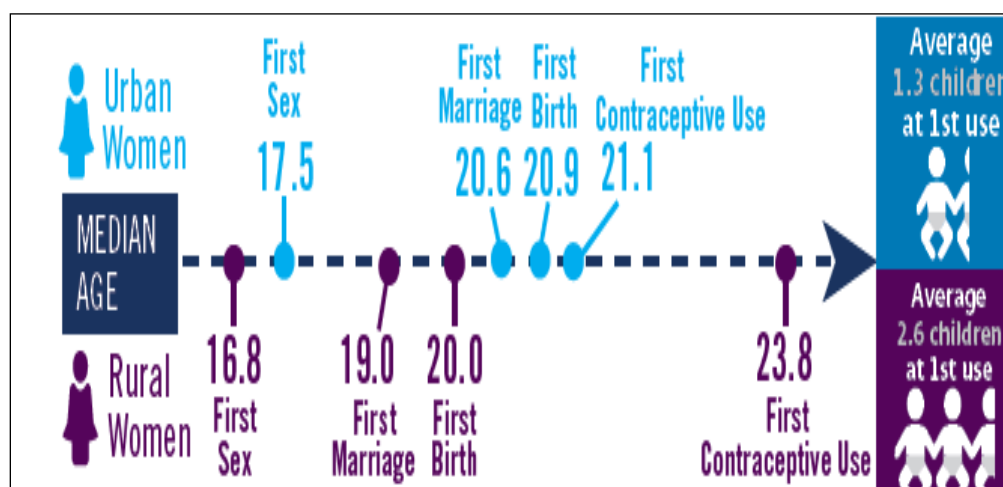


Figure 2. First sex and first contraceptive use among girls aged 15-49 years in Uganda. (Reprinted from PMA2020, 2018).

Sexual Activity Among Teenage Girls

Sexual activity exposes unmarried adolescent girls to the risks of unintended pregnancy, unsafe abortion, and sexually transmitted infections including HIV/AIDS (UBOS, 2016). Sexual activity is measured in two ways: Whether the respondent has ever had sex and whether he or she has had sex recently (within 3 months before the study) (Abma & Martinez, 2017). Half of the Ugandan women aged 15 to 19 years have ever had sex, and by age 20 years, 83% of women have had sexual intercourse (UBOS, 2016). The earlier the young women start sexual activity, the higher the number of pregnancies and sexual partners until the moment of their reproductive life (Maranhão,

Gomes, & Oliveira, 2017). In Uganda, premarital sexual activity and pregnancy are generally perceived as negative whereas post marital pregnancy, regardless of age, is regarded as positive, and society expects the newly married to commence childbearing immediately (Maly et al., 2017; UNICEF, 2016).

Sexual debut, premarital sex, and teenage pregnancy are significantly associated with lower education status, household wealth, religion, rural-urban residence and characteristics of household head (Adanikin, Adanikin, Amo-Adjei & Tuoyire, 2017; Amoyaw & Luginaah, 2017; Orji, & Adeyanju, 2018; Okigbo & Speizer, 2015; Salih, Metaferia, Reda, & Biadgilign, 2015). Higher educational attainment may delay initial intercourse (Zhang et al., 2016)

Teenage Pregnancy: Prevalence, Determinants, and Consequences

According to estimates by the World Health Organization, globally, the adolescent birth rate in 2015 was 44.1 per 1000 women aged 15 to 19 years (WHO, 2016). In Uganda, however, teenage pregnancy is higher than the world average, with 25% of teenagers, being either pregnant or having a child (UBOS, 2016). The teenage pregnancy rates in Uganda moved from 24% in 2011, to 25% in 2016, an indication that something needs to be done differently to address the situation (UBOS, 2016). Many Ugandan girls start engaging in sex, either voluntarily or sexually coerced, earlier in life, with the mean age at first sex being 16 years, and they only begin using contraceptives at an average age of 24 years, at which age they are already having an average of 3.1 children (PMA2018/Uganda, 2018).

Teenage pregnancy has deleterious consequences for young mothers, children, and society at large (Gennari, 2013). Age is a risk factor for preterm birth, fetal growth restriction, episiotomy, uterine revision, cephalopelvic disproportion, and postpartum hemorrhage among teenagers (Socolovet al., 2017). If the teen mother and her child survive childbirth, studies have shown that children born to teenage mothers are likely to struggle in life, suffer social and emotional problems, are more likely to drop out of high school, live in poverty, and become teenage mothers themselves, sparking off a vicious cycle of teenage motherhood (Pitso & Kheswa, 2014). Teenage mothers are likely to be unmarried, poor, and with less formal education and often with little say in decisions over childbearing and their reproductive health. They are often unemployed and with inadequate antenatal care and obstetric risks for poor pregnancy outcomes (Ayuba & Gani, 2012). According to Maly et al. (2017), teenage pregnancy is influenced by societal norms, the girls' perceived control over getting pregnant, readiness for childbearing, cultural beliefs, family pressure, a lack of reproductive education, and lack of access to contraception (Gennari, 2013).

Health advocates argue that teenagers and young persons should have full access to information and tools they need to protect their health, including access to condoms, contraception, and the full array of reproductive health care services, without any form of discrimination based on either age, sex, ability to pay, marital status, school status, education level, location or ethnicity if both unplanned first-time and repeat pregnancies are to be effectively prevented (Patel et al., 2016).

The Demand for Family Planning Among Teenage Women

One in four teenage girls in Uganda aged 15 to 19 years have had a child or are pregnant, yet 42% of all pregnancies among adolescents in Uganda are unintended, with nearly one-third of these ending in abortion (Hussain, 2013; UBOS, 2016). Although contraceptive use has generally increased among young East African women, unmet need remains high, necessitating family planning programs to develop more targeted strategies for expanding access to reproductive health services for young women (Dennis et al., 2017). The use of modern contraceptives can alter population size and age structure, with declines in fertility and youth dependency, which can help developing economies of the world to harness the demographic dividend (Goodkind, Lollock, Choi, McDevitt, & West, 2018). Many policymakers have now adopted the benchmark of meeting at least 75% of the demand for family planning after learning that meeting the demand for contraceptives can facilitate progress toward all major themes of the United Nations sustainable development goals (SDGs) (Goodkind et al., 2018).

The demand for family planning is influenced by the individual as well as societal/ environmental factors (The FANTA project, 2018). Individuals' as well as society's previous experiences and knowledge about family planning, especially about misconceptions and inaccurate understanding of some modern contraceptive methods and side effects, inconsistent knowledge on timing of postpartum FP initiation play a significant role in shaping the demand for family planning (The FANTA project, 2018). Family size and child spacing preferences and the perceived benefits of family planning,

child spacing, and smaller family size are equally important in determining the demand for family planning (The FANTA project, 2018).

Contraception, Unmet Needs, and Marital Status

The demographic and health surveys consider married women or women in union to be more at risk of unplanned pregnancy than their unmarried counterparts (The DHS Program, n.d). However, for married young teenage women in Uganda, society expects them to commence childbearing immediately after marriage and many of them will only begin thinking of contraception after they have had more than three children (PMA2018/Uganda, 2018; UNICEF, 2016). On the other hand, society perceives premarital pregnancy for teenage women as negative and is often associated with a multitude of problems for the teenage mother, including, stigma, desertion, school dropout (Maly et al., 2017). According to Macquarrie (2014), sexually active, unmarried young women want to avoid pregnancy to a greater degree than do their married peers, resulting in higher unmet needs among the unmarried.

According to November and Sandall (2018), when teenage unmarried girls become pregnant, their perceived risks are related more to stigma and abandonment than to physical immaturity that could lead to poor pregnancy-related outcomes, leading to delayed care-seeking for antenatal and delivery care. Upon learning about their first unplanned pregnancy, unmarried teenage women undergo an immediate psychological whirlwind, beginning with shock, anger, denial, bargaining, depression; and they go back and forth several times before finally accepting their impending parenthood (Mann, Cardona, & Gómez, 2015). The pregnant teenagers then ponder the options to resolve

their unintended pregnancies by either abortion or adoption before confiding in a trusted family member or male partners who mostly give them directives on how to resolve their pregnancies, most likely, by the termination of the pregnancy in unsafe settings, that may lead to death or permanent disability of the teenage mother (Mann et al., 2015).

Maly et al, (2017) found that pregnancy complications, unsafe abortions, and childbirth were the main causes of death and disability among older adolescents aged 15 to 19 years in Uganda. Young maternal age at delivery is associated with poorer pregnancy outcomes compared to older maternal age (Fouelifack et al., 2014).

Contraception and Age

According to Asiimwe, Ndugga, Mushomi, and Ntozi (2014), the key determinants of modern contraceptive use in Uganda varied among young and older women. Factors such as the perception of distance to the health facility, listening to the radio, and geographical differences exhibited significant variability in contraceptive use among the young and the older women (Asiimwe et al., 2014).

Other key factors that were important for both age groups in explaining contraceptive use were the desire to have children after 2 years and education level (Asiimwe et al., 2014). Despite long-acting reversible contraceptives (LARCs) being recommended as first-line contraception for adolescents, Smith, Harney, Singh, and Hurwitz (2017) found that older adolescents were significantly more likely to use a LARC method than younger ones.

Contraceptive Use and Household Wealth

Studies among married women showed that poorer women or women from poor households are much less likely to use modern contraceptives than their wealthier counterparts (Adebowale, Adedini, Ibisomi, & Palamuleni, 2014; Adebowale, Gbadebo, & Afolabi, 2016; UBOS, 2016). A study on the use of long-term and permanent methods (LAPMs) of family planning by Ugaz, Chatterji, Gribble, and Banke (2016) found that wealthier women were more likely than poorer women to use LAPMs instead of short-acting methods.

Contraceptive Use and Education Status

Though there was a generally positive association between women's formal education and the use of modern contraceptives, an increase in the proportion of women with secondary education alone could not explain the increase in modern contraceptive use (Asiimwe et al., 2014; Emina, Chirwa, & Kandala, 2014).

Adanikin et al. (2017) found that unprotected sexual intimacy was found to be higher among young school/college drop-outs than their in-school counterparts. More of the out-of-school adolescent girls were also found to use contraceptives than the in-school, although the difference was not statistically significant (Batwala et al., 2006).

Literacy, defined as the ability to read, was found to be one of the four key determinants of contraceptive use in Sierra Leone as females with low literacy rates, women may not benefit from media and communication strategies (Labat et al., 2018).

Contraceptive Use and Residence

A study by Geske, Quevillon, Struckman-Johnson, and Hansen (2016) found that although there were no urban-rural differences in contraceptive use, rural participants reported more barriers in accessing and obtaining contraceptives than their urban counterparts. According to the UBOS (2016), although knowledge about contraception in Uganda was nearly universal, with more than 99% of respondents in both urban and rural communities aware of at least one method of contraception, women in urban areas were more likely to use modern contraceptives than those from rural areas. The urban-rural divide in contraceptive use is thought to be modified by several factors such as education, socioeconomic status of women or their families, and access to services (Andi, Wamala, Ocaya, & Kabagenyi, 2014).

Contraceptive Use and Number of Surviving Children

Women with a higher number of surviving children are more likely to use contraceptives as compared with those women with a low number of living children (Alene & Atalell, 2018; Andi et al., 2014; Islam et al., 2016). A study among postpartum women in Uganda showed that a one-child increment in the number of living children was associated with a 9% increase in log-odds of using postpartum family planning (Rutaremwa et al., 2015).

Desired Fertility and Contraceptive Use

Motivations for use of contraceptives vary across populations, with some WRA using contraceptives for delaying or spacing childbirth, and others adopt contraception for stopping childbearing altogether. According to Bawah et al., (2019), many of the

younger women use contraceptives for either delaying childbirth or spacing purposes. However, as women grow older, a higher proportion prefers contraception for purposes of stopping rather than spacing.

Contraception and Religion

Religion is embedded in the culture of all societies and it influences matters of morality, ideology, and decision-making, which concern every human being at some point in their lives. Although the different religions often lack a united view on matters of contraception, there is sometimes some dogmatic overlap when general religious principles are subject to the influence of local customs (Pinter et al., 2016). Findings by Bakibinga et al., Mutombo, Mukiira, Kamande, Ezeh, and Muga (2016) indicated that religion and ethnicity had no significant effect on facilitating or aiding or hampering contraceptive uptake by rural women. A study by Agadjanian (2013) showed a higher prevalence of modern contraceptive use among Catholics and, to a lesser extent, traditional Protestants. Overall, religion alone was found inadequate in predicting the use or non-use of modern contraceptives, as the woman's use of contraceptives is modified by a range of other factors such as ethnicity, education, and employment status (Wusu, 2015).

Contraception and Discontinuation

A study by Cleland, Harbison, and Shah (2014) found that as family planning programs continue to address barriers to contraception and contraceptive use increases in communities, users become more concerned about side effects and health effects of modern contraceptives, and discontinued users now constitute a large proportion of

women with unmet need. Jain, Obare, RamaRao, and Askew (2013) found that women who had discontinued the use of a modern method and subsequently had an unmet need at the time of the survey accounted for 38% of the total estimated unmet need. Approximately one-third of unintended births are due to contraceptive discontinuation (Jain & Winfrey, 2017).

Although LARCs, including the contraceptive implants, are recommended for teens and young women, some young women discontinue the implant early, reportedly due side effects, most often frequent or heavy bleeding or mood changes (Lunde et al., 2013). After discontinuing a method, close to 50% of the participants did not start new contraception despite reporting their continued desire to avoid pregnancy (Lunde et al., 2013).

Kiran, Sanjay, and Rajesh (2016) and Modey, Aryeetey, and Adanu (2014) found an association between contraceptive discontinuation with the duration of use, age, parity, contraceptive method, religion, and contraceptive intention.

Contraception, Exposure to Mass Media, and Knowledge Among Adolescents

Sexually active unmarried adolescents are prevented from accessing sexual and reproductive health (SRH) information and services by existing policies or social taboos leading to a high unmet need for modern contraception and a high prevalence of unintended (Lim, et al., 2015). Consequently, many teenagers experience unmet health needs and face negative health consequences of early, unprotected sexual activity including unplanned pregnancies, unsafe abortions pregnancy-related mortality and morbidity and Sexually Transmitted Infections including human immunodeficiency virus;

as well as its social and economic costs (Chandra-Mouli, McCarraher, Phillips, Williamson, & Hainsworth, 2014). Among unmarried university students, knowledge of any contraceptives, perceived acceptability, and benefits of contraceptive use was almost universal but contraceptive use was low in this setting, exposing the young women to unintended pregnancies (Nsubuga, Sekandi, Sempeera, & Makumbi, 2016).

The Effect of Community and Health Systems or Services on Contraceptive Use

The community and health systems are part of the external observable factors that can influence a teenage woman's decision to initiate and maintain the use of modern contraceptives (Andersen, 1995). Studies by Tchokossa and Adeyemi (2018) and de Andrade et al. (2018) showed that contraceptive use was associated with proper sex education, outreach services, and proper orientation of the prospective users as well as service providers. Silumbwe et al., (2018) found that contraceptive uptake and use were hindered by the non-availability of the methods of choice at service delivery points, unfavorable policies, provider biases and attitudes, and the long distances to service delivery points. At the community level, the use of modern contraceptives was hindered by the fear of side effects, rumors, myths and misconceptions, and the negative religious and traditional beliefs (Silumbwe et al., 2018).

The access to, uptake and the use of modern contraceptive was found to be enhanced by the political will, integration of contraceptive services, provision of couples counseling, availability of trained personnel to offer basic methods mix, functional community health system structures, the community's desire to delay pregnancy, and knowledge of contraceptive services (Silumbwe et al., 2018).

Barriers to Contraceptive Use

Substantial numbers of adolescents experience the negative health consequences of early, unprotected sexual activity: unintended pregnancy, unsafe abortions, pregnancy-related mortality and morbidity, and sexually transmitted infections including human immunodeficiency virus (HIV); as well as its social and economic costs. Sexually active unmarried adolescents face several barriers in obtaining contraception and in using them correctly and consistently (Chandra-Mouli et al., 2014).

Uptake of modern contraceptives is constrained by unstable reproductive preferences, low educational attainment, and misconceptions about contraceptive side effects (Baraka et al., 2015). Ndayizigiye, Fawzi, Lively, & Ware (2017) found that uptake of contraceptives was affected by the lack of providers to administer contraception, lack of fit between available, and preferred contraceptive methods, a climate of fear surrounding contraceptive use, and provider refusal to offer family planning services. Other barriers include gender dynamics, economic conditions, religious and cultural norms, and supply chain bottlenecks (Baraka et al., 2015). The capability of healthcare providers to share the relevant information on contraceptive choices for the client and their ability to administer the method preferred by the client also greatly influences the uptake of contraception (Baraka et al., 2015). Potential users of long-term reversible contraceptives, also need assurance that the providers are also capable of removing the implants or intrauterine devices either whenever the clients experience undesired side effects or whenever they wish to return to fertility (Christofield & Lacoste, 2016)

Among married women, the most common reasons for nonuse of contraceptives included infrequent sex and concerns regarding side effects or health risks as well as insufficient information concerning methods (Cleland, Harbison, & Shah, 2014; Sedgh & Hussain, 2014). Whereas adolescents are aware of the availability of contraceptive services, they were found to lack a comprehensive knowledge about contraception and contraceptives, which led to negative attitudes towards using the services (Lebese, Maputle, Ramathuba, & Khoza, 2013). Cultural health belief, attitudes, and sociocultural norms were also identified as a barrier to the uptake and use of contraceptives (Lebese, Maputle, Ramathuba, & Khoza, 2013; Kabagenyi, Reid, Ntozi, & Lynn, 2016). Health providers were also found to impose barriers to contraceptive use by presenting contraceptive eligibility restrictions based on either age or marital status, with restrictions based on marital status less common than those based on age (Sidze et al., 2014).

Definition of Terms

Adolescence: Adolescence is defined as the period that bridges childhood and adulthood. It includes puberty and sexual maturation. This period begins at age 10 to 12 and ends at 19. Adolescence encompasses emotional, social, physical, and mental growth. Some researchers use adolescence and teenage interchangeably

Cognitive Factors: Characteristics of the person that affect performance and learning and serve to modulate performance such that it may improve or decline. These *factors* involve *cognitive* functions like attention, memory, and reasoning (Roy,

2013). In this study, cognitive factors of knowledge of contraception and the dangers of teenage pregnancy will be measured.

Contraceptive Discontinuation- starting contraceptive use and then stopping for any reason while still at risk of unintended pregnancy (Castle & Askew, 2015)

Demand for family planning met by modern methods: The proportion using modern contraception divided by total demand for family planning [$\text{MCPR} / (\text{CPR} + \text{Unmet Need})$] (Cahilli et al., 2018; Fabic et al., 2015)

Environmental Factors: External factors that can potentially influence an individual's behavior. They not only include the situation, roles, models, and relationships in a community but also the physical environment (Hurst, 2016). In this study, environmental factors will include communities, families, and peers as well as health infrastructure and health service providers.

Household wealth: Is measured using the wealth index, which is a composite measure of a household's cumulative living standard, calculated using data on a household's ownership of selected assets, such as televisions and bicycles; materials used for housing construction; and types of water access and sanitation facilities. The wealth index is then classified into quintile, with the first quintile representing the poorest households and the fifth quintile the wealthiest (The DHS Program, n.d).

Maternal morbidity and mortality: Illness or death occurring during pregnancy or childbirth, or within two months of the birth or termination of a pregnancy.

Media: The main means of mass communication including radio, newspapers, television, and the internet.

Modern Contraceptives- Modern contraceptives are family planning methods characterized by or using the most up-to-date techniques, ideas, or equipment (López del Burgo & de Irala, 2016). They include female sterilization, male sterilization, IUD, pill, injectables, implants, male condoms, standard days method (SDM), Lactational Amenorrhea method (LAM), and female condoms (UBOS,2016).

Region: A geographical area, especially the part of a country having definable characteristics such as common language, beliefs, or economic profiles (Ochako et al., 2015).

Religion: a system of faith and worship of superhuman controlling power, especially a personal God or gods (Merriam-Webster, n.d)

Residence: The type of residence, whether rural or urban, where the household is located (UDHS, 2016).

Sexually active: Unmarried women were considered sexually active if they have had last sexual intercourse within 30 days preceding the survey interview (UBOS, 2016).

Total demand for family planning: The percent of fecund and sexually active WRA who want to delay or limit childbearing. It is measured by adding the proportion of this population currently using any contraception to those with an unmet need (Fabic et al., 2015).

Traditional or non-modern contraceptives are those methods that do not meet the criteria of modern methods. They include periodic abstinence, rhythm, withdrawal, and use of herbs (UBOS, 2016).

Unmet need for family planning: The percentage of fecund and sexually active women reproductive age who want to stop or delay childbearing but are not using any method of contraception (United Nations, 2014).

Wanted Fertility: The ideal number of children preferred by a woman thought her reproductive life.

Years of education: A measure of educational attainment that counts the number of years the respondent has spent in formal education (UBOS, 2016).

Assumptions

The first assumption is the data collectors who interviewed the young people during the Uganda health and demographic survey (UDHS) 2016 gained the confidence of the teenagers to enable them to share personal information about their sexual and reproductive health, and that the teenagers who participated were honest and gave truthful responses to the survey questions. The potential limitation here is the social desirability bias, where respondents may present themselves more favorably rather than give accurate responses. The DHS program controls for this bias by carefully wording the questions and assurance of anonymity to participants (UBOS, 2016)

I also assumed that data was collected and coded correctly and checked for errors by the enumerators and that the data were reliable as not to affect outputs from further statistical analyses. This assumption is necessary because the original questionnaire was in English and yet Uganda is home to over 56 tribes, which speak different languages (MyUganda, 2017). It was, therefore, important to assume that the translations were correct and well understood by respondents.

Scope and Delimitations

The study was limited to young women aged 15-19 years of age living in Uganda. I used secondary data from the Uganda Health and Demographic Survey (UDHS) 2016, a nationally representative sample survey.

I examined contraceptive practices and unmet needs among fecund and sexually active unmarried teenagers. While it takes a man and a woman to make a teenage pregnancy, and men are primary decision-makers in contraceptive use (Kabagenyi et al., 2014), this study focused on women because women use most of the available modern contraceptives. This study also excluded older women aged 20 years and above because young women aged 15-19 years face unique barriers to their sexual and reproductive health and rights. Consequently, young women face a significantly higher burden of unmet need for contraception than older women do. The restrictions young people face when accessing contraceptives can be either legal (parental consent laws, the age restriction to sexual activity and contraception, limited freedom of movement) or societal (misinformation on the absence of legal restrictions, denying access to sources of information, financial dependency) (Chandra-Mouli et al., 2014)

The study examined the relationship between contraceptive use and factors relating to teenage women, their environment, and behaviors in line with the SCT.

Significance, Summary, and Conclusions

Uganda has a large pool of women entering reproductive age who need to be equipped with contraception information if the country is to avert an impending population explosion (Index Mundi, 2018). Increasing access and the use of

contraception among sexually active unmarried teenagers will also save the lives of young girls and save healthcare costs for managing unplanned pregnancies or consequences of unsafe abortion that often results from early and frequent births.

Increasing access and use of post-partum contraception to teenagers will prevent repeat teen births (two or more live births before age 20 years) which may otherwise constrain the mother's ability to take advantage of educational and workforce opportunities.

By encouraging young girls to stay in schools longer, focus on their careers, and employed in the future, girls will produce fewer children; they can support to become successful through life. In the end, if fertility control is sustained, it will result in a population structure that will be characterized by high productivity and less dependency and will result in overall socio-economic development through harnessing the demographic dividend.

Section 2: Research Design and Data Collection

Introduction

This study project aimed to investigate the extent to which sexual activity, contraception use, and unmet needs among sexually active unmarried teenage women aged 15 to 19 years were influenced by demographic factors such as age, ethnicity, and socioeconomic factors such as education and wealth index. Furthermore, the study investigated the reasons why teenagers abandoned certain modern contraceptive methods by examining responses as provided by teenagers aged 15 to 19 years, who reported ever using a contraceptive method but are currently having an unmet need for contraception. This section provides information on research design and rationale, the sampling and sampling procedures used to collect data as described in secondary data materials, instrumentation and operationalization of variables, threats to validity and ethical procedures, as well as data management processes.

Research Design and Rationale

I carried out a retrospective cross-sectional quantitative study using a secondary dataset from the Uganda demographic and health Survey (2016). The cross-sectional study design using an existing dataset was found to be both cost and time effective and efficient compared with primary data collection and analysis (Melissa, 2014). Secondary data analysis also allowed manipulation and analysis of already-existing large datasets, thereby avoiding duplication of efforts and minimizing ethical issues associated with primary data collection and allowed the researcher more time to tests different hypotheses and models instead of spending time in data collection (Cheng & Phillips, 2014).

Methodology

Study Area/Population

Uganda has a total area of 241,550.7 square kilometers and a population of 34.6 million people, of which 55% are younger than 18 years (NPHC, 2014). The country was stratified into administrative units, namely districts, counties, constituencies, sub-counties, parishes, and villages, to facilitate service delivery nearer to the people. In total, there are 122 districts as of 1 July 2017, including the capital city of Kampala (UBOS, 2017).

Sampling and Sampling Procedures

My secondary data source was the Uganda demographic and health survey (UDHS), 2016. This study was designed to cover the entire country and representative samples were collected from each enumeration area (EA). The sampling strategy employed in the UDHS was stratified multistage cluster sampling (Elfil & Negida, 2017).

The UDHS used the frame of the national population and housing Census of 2014 that consisted of a complete list of all census EAs (UBOS, 2016). Each EA consisted of a geographic area that covered approximately 130 households (UBOS, 2016).

During the national population and housing census, Uganda was divided into 112 districts, which were grouped into 15 regions for the Uganda demographic and health Survey. All the regions were stratified into urban and rural strata, except Kampala, which was retained as only urban. Three of the 15 regions were further stratified into “island” and “not island,” yielding 34 sampling strata.

The sample for the UDHS was stratified at two levels of sampling, with the first being the enumeration area while the second level consisted of households. According to UDHS (2016), a listing of households was compiled. The listing excluded institutional living arrangements such as army barracks, hospitals, police camps, and boarding schools. To minimize the task of household listing, each large EA (i.e., more than 300 households) selected for the 2016 UDHS was segmented. Only one segment was selected for the survey with probability proportional to segment size, and the household listing was conducted only in the selected segment. Thus, a 2016 UDHS cluster is either an EA or a segment of an EA. In total, a representative sample of 20,880 households (30 per EA or EA segment) was randomly selected for the 2016 UDHS.

The UBOS in collaboration with the Ministry of Health implemented the data collection for the 2016 UDHS between 15 June 2016 and 18 December 2016. The main purpose of the 2016 UDHS is to provide the data needed to monitor and evaluate population, health, and nutrition programs regularly.

UBOS recruited and trained a total of 173 fieldworkers (108 women and 65 men) to serve as supervisors, Computer Assisted Personal Interview (CAPI) managers, interviewers, health technicians, and reserve interviewers for the main fieldwork. The main training took place from 14 May 2016 to 14 June 2016. Of the 20,791 selected households, 19,938 were occupied, of which 19,588 (98%) were successfully interviewed from which 19,088 eligible WRA were identified for individual interviews. The response rate was 97%, with higher response rates in rural than in urban areas, at 98% and 95%, respectively.

The UDHS applied a power allocation with a small adjustment in the allocation of sample enumeration areas because a proportional allocation would not have met the minimum number of clusters per survey domain required for the UDHS, 2016. The sample EAs were selected independently from each stratum using probability proportional to size. Overall, 20,880 households were reached with 18,506 WRA interviewed during the UDHS.

Inclusion and Exclusion Criteria

All WRA who spent the night before the survey at the household were included in the study regardless of whether they are permanent residents or not (UDHS, 2016). This selected age bracket was decided by primary data collectors to include all WRA who are likely to get pregnant. For this study, data analysis was limited to women aged 15 to 19 (older teenage girls), who participated in the UDHS. All teenage girls who were not sexually active were excluded from the study.

Sample Size

In the study, I analyzed a sample of 4,014 unmarried teenage girls of whom 700 (17.4%) were sexually active. Researchers in the social sciences commonly use a statistical power of 0.80 and α of 0.05. The statistical power of 0.80 assumes that an effect was detected in 80% of cases when it is present an α of .05 assumes that there was only a 5% probability of erroneously rejecting a true hypothesis (Cunningham & McCrum-Gardner, 2007).

The Justification for the Effect Size, Alpha Level, and Power Level Chosen

Estimates from a sample survey are affected by either non-sampling errors or sampling errors (UDHS, 2016). Nonsampling errors that potentially arise from omissions or commissions made in implementing data collection and processing were minimized by the UDHS during the design and implementation of the survey (UDHS, 2010).

Sampling errors, on the other hand, can be statistically evaluated to measure the degree of variability among all possible samples that can be drawn from the population (UDHS, 2016). This is usually done to increase external validity and improve the outcomes of the study. The minimum effect size of 0.10 was chosen to allow for the best external validity since this was a stratified multistage cluster study (Cunningham & McCrum-Gardner, 2007). The alpha level of 0.5 was chosen to reduce Type 1 error while the power level of 0.80 reduced Type 2 error. Power analysis was used to identify sample size that was sufficient to detect an effect if there was an effect in a study. A-priori G*Power version 3.1.9.4 software (Faul, Erdfelder, Lang, & Buchner, 2007) was used to calculate the minimum sample size required at 80 % (0.80) power (Figure 3).

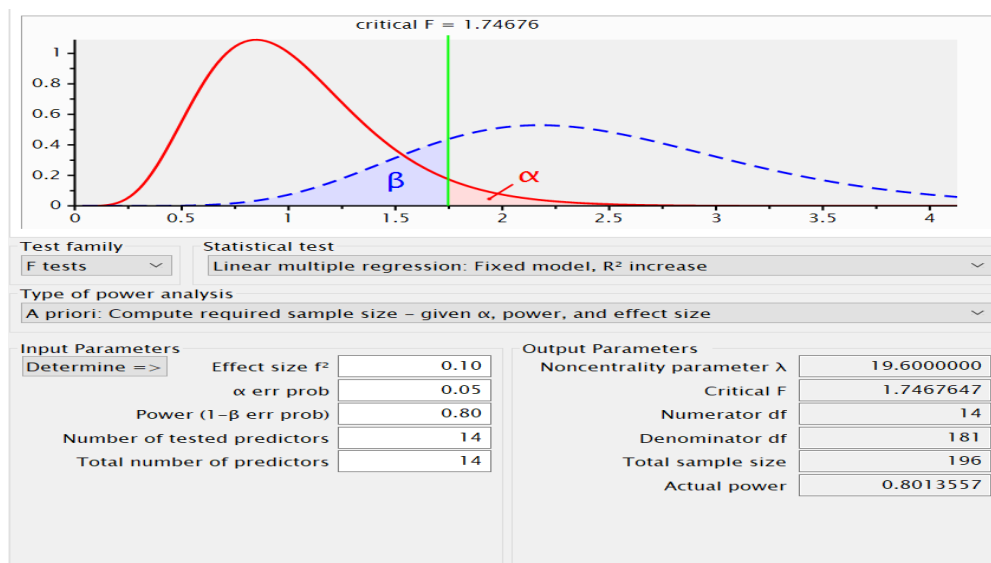


Figure 3. G* power analysis.

By factoring in a nonresponse factor of 10%, the minimum sample size required for this study was 216 participants. However, the sample size of 700 sexually active women used in this study was far higher than the calculated sample size using the above parameters. According to Sullivan & Feinn, 2012, the power of the study, increases with the sample size. I conducted an a priori power analysis for multiple linear regression (MLR) using G*Power (Faul, Erdfelder, Lang, & Buchner, 2007) to determine the actual power of this study using the 4014 and 700 participants, having set, the significance value to $p < .05$; the number of predictors was set at 13 and the minimum effect size to 0.10. The actual power of this study was close to 100% for a sample of 4,014 participants (Figure 4) and close to 100% for a sample of 700 participants (Figure 5).

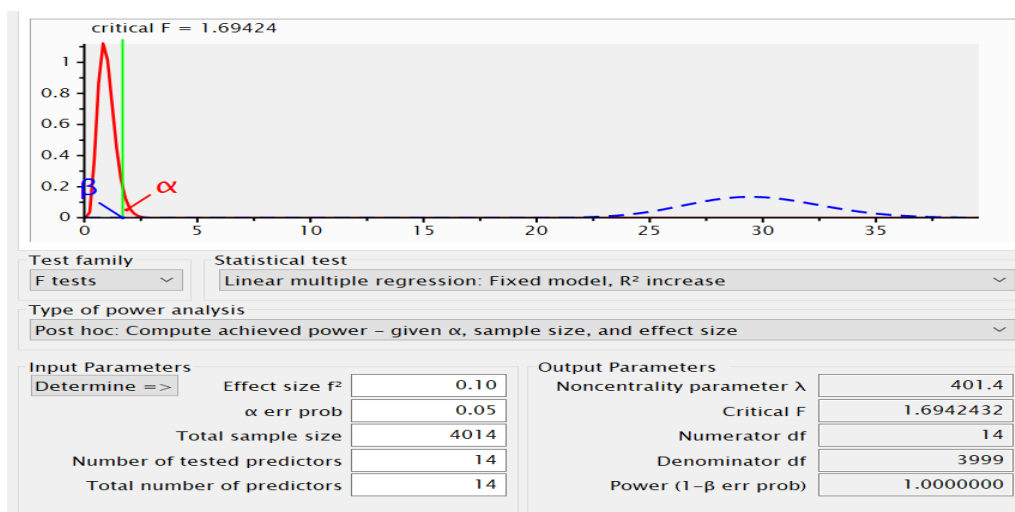


Figure 4. G*power analysis findings for a sample of 4014 participants.

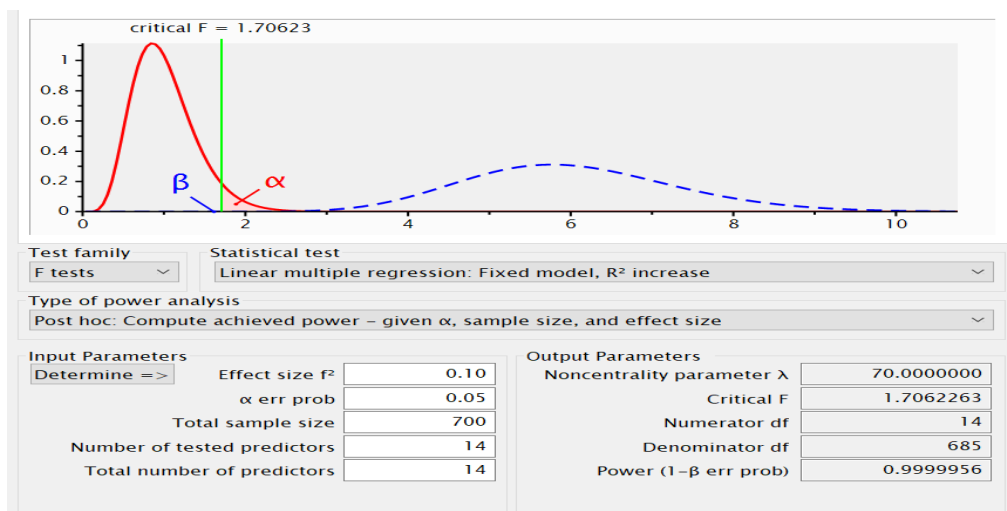


Figure 5. G*power analysis findings for a sample of 700 participants.

procedure for gaining access to the dataset

Following the publication of the final UDHS 2016 report, the Uganda Bureau of Statistics (UBOS) declared that data was available for secondary data analysis.

Permission was granted to me by UBOS to access and use the UDHS 2016 data after the proposal had been cleared by the Walden University Institutional Review Board (IRB). I

proceeded to get approval to access online datasets from ICF International after registration confirmation by the DHS Program (Figure 5). The online registration was made through the link: <https://dhsprogram.com/data/new-user-registration.cfm>

Figure 6. Registration with the DHS Program ((The DHS Program, n.d).

To access the DHS 2016 survey for Uganda, I chose the sub-Saharan Africa Region, then Uganda as a country. Then full access was granted to all unrestricted survey data sets for that country, and then I selected the standard DHS 2016, which I downloaded in SPSS format as a zipped folder, before unzipping the whole content for use.

Instrumentation and Operationalization of Constructs

The UDHS 2016 is the sixth round of the survey supported by the DHS Program for Uganda. It collects, analyzes, and disseminates accurate and nationally representative data on population, fertility and total fertility rate (TFR), reproductive health, maternal health, child health, immunization and child

survival, HIV/AIDS; maternal mortality, child mortality, malaria, and nutrition among women and children in Uganda (The DHS Program, n.d). The UDHS 2016, interviewed WRA, 15-49 years, both married and unmarried. The report on contraception, however, did not disaggregate data to cater for unmarried teenage women aged 15-19 years.

Data Cleaning Procedures

Before analyzing my secondary data, I started with cleaning in and organization. I reviewed the UDHS 2016 data set to ensure that it contained data for unmarried teenage women aged 15-19 years. I found that the data set included the required age bracket under WRA i.e. aged 15-49 years. The first step was to exclude women aged 20 years and above from the WRA, followed by those who were aged 15-19 years and were married at the time of the survey. Finally, I examined the data set variables for consistency and completeness. While the absence of missing data is beneficial for the avoidance of biases and enhancing the validity of the study, it may not be avoidable (Pampaka, Hutcheson, & Williams, 2016). I reviewed the dataset to determine if any of the study measures had missing data values. All the independent variables had no missing individual values. Besides, in this study, I considered additional safeguards provided by the large sample size from the survey which provided additional power to the study.

DHS data was provided in a format that is compatible with the Statistical Package for the Social Sciences (SPSS) software hence negating the need for data entry (Arkkelin, 2014). Data analysis was conducted in two steps: The first step consisted of simple descriptive analyses of the variables with results summarized as frequencies, percentages

or proportions, mean, standard deviation, median, minimum, and maximum. This information was then presented as tables, charts, or maps.

Table 1

Operationalization of Variables

Variables	Variable type: DV*/IV**	Outcome categorical/continuous	Number of categories	Reference table (for details)
1. Sexual activity	DV	Categorical	4	Table 4
2. Marital status	IV	Categorical	6	Table 3
3. Contraceptive use	DV	Categorical	3	Table 22
4. Unmet need for contraception	DV	Categorical	6	Table 25
5. Respondent's current Age	IV	Continuous	NA	Table 6
6. Age at first sex	IV	Continuous	NA	Figure 8
7. Years of education	IV	Continuous	NA	Table 10
8. Residence	IV	Categorical	2	Table 8
9. Region	IV	Categorical	15	Table 7
10. Religion	IV	Categorical	7	Table 13
11. Exposure to media	IV	Categorical	4	Figure 9 & 10
12. Household wealth	IV	Categorical	5	Table 12
13. Knowledge of family planning		Categorical	3	Table 17
14. Characteristics of the household head	IV	Categorical	3	Table 14 & 15
15. Wanted fertility	IV	Continuous	NA	Table 19
16. Number of living children	IV	Continuous	NA	Table 20
17. Attempt to avoid or stop a pregnancy	IV	Categorical	3	Table 18

Note. *Dependent or **independent variable.

The second step consisted of inferential analyses (chi-squares and logistics regression analyses for testing the hypotheses, as summarized in table 2 below:

Table 2

Variables and Statistical Tests to be Conducted

RQ	Variables	Statistical tests
1. Is there a significant association between (i) age, (ii) age at first sex, (iii) residence, (iv) contraceptive discontinuation, (v) region, (vi) religion, (vii) household wealth, (viii) years of education, (ix) knowledge about family planning, (x)exposure to media, (xi) characteristics of household head, (xii) the number of living children, (xiii) wanted fertility, (xiv) attempt to avoid or stop pregnancy and sexual activity among unmarried teenage women aged 15-19 years old in Uganda?	<ol style="list-style-type: none"> 1. Sexual activity 2. Age 3. Age at first sex 4. Years of education 5. Residence 6. Region 7. Religion 8. Exposure to media 9. Knowledge about Family planning 10. Household Wealth 11. Characteristics of the household head 12. Number of living children 13. Wanted fertility 14. Attempt to avoid or stop a pregnancy 	<p>Chi- Squares (for nominal Independent Variables and simple logistics regression for Interval independent variables)</p> <p>Multinomial Logistic regression</p>
2. Is there a significant association between (i) age, (ii) age at first sex, (iii) residence, (iv) contraceptive discontinuation, (v) region, (vi) religion, (vii) household wealth, (viii) years of education, (ix) knowledge about family planning, (x)exposure to media, (xi) characteristics of household head, (xii) the number of living children, (xiii) wanted fertility, (xiv) attempt to avoid or stop pregnancy and the use of modern contraception among unmarried teenage women aged 15-19 years old in Uganda?	<ol style="list-style-type: none"> 1. Contraceptive Use 2. Age 3. Age at first sex 4. Years of education 5. Residence 6. Region 7. Religion 8. Exposure to media 9. Knowledge about Family planning 10. Household Wealth 11. Characteristics of the household head 12. Number of living children 13. wanted fertility 14. Attempt to avoid or stop a pregnancy 	<p>Chi- Squares (for nominal Independent Variables and simple logistics regression for Interval independent variables)</p> <p>Multinomial logistics regression</p>
3. Is there a significant association between (i) age, (ii) age at first sex, (iii) residence, (iv) contraceptive discontinuation, (v) region, (vi) religion, (vii) household wealth, (viii) years of education, (ix) knowledge about family planning, (x)exposure to media, (xi) characteristics of household head, (xii) the number of living children, (xiii) wanted fertility, (xiv) attempt to avoid or stop pregnancy and unmet need for contraception among unmarried teenage women aged 15-19 years old in Uganda?	<ol style="list-style-type: none"> 1. Unmet need for contraception 2. Age 3. Years of education 4. Residence 5. Region 6. Religion 7. Exposure to media 8. Knowledge about Family planning 9. Household Wealth 10. Characteristics of the household head 11. Contraceptive Discontinuation 12. Number of living children 13. Wanted fertility 14. Attempt to avoid or stop a pregnancy n 	<p>Chi- Squares (for nominal Independent Variables and simple logistics regression for Interval independent variables)</p> <p>Multinomial Logistic regression</p>

Threats to Validity and Ethical Procedures

Validity concerns

External threats to validity were addressed by the sampling procedures employed by the Uganda demographic and health Survey (UDHS). There are no perceived internal threats to conducting this study, as it is secondary data analysis.

Ethical Procedure

The original survey protocol was reviewed and approved by the ICF Institutional Review Board (IRB). Participants had the right to decline participation or to withdraw at any time during the survey. The anonymity of participants was maintained, and no personally identifiable information was reported about participants or released to anyone for any reason.

Participation in the original project was voluntary and involved no unusual risks to participants and the participants could rescind their permission at any time without negative consequences. The risks to participants were considered minimal; but where minors were involved, consent was sought from the parents or guardians. For my study project, approval was obtained from the Walden University IRB.

Summary

This section discussed the research design and approach, setting, sample size and sampling, instrumentation and materials, and data collection. The appropriate statistical analysis needed to test the hypotheses were also discussed.

Section 3: Presentation of the Results and Findings

Introduction

The purpose of this study was to investigate how sexual activity, contraceptive use, and unmet needs among unmarried teenage women in Uganda are influenced by (a) age, (b) age at first sex, (c) residence, (d) contraceptive discontinuation, (e) region, (f) religion, (g) household wealth, (h) years of education, (i) knowledge about family planning, (j) exposure to media, (k) characteristics of household head, (l) the number of living children, (m) wanted fertility, and (n) attempt to avoid or stop pregnancy. Evidence from this research study findings will help to improve the understanding of the risk of sexual activity and unplanned pregnancy and, inform interventions to address the factors hindering the use of modern contraceptives among the unmarried sexually active teenage girls to contribute to Uganda's realization of both global and national development goals. To actualize this, I utilized three key research questions:

Research Questions and Associated Hypotheses

Research Question 1 (RQ1). Is there a significant association between (a) age, (b) age at first sex, (c) residence, (d) contraceptive discontinuation, (e) region, (f) religion, (g) household wealth, (h) years of education, (i) knowledge about family planning, (j) exposure to media, (k) characteristics of household head, (l) the number of living children, (m) wanted fertility, (n) attempt to avoid or stop pregnancy and sexual activity among unmarried teenage women aged 15 to 19 years old in Uganda?

H01: There is no significant association between (a) age, (b) age at first sex, (c) residence, (d) contraceptive discontinuation, (e) region, (f) religion, (g) household wealth,

(h) years of education, (i) knowledge about family planning, (j) exposure to media, (k) characteristics of household head, (l) the number of living children, (m) wanted fertility, and (n) attempt to avoid or stop pregnancy, and sexual activity among unmarried teenage women aged 15-19 years old in Uganda.

H_{a1}: There is a significant association between (a) age, (b) age at first sex, (c) residence, (d) contraceptive discontinuation, (e) region, (f) religion, (g) household wealth, (h) years of education, (i) knowledge about family planning, (j) exposure to media, (k) characteristics of household head, (l) the number of living children, (m) wanted fertility, and (n) attempt to avoid or stop pregnancy, and sexual activity among unmarried teenage women aged 15-19 years old in Uganda.

Research Question 2 (RQ2). Is there a significant association between (a) age, (b) age at first sex, (c) residence, (d) contraceptive discontinuation, (e) region, (f) religion, (g) household wealth, (h) years of education, (i) knowledge about family planning, (j) exposure to media, (k) characteristics of household head, (l) the number of living children, (m) wanted fertility, and (n) attempt to avoid or stop pregnancy, and the use of modern contraception among unmarried teenage women aged 15-19 years old in Uganda?

H₀₂: There is no significant association between (a) age, (b) age at first sex, (c) residence, (d) contraceptive discontinuation, (e) region, (f) religion, (g) household wealth, (h) years of education, (i) knowledge about family planning, (j) exposure to media, (k) characteristics of household head, (l) the number of living children, (m) wanted fertility,

and (n) attempt to avoid or stop pregnancy, and the use of modern contraception among unmarried teenage women aged 15-19 years old in Uganda.

H_{a2}: There is a significant association between (a) age, (b) age at first sex, (c) residence, (d) contraceptive discontinuation, (e) region, (f) religion, (g) household wealth, (h) years of education, (i) knowledge about family planning, (j) exposure to media, (k) characteristics of household head, (l) the number of living children, (m) wanted fertility, and (n) attempt to avoid or stop pregnancy, and the use of modern contraception among unmarried teenage women aged 15-19 years old in Uganda

Research Question 3 (RQ3). Is there a significant association between (a) age, (b) age at first sex, (c) residence, (d) contraceptive discontinuation, (e) region, (f) religion, (g) household wealth, (h) years of education, (i) knowledge about family planning, (j) exposure to media, (k) characteristics of household head, (l) the number of living children, (m) wanted fertility, and (n) attempt to avoid or stop pregnancy, and unmet need for contraception among unmarried teenage women 15-19 years old in Uganda?

H₀₃: There is no significant association between (a) age, (b) age at first sex, (c) residence, (d) contraceptive discontinuation, (e) region, (f) religion, (g) household wealth, (h) years of education, (i) knowledge about family planning, (j) exposure to media, (k) characteristics of household head, (l) the number of living children, (m) wanted fertility, and (n) attempt to avoid or stop pregnancy, and unmet need for contraception among unmarried teenage women 15-19 years old in Uganda.

H_{a3} : There is a significant association between (a) age, (b) age at first sex, (c) residence, (d) contraceptive discontinuation, (e) region, (f) religion, (g) household wealth, (h) years of education, (i) knowledge about family planning, (j) exposure to media, (k) characteristics of household head, (l) the number of living children, (m) wanted fertility, and (n) attempt to avoid or stop pregnancy, and unmet need for contraception among unmarried teenage women 15-19 years old in Uganda.

In this section, I present the results of secondary data analysis from the UDHS, 2016. The data used in this study were obtained from the UDHS 2016, which is part of the more than 400 nationally representative surveys in more than 90 countries on population, health, HIV, and nutrition carried out every 5 years as part of the ongoing study under the demographic health surveys (DHS) Program. The UDHS 2016 data were reanalyzed using SPSS Version 25. Simple descriptive, univariate, bivariate, and multivariate analyses were done. Inferential analysis and conclusions were made. The section is concluded with a summary of findings from the data analysis.

Data Collection of Secondary Data Set

I collected data for the secondary data set from the 2016 UDHS. The UBOS implemented the data collection for the 2016 UDHS between 15 June 2016 and 18 December 2016. The main purpose of the 2016 UDHS is to provide the data needed to monitor and evaluate population, health, and nutrition programs regularly (The DHS Program, n.d). UBOS recruited and trained a total of 173 fieldworkers (108 women and 65 men) to serve as supervisors, CAPI managers, interviewers, health technicians, and reserve interviewers for the main fieldwork. Altogether, 20,791 households were selected

for the sample, of which 19,938 were occupied. Of the occupied households, 19,588 were successfully interviewed, which yielded a response rate of 98%. In the interviewed households, 19,088 eligible women were identified for individual interviews. Interviews were completed with 18,506 WRA, yielding a response rate of 97%. Response rates were higher in rural than in urban areas, with the rural-urban difference of (98% and 95%, respectively). Of the 18,506 WRA who responded to the survey, 4,276 (23%) were teenage girls aged 15 to 19 years.

Results of the Study

Summary of Descriptive Characteristics of the Sample Population

Altogether, 18,506 WRA, aged 15 to 49 years responded to the survey. Twenty-three percent (4,276 women) of the respondents were teenage girls aged 15 to 19 years (Figure 7).

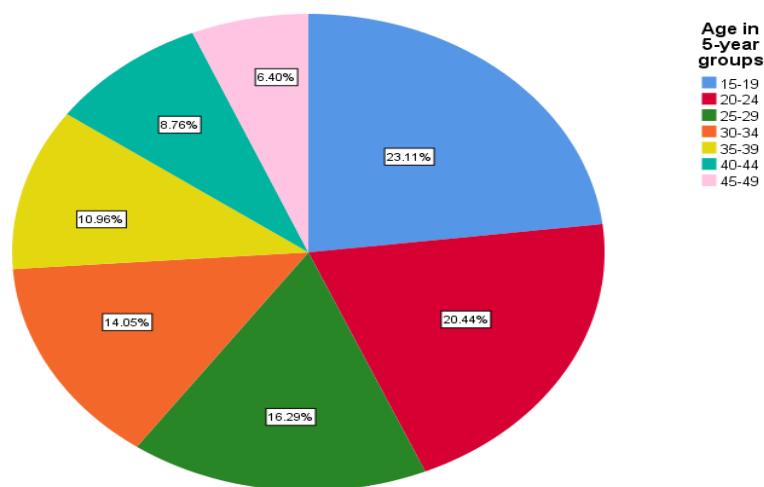


Figure 7. Age distribution for the women of reproductive age.

Marital Status and Sexual Behavior of Teenage Women

Only 262 teenage women aged 15 to 19 years (6.1%) were officially married with the majority (4,014, 93.9%) being unmarried. Among the unmarried, 3,286 women (76.8%) had never been in a marriage union, whereas the rest were not married but living with a partner (14.3%), widowed (0.1%), divorced (0.1%), or no longer living together/separated (Table 3).

Table 3

Current Marital Status

	Frequency	Percentage
Never in union	3,286	76.8
Married	262	6.1
Living with a partner	613	14.3
Widowed	4	0.1
Divorced	5	0.1
No longer living together/separated	106	2.5
Total	4,276	100.0

The scope of this study was, however, scaled down to unmarried teenagers (4,014 women) since the expectation from the society in Uganda is that soon after marriage, the married girls should be conceiving, and therefore would not require contraception (UNICEF, 2016).

More than four in every 10 unmarried teenagers aged 15 to 19 years (1,695, 42.2%) had already experienced sexual intercourse, and 17% (700) were sexually active at the time of the survey, as they reported having had sexual intercourse during the 4 weeks before the survey (Table 4).

Table 4

Recent Sexual Activity Among Unmarried Teenage Girls

	Frequency	Percentage
Never had sex	2,319	57.8
Active in the last 4 weeks	700	17.4
Not active in last 4 weeks - postpartum abstinence	201	5.0
Not active in last 4 weeks - not postpartum abstinence	794	19.8
Total	4,014	100.0

Respondents (2.2%) reported having been forced to perform unwanted sexual acts (Table 5) and the median age first forced sex was 17 years.

Table 5

Ever Forced to Perform Unwanted Sexual Acts

	Frequency	Percentage
No	3,926	97.8
Yes	88	2.2
Total	4,014	100.0

Most of the teenagers were forced to have sex by someone they knew (64.8%) including own friend/acquaintance (22.7%), current/former boyfriend (12.5%), and many others (Table 6).

Table 6

The Person Who Forced the Respondent into the First Sexual Act

	Frequency	Percentage
Current/former boyfriend	11	12.5
Father/stepfather	2	2.3
Brother/stepbrother	1	1.1
Other relatives	8	9.1
In-law	1	1.1
Own friend/acquaintance	20	22.7
Family friend	8	9.1
Teacher	1	1.1
Employer/someone at work	3	3.4
Stranger	31	35.2
Other	2	2.3
Total	88	100.0

Sexual activity increased with the age of respondents and about two-thirds of the sexually active teenagers were aged 18 and 19 years. Most of the sexually active respondents (63.4%) were older teenagers aged 18 and 19 years (Table 3). The median age of the sexually active teenage girls was 18 years and the mean age 17.74 years ($SD = 1.196$) (Table 7)

Table 7

Age Distribution of the Sexually Active Teenagers

Age	Frequency	Percentage
15	38	5.4
16	85	12.1
17	133	19.0
18	211	30.1
19	233	33.3
Total	700	100.0

Approximately half of the sexually active teenage girls had their first sexual intercourse by the age of 16 years. The earliest age at first sex was 9 years (Figure 8).

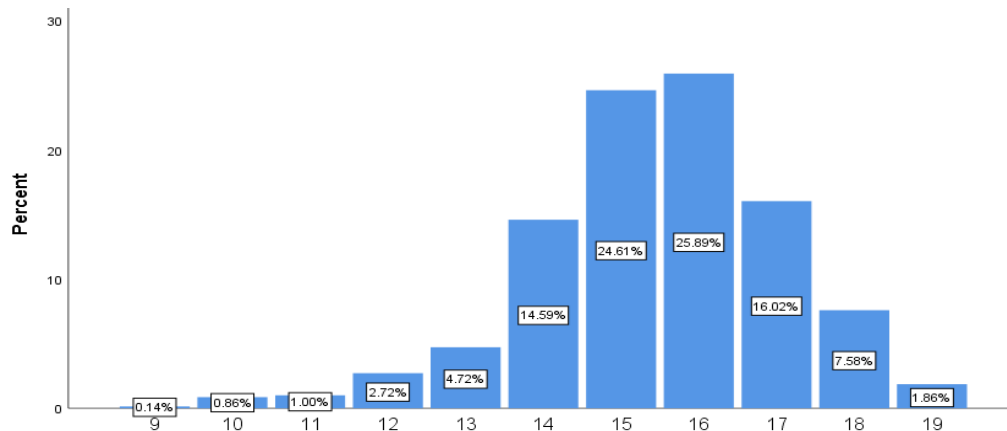


Figure 8. Distribution of respondents' age at first sex.

Of the 15 regions, the Bunyoro region contributed most of the participants (82, 11.7%), whereas Kigezi contributed the least (11, 1.6%) (Table 8).

Table 8

Respondents by Region

	Frequency	Percentage
Kampala	27	3.9
South Buganda	50	7.1
North Buganda	64	9.1
Busoga	60	8.6
Bukedi	63	9.0
Bugisu	61	8.7
Teso	52	7.4
Karamoja	23	3.3
Lango	49	7.0
Acholi	54	7.7
West Nile	32	4.6
Bunyoro	82	11.7
Tooro	56	8.0
Ankole	16	2.3
Kigezi	11	1.6
Total	700	100.0

Socio-economic characteristics of unmarried sexually active teenagers

Most of the sexually active teenagers (575, 82.1%) resided in the rural areas of their respective regions, with only 125 (17.9%) residing in urban areas (Table 9).

Table 9

Type of Place of Residence

	Frequency	Percent
Urban	125	17.9
Rural	575	82.1
Total	700	100.0

Contraceptive prevalence among the unemployed teenage women (28.0%) was slightly higher than in the employed (27.0%). Most of the respondents (452, 64.6%) were involved in some form of income-generating activity (Table 10).

Table 10

Respondent Currently Working

	Frequency	Percent
No	248	35.4
Yes	452	64.6
Total	700	100.0

On average, the respondents had spent 6.12 years in formal education (SD 2.647 years) (Table 11).

Table 11

Education in Single Years

	Frequency	Percent
0	25	3.6
1	9	1.3
2	16	2.3
3	32	4.6
4	69	9.9
5	122	17.4
6	167	23.9
7	111	15.9
8	27	3.9
9	41	5.9
10 and more	82	11.6
Total	700	100.0

Only 3.3 % of the respondents did not have any formal education and 80% (417 of 520) of respondents whose highest level was primary did not complete that level, 98% (144 out of 147) did not complete the secondary level (Table 11). Most of the respondents (400, 57.2%) had 5 to 7 years of education, with only 81 (11.6%) having spent 10 years or more of education. The mean of the years of education was 6.1 years (SD= 2.6 years) (Table 12).

Table 12

Educational Attainment

	Frequency	Percent
No education	23	3.3
Incomplete primary	417	59.6
Complete primary	103	14.7
Incomplete secondary	144	20.6
Complete secondary	3	0.4
Higher	10	1.4
Total	700	100.0

While just about half (334, 47.7%) of the respondents were able to read a whole sentence, about 1 in three sexually active teenagers (228, 32.6%) could not read at all (Table 13).

Table 13

Literacy Levels of Respondents

	Frequency	Percent
Cannot read at all	228	32.7
Able to read-only parts of a sentence	135	19.4
Able to read a whole sentence	334	47.9
Total	697	100.0

Over half (354, 50.6%) of the respondents were from the lowest and second lowest (poorest and poor) wealth quintiles (Table 14).

Table 14

Household Wealth Index

	Frequency	Percent
Lowest (poorest)	188	26.9
The second (Poor)	166	23.7
Middle	135	19.3
Fourth (Wealthy)	118	16.9
Highest (Wealthiest)	93	13.3
Total	700	100.0

Most of the respondents (288, 41.1%) were Catholics, followed by Anglican (200, 28.6%), with the minority being Baptists (1, 0.1%), (Table 15).

Table 15

Respondents' Religion

	Frequency	Percent
Anglican	200	28.6
Catholic	288	41.1
Muslim	91	13.0
Seventh Day Adventist	13	1.9
Pentecostal/Born Again/Evangelical	94	13.4
Baptist	1	0.1
Other	13	1.9
Total	700	100.0

The lowest age of household head was 15 years and the oldest household head was aged 98 years (median age was 45 years). Most of the households (547, 78.1%) were headed by males (Table 16).

Table 16

Sex of Household Head

	Frequency	Percent
Male	547	78.1
Female	153	21.9
Total	700	100.0

Over half of the respondents (2,163, 53.9%) lived in the households headed by their parents and 87 (2.2%) of the respondents were the heads of the households they lived in (table 17).

Table 17

Relationship to the Household Head

	Frequency	Percent
Head	87	2.2
Spouse	398	9.9
Daughter	2163	53.9
Daughter-in-law	123	3.1
Granddaughter	329	8.2
Mother-in-law	1	0.0
Sister	142	3.5
Other relatives	446	11.1
Adopted/foster child	70	1.7
Not related	254	6.3
Don't know	1	0.0
Total	4014	100.0

Exposure to Mass Media

The most dominant channel of mass media was radio, with more than half of the households (54.3%) having a radio and 71.2% having listened to the radio in the near past (Figure 5). More than 8 in 10 teenage girls (597, 85.3%) did not read newspapers at all, only 25 (3.6%) of the sexually active unmarried teenage girls read newspaper or magazine at least once a week (Figure 9).

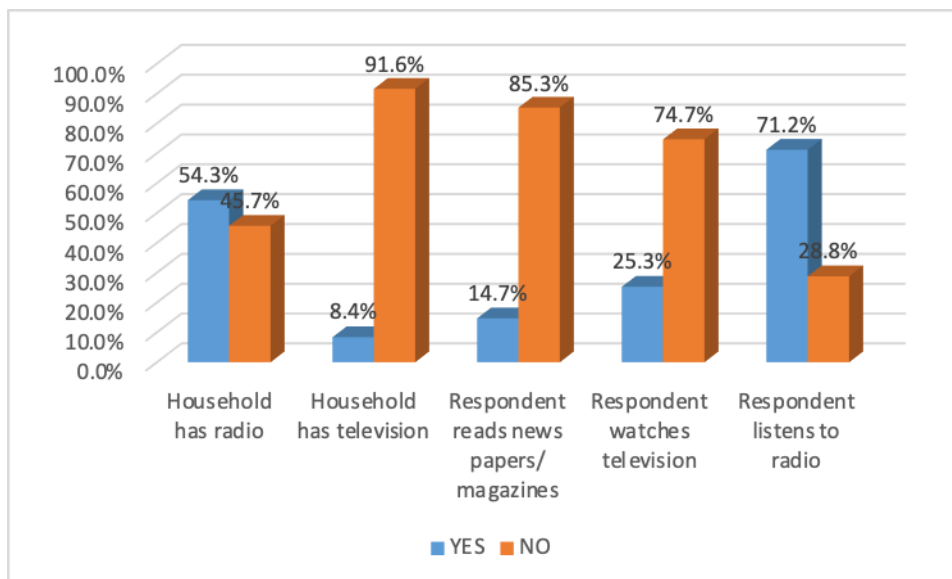


Figure 9. Bar chart showing the availability of different mass media channels.

Respondents were asked if they heard of family planning in any of the three forms of media (newspaper, television, and radio). Most of the respondents had heard of family planning from the radio (60.9%), only 57 (8.1%) of the respondents had heard of family planning in newspaper/magazine in a few months preceding the survey (Figure 10)

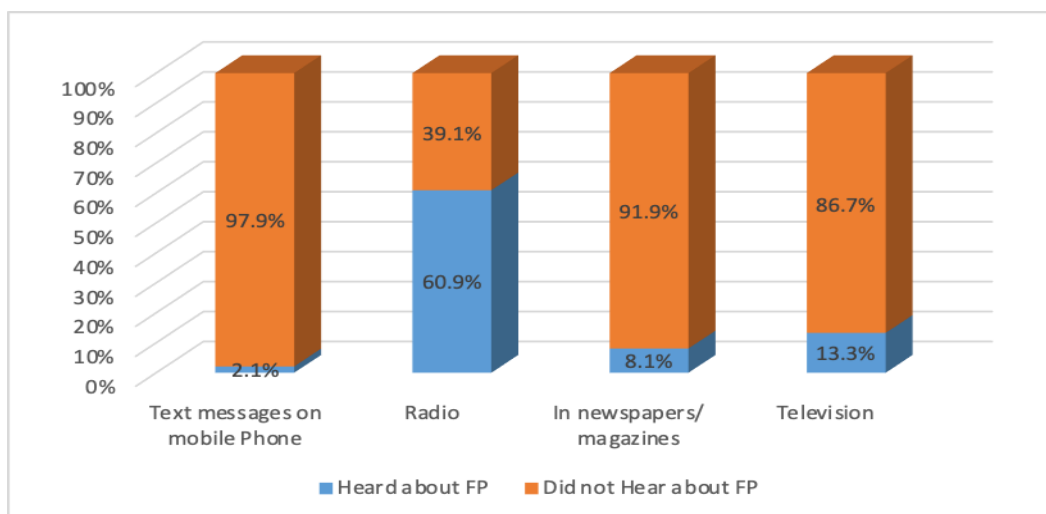


Figure 10. Bar chart showing access to family planning information through the different channels of mass media.

Internet Usage: The Internet is also a critical tool through which people access and share information. Internet use includes accessing web pages, email, and social media. About 94% of respondents had never used the internet and only 4.3% of the respondents reported having used the internet in the 12 months preceding the survey (Table 18).

Table 18

Use of the Internet

	Frequency	Percent
Never	657	93.9
Yes, last 12 months	30	4.3
Yes, before the last 12 months	13	1.9
Total	700	100.0

Knowledge about family planning

Knowledge about family planning was ubiquitous with 99% of the respondents aware of at least one family planning method (Table 19).

Table 19

Knowledge of Family Planning Methods

	Frequency	Percent
Knows no method	7	1.0
Knows only traditional method	1	0.1
Knows modern method	692	98.9
Total	700	100.0

Ever using anything or tried to delay or avoid getting pregnant

Close to half (314, 44.9%) of the sexually active teenagers have ever used anything or attempted to delay or avoid getting pregnant (Table 20).

Table 20

Ever Used Anything or Tried to Delay or Avoid Getting Pregnant

	Frequency	Percent
No	386	55.1
Yes, used outside calendar	22	3.1
Yes, used in calendar	292	41.7
Total	700	100.0

Contraceptive use and intention to use

When asked the ideal family size, a great majority (79.1%) of respondents preferred an ideal family of four children and above, a reflection of an inherent preference for large families. The most common response (mode) to the question was four children (Table 21).

Table 21

The Ideal Number of Children

	Frequency	Percent
0	1	0.1
1	8	1.1
2	55	7.9
3	83	11.9
4	339	48.4
5	85	12.1
6+	123	17.6
Missing	6	0.9
Total	700	100.0

About 45% of all sexually active unmarried teenage girls had at least one living child, and 8.5% of them have had experienced at least one repeat pregnancy as a teenager (Table 22).

Table 22

Number of Living Children

	Frequency	Percent
0	382	54.6
1	259	37.0
2	55	7.9
3	4	0.6
Total	700	100.0

Among the 495 nonusers of contraception, 357 (72.1%) intend to use contraception in the future, while over 1 in 4 non-users (27.9%) reported that they did not intend to use contraception in the future (Table 23).

Table 23

Contraceptive Intention

	Frequency	Percent
Non-user - intends to use later	357	72.1
Does not intend to use	138	27.9
Total	495	100.0

The intention to use contraception in the future rather than now depended on the number of living children that a woman had at the time of the survey, the more they became sure about the use of contraception and the earlier they decided to use a contraceptive method (Table 24).

Table 24

Intention to Use Contraceptives and the Number of Living Children

		Number of living children				Total
		0	1	2	3	
Intention to use	Use later	219	111	26	1	357
	Unsure about use	17	11	0	0	28
	<u>Does not intend</u>	70	33	7	0	110
Total		306	155	33	1	495

The contraceptive prevalence rate (CPR) among respondents was 29.3% with modern contraceptive methods contributing 27.3% and traditional methods 2.0% (Table 25).

Table 25

Current Contraceptive Use by Method Type

	Frequency	Percent
No method	495	70.7
Traditional method	14	2.0
Modern method	191	27.3
Total	700	100.0

Contraceptive prevalence varied by region

Among the unmarried teenage girls, modern contraceptive use is lowest among women in the Karamoja region (13%) and highest among women in the Kampala region (40.7%), (Figure 11).

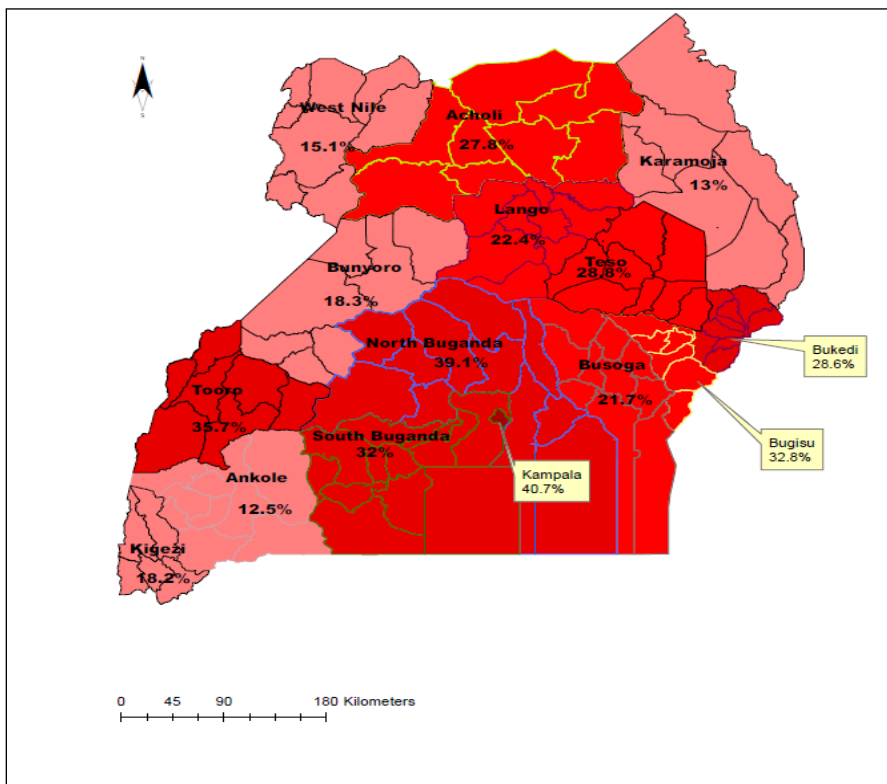


Figure 11. Map of Uganda showing contraceptive prevalence (%) by region.

Contraceptive Method Mix

Most of the respondents (14.7%) were using injectable contraceptives. Lactational amenorrhea and IUD were the least used with only three girls (0.4%) of the respondents using each of the methods (Table 26).

Table 26

Current Contraceptive Method Among Sexually Active Unmarried Teenage Girls

Family Planning Method	Frequency	Percent
Not using	495	70.7
Pill	10	1.4
IUD	3	0.4
Injections	103	14.7
Male condom	52	7.4
Periodic abstinence	5	0.7
Withdrawal	9	1.3
Implants/Norplant	20	2.9
Lactational amenorrhea (LAM)	3	0.4
Total	700	100

Over a half (103, 54 %) users of modern contraceptives used injectable contraceptives, followed by male condoms at 27%, then implants at 10%. No respondent reported the use of a female condom (Figure 12).

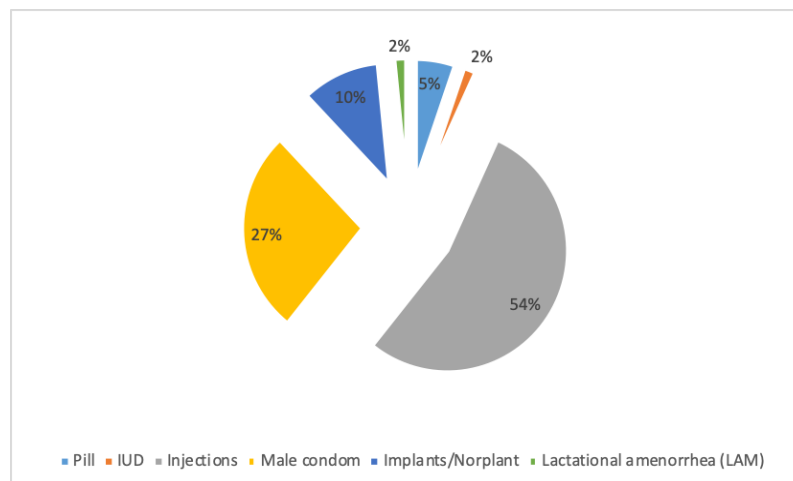


Figure 12. Modern contraceptive method-mix among sexually active unmarried teenagers in Uganda.

Current users of contraceptives reported having been on the current method for an average of 7 months and most of the respondents who used contraceptives obtained them

from public facilities (53.7%) compared to 46.3% who obtained them from private health providers (Table 27).

Table 27

Last Source of Contraceptives for Current Users

	Frequency	Percent
Government health center	69	33.7
Private hospital/clinic	57	27.8
Pharmacy/drug shop	21	10.2
Family planning clinic	2	1.0
Government hospital	16	7.8
Shop	8	3.9
Mobile clinic	4	2.0
Community health worker/VHT	4	2.0
Other private sector	1	0.5
Friend/relative	1	0.5
Buying/ acquisition not necessary	17	8.3
Other	5	2.4
Total	205	100.0

The unmet need for contraception was 35.3%, with most of the teenagers (238, 34%) having an unmet need for spacing/ delaying. Of those who had an unmet need for contraception, 96.3% reported having an unmet need for spacing or delaying childbirth, with only 3.7% having an unmet need for limiting (Table 28).

Table 28

Unmet Need for Contraception Among Participants

	Frequency	Percent
Unmet need for delaying/ spacing	238	34.0
Unmet need for limiting	9	1.3
Using for spacing	199	28.4
Using for limiting	6	0.9
No unmet need	241	34.4
Infecund, menopausal	7	1.0
Total	700	100.0

About three quarters (74%) of the women with unmet need for contraception preferred to use contraceptives later rather than at the time of the survey, 7% were not sure about their future use of contraception and 19% did not intend to use contraceptives at all (Table 29).

Table 29

Intention to Use and Unmet Need for Contraception

	Unmet need				Total
	Unmet need for spacing	Unmet need for limiting	No unmet need	Infecund, menopausal	
Use later	175	7	169	6	357
Unsure about use	17	1	10	0	28
Does not intend	45	1	61	2	109
Total	237	9	240	8	494

The demand for family planning among unmarried teenage women

The total demand for family planning among currently unmarried sexually active women aged 15-19 years was 64.6%, of which only 54.6% was satisfied by modern methods, 3.1% is met by traditional methods and 42.3% of the demand remained unmet (Figure 13).

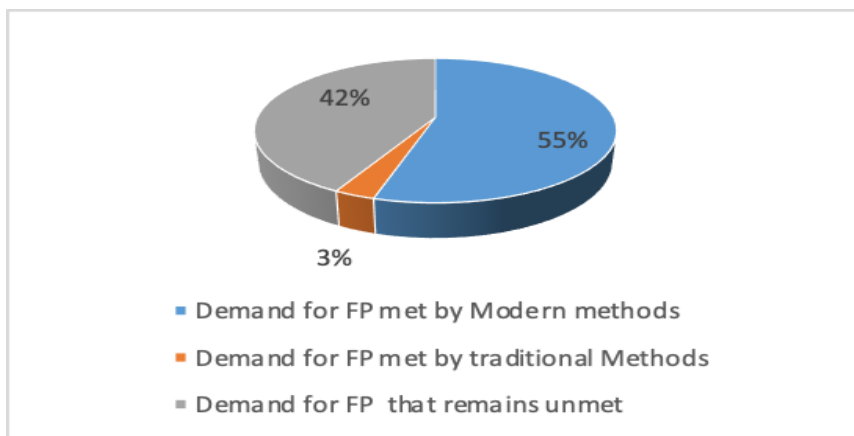


Figure 13. Demand for Family Planning among sexually active unmarried teenage women aged 15-19 years in Uganda.

The demand for family planning was highest in the Teso region (78.8%) and lowest in the Karamoja region 26.1 percent (Figure 14).

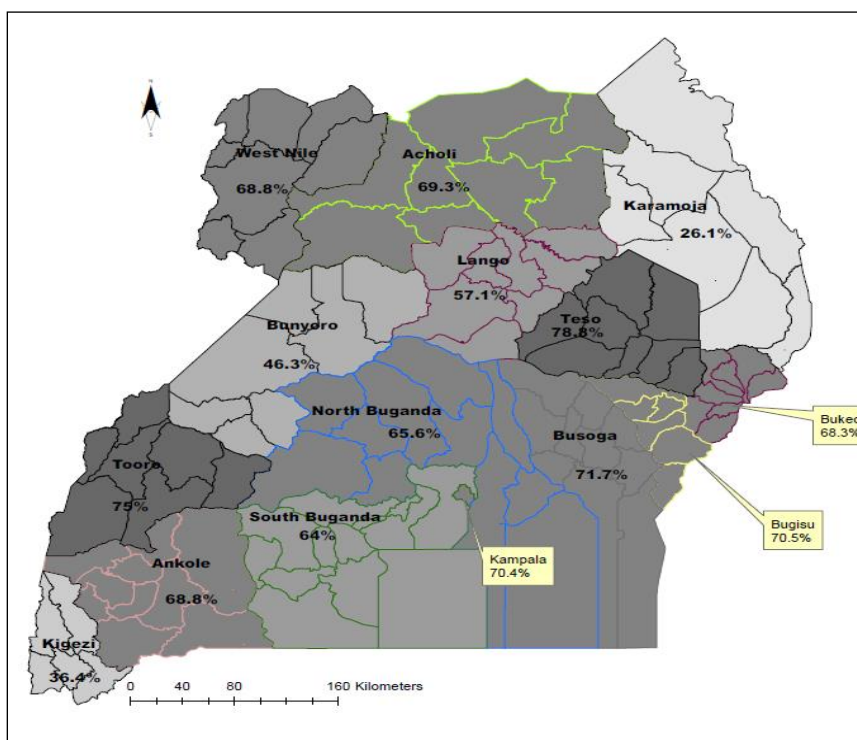


Figure 14. Map of Uganda showing demand for family planning by region.

The proportion of the demand for FP met by modern methods

The proportion of demand for family planning met by modern methods is high in the central regions of Kampala (57.9%), North Buganda (59.5%) and lowest in Ankole and West-Nile region (Figure 15)

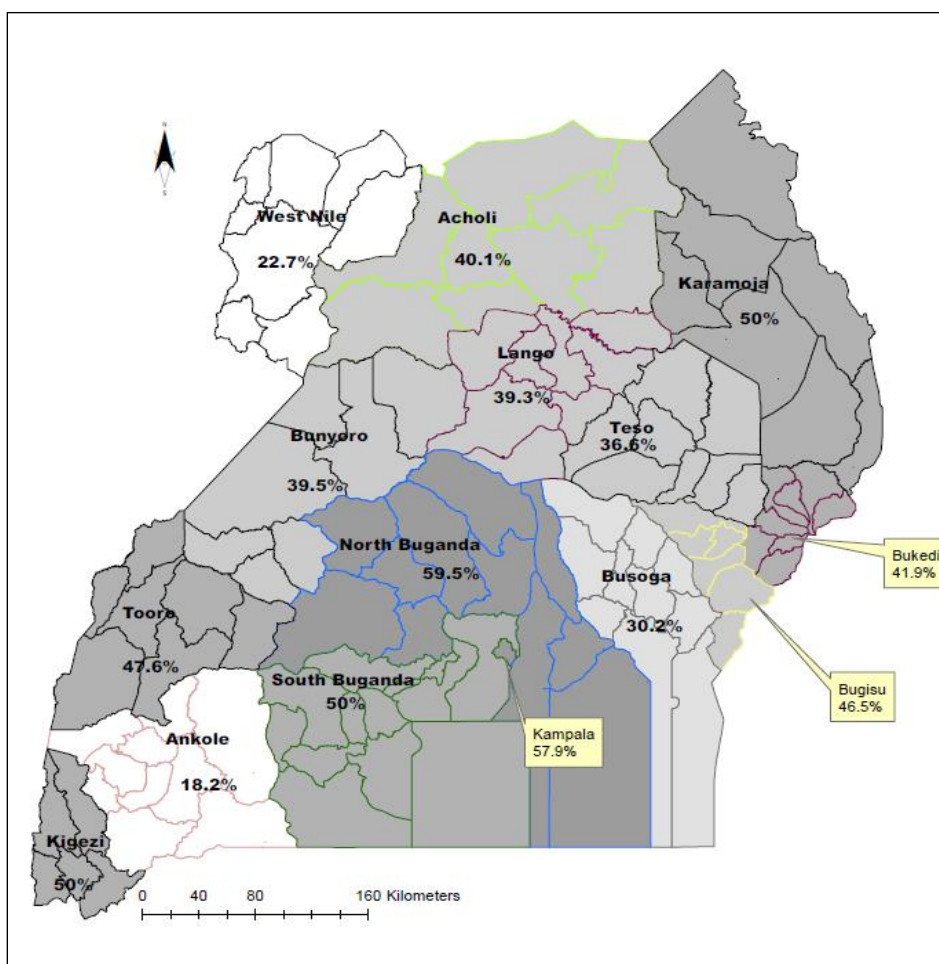


Figure 15. Map of Uganda showing patterns of demand for family planning met by modern methods.

Most sexually active unmarried teenage girls (386, 55.1%) had never used any form of contraceptive, while those who ever-used a contraceptive but were currently not using a method were 109 (15.5%) (Table 30).

Table 30

The Pattern of Contraceptive Use Among Unmarried Teenage Girls

	Frequency	Percent
Never used	386	55.1
Currently using	205	29.3
Used since last birth	71	10.1
Used before last birth	38	5.4
Total	700	100.0

Non-users of contraception gave various reasons for not using a method. The Fear of side effects/ health concerns and infrequent sex were the main reasons for not using contraception. Religion was not among the main reasons respondents were not using contraceptives (Table 31).

Table 31

Reason for Not Using a Contraceptive Method

	Frequency	Percent
Infrequent Sex	32	16
Fear of side effects/ health concerns	32	16
Postpartum amenorrhic	20	10
Breastfeeding	20	10
Partner opposed	19	9.5
Not Married	16	8
Respondent opposed	14	7
Fatalistic	9	4.5
Other reasons	9	4.5
Not having sex	5	2.5
Others opposed	5	2.5
Don't Know	5	2.5
Lack of access/ too far	4	2
Others	10	5
Total	200	100

Contraceptive discontinuation rates were highest for injections at 50.4%, followed by the male condom at 28.1% and lowest for implants at 0.8% (table 32).

Table 32

The Last Method Discontinued in the Last 5 Years

	Frequency	Percent
Pill	10	8.3
IUD	5	4.1
Injections	61	50.4
Male condom	34	28.1
Periodic abstinence	3	2.5
Withdrawal	6	5.0
Implants/Norplant	1	0.8
Lactational amenorrhea (LAM)	1	0.8
Total	121	100.0

The main reasons for discontinuing a contraceptive method were health concerns or experiencing side effects (32.2%) and the desire to become pregnant (19.8%). Infrequent sex because the partner is away (12.4%) and partner disapproval (10.7%) were the other remarkable contributors to method discontinuation (Table 33)

Table 33

Reason of the Last Discontinuation

	Frequency	Percent
Became pregnant	2	1.7
Wanted to become pregnant	24	19.8
Husband disapproved	13	10.7
Side effects or health concerns	39	32.2
Access, availability	2	1.7
Wanted a more effective method	6	5.0
Inconvenient to use	7	5.8
Infrequent sex, partner away	15	12.4
Cost	5	4.1
Other	7	5.8
Don't know	1	0.8
Total	121	100.0

Short-term methods (injections, pills, and male condoms) contributed 86.7% of the discontinuations with injectables contributing 50.4% and male condoms 28.1%. The reasons for discontinuing a contraceptive method were fear of side effects (32%), wanting to become pregnant (20%), and infrequent sex (12%) (Figure 16).

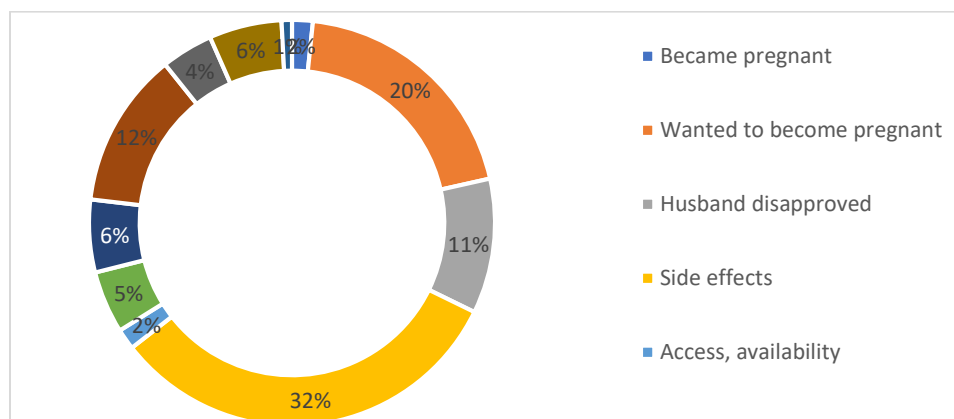


Figure 16. A chart showing the reasons for discontinuing a family planning method.

Bivariate Analysis

Analysis of the association of independent variables with the respondents' sexual activity, contraceptive use, and unmet need for contraception status was done in this section. The relationships between the dependent variables and categorical independent variables were performed using the chi-square tests, while the association between the categorical dependent variables and quantitative independent variables such as age, age at first sex, and years of education were performed using multinomial logistics regression, (McDonald, 2014).

The chi-square test and bivariate logistics regression

I chose to use the chi-square statistic because of the various its advantages over the other non-parametric test, including the fact that it does not require equality of variances among the study groups or homoscedasticity in the data (McHugh, 2013).

In cases where the independent variables were quantitative, multivariate logistics regression analysis involving only two variables was used to establish the strength of the

relationship between them because my dependent variables involved more than two categories of responses (McHugh, 2013).

Research Question 1. Is there a significant association between (a) age, (b) age at first sex, (c) residence, (d) contraceptive discontinuation, (e) region, (f) religion, (g) household wealth, (h) years of education, (i) knowledge about family planning, (j) exposure to media, (k) characteristics of household head, (l) the number of living children, (m) wanted fertility, (n) attempt to avoid or stop pregnancy and sexual activity among unmarried teenage women aged 15-19 years old in Uganda?

H₀1: There is no significant association between (a) age, (b) age at first sex, (c) residence, (d) contraceptive discontinuation, (e) region, (f) religion, (g) household wealth, (h) years of education, (i) knowledge about family planning, (j) exposure to media, (k) characteristics of household head, (l) the number of living children, (m) wanted fertility, (n) attempt to avoid or stop pregnancy and sexual activity among unmarried teenage women aged 15-19 years old in Uganda.

H_a1: There is no significant association between (a) age, (b) age at first sex, (c) residence, (d) contraceptive discontinuation, (e) region, (f) religion, (g) household wealth, (h) years of education, (i) knowledge about family planning, (j) exposure to media, (k) characteristics of household head, (l) the number of living children, (m) wanted fertility, (n) attempt to avoid or stop pregnancy and sexual activity among unmarried teenage women aged 15-19 years old in Uganda.

To assess the level of association between sexual activity and categorical independent variables, I used crosstabulation using SPSS as summarized in table 34.

Table 34

Case Processing Summary from SPSS for Recent Sexual Activity and Categorical Variables

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Religion	4014	100	0	0	4014	100
Type of place of residence	4014	100	0	0	4014	100
Highest educational level	4014	100	0	0	4014	100
Literacy	4014	100	0	0	4014	100
Respondent's occupation	3995	100		0	4014	100
Region	4014	100	0	0	4014	100
Household has radio	4014	100	0	0	4014	100
Frequency of listening to radio	4014	100	0	0	4014	100
Household has television	4014	100	0	0	4014	100
Frequency of watching television	4014	100	0	0	4014	100
Frequency of reading newspaper or magazine	4014	100	0	0	4014	100
Owns a mobile telephone	4014	100	0	0	4014	100
Use of internet	4014	100	0	0	4014	100
Knowledge of any method	4014	100	0	0	4014	100
Sex of household head	4014	100	0	0	4014	100

To test the relationship between categorical variables, I used the Chi-Square Test of Independence separately for each of the variables using SPSS. Where the Asymptotic Significance (p-value) was greater than the chosen significance level ($\alpha = 0.05$), I did not reject the null hypothesis. Rather, I concluded that there is not enough evidence to suggest an association between sexual activity and the categorical variables. On the other hand, when the p-value was less than 0.05, I rejected the null hypothesis and concluded that the variables were not independent of each other and that there was a statistical significance between sexual activity and the categorical variables (Kent State University, n.d). The association between sexual activity (categorical variable with more than two categories) and quantitative variables was conducted, separately for each variable, using

multinomial logistics regression (McDonald, 2014). Analysis of the respondents' sexual activity and independent categorical variables revealed several significant factors affecting sexual activity as shown in Table 34. Religion and household owning a radio were not found to significantly influence sexual activity among teenage girls (Table 35).

Table 35

Association Between Sexual Activity and Categorical Demographic and Socioeconomic Factors

	Pearson Chi-Square (X ²)	<i>df</i>	Asymptotic Significance (2-sided)
Region	210.9	42	0.000
Ideal Number of Children	115	48	0.000
Respondent's current age*	882.8	3	0.000
Years of education*	77.3	3	0.000
Age of household head*	346.1	3	0.000
Age at first sex*	5491.4	36	0.000
Type of place of residence (Rural/ urban)	14.0	3	0.003
Highest educational level	91.7	9	0.000
Education attainment	106.5	15	0.000
Literacy	147.2	12	0.000
Respondent's occupation	277.6	24	0.000
Religion	45.3	33	0.075
Wealth Index	66.8	12	0.000
Household has a radio	6.7	6	0.352
Frequency of listening to a radio	43.8	6	0.000
Household has a television	56.3	6	0.000
Frequency of watching television	45.6	6	0.000
Frequency of reading newspapers	60.3	6	0.000
Owens a mobile phone	206.6	3	0.000
Frequency of using the internet	39.7	6	0.000
Knowledge about Family planning	67.9	6	0.000
Sex of Household head	67.9	3	0.000

* *Quantitative variables, association determined used multinomial regression conducted separately for each variable.*

Research Question 2

Is there a significant association between (a) age, (b) age at first sex, (c) residence, (d) contraceptive discontinuation, (e) region, (f) religion, (g) household wealth, (h) years of education, (i) knowledge about family planning, (j) exposure to media, (k)

characteristics of household head, (l) the number of living children, (m) wanted fertility, (n) attempt to avoid or stop pregnancy and the use of modern contraception among unmarried teenage women aged 15-19 years old in Uganda?

H₀2: There is no significant association between (a) age, (b) age at first sex, (c) residence, (d) contraceptive discontinuation, (e) region, (f) religion, (g) household wealth, (h) years of education, (i) knowledge about family planning, (j) exposure to media, (k) characteristics of household head, (l) the number of living children, (m) wanted fertility, (n) attempt to avoid or stop pregnancy and the use of modern contraception among unmarried teenage women aged 15-19 years old in Uganda.

H_a2: There is a significant association between (a) age, (b) age at first sex, (c) residence, (d) contraceptive discontinuation, (e) region, (f) religion, (g) household wealth, (h) years of education, (i) knowledge about family planning, (j) exposure to media, (k) characteristics of household head, (l) the number of living children, (m) wanted fertility, (n) attempt to avoid or stop pregnancy and the use of modern contraception among unmarried teenage women aged 15-19 years old in Uganda.

Bivariate analysis showed that religion, knowledge about family planning, age at first sex, the household has a television, the household has radio, frequency of reading newspapers/ magazines, the use of the internet, respondents' occupation, reasons for last discontinuation and characteristics of the household head were not significantly associated with contraceptive use among sexually active teenage girls. Several statistically significant associations were found between contraceptive use and

independent variables, including the respondent's current age, age of household head, education status, region, type of place of residence, wealth index. (Table 36).

Table 36

Association Between Contraceptive Use and Personal, Behavioral and Environmental Factors

	Pearson Chi-Square (X^2)	<i>df</i>	<i>p</i> value
Respondent's current age**	12.2	3	.007
Age at first sex**	5.0	3	.175
Age of Household head**	8.3	3	.040
Years of education**	42.7	3	.000
Region	78.5	42	.001
Type of place of residence (Rural/ urban)	14.8	3	.002
Highest educational level	42.2	9	.000
Education attainment	49.3	15	.000
Literacy	27.2	12	.001
Religion	13.9	18	.736
Wealth Index	33.2	12	.001
Knowledge of any method	10.835*	6	.094*
Household has a radio	8.9	6	.180
Reason for last discontinuation	35.344*	30	.230
Frequency of Listening to radio	16.2	6	.013
Household has a television	11.5	6	.075
Frequency of watching television	25.3	6	.000
Frequency of reading newspapers	6.3	6	.387
Use of internet	11.0*	6	.087*
Frequency of using internet	12.2*	9	.203*
Owns a mobile phone	9.9	3	.020
Occupation	26.6	21	.183
Ideal number of children	65.642*	36	.002*
Number of living children	42.2	9	.000
Ever trying to stop a pregnancy	413.9	6	.000
Relationship with Household head	30.9*	24	.157*
Sex of Household head	1.4	3	.702

*Used the maximum likelihood ratio chi-square (G^2) as the sample size violated the chi-square (X^2) of expected cells.

** Quantitative variables, association determined used multinomial regression conducted separately for each variable.

Age at first sex and age of household age were not significant predictors of contraceptive use, while the age of the respondent and years of education were positive predictors of contraceptive use.

Research Question 3

Is there a significant association between (a) age, (b) age at first sex, (c) residence, (d) contraceptive discontinuation, (e) region, (f) religion, (g) household wealth, (h) years of education, (i) knowledge about family planning, (j) exposure to media, (k) characteristics of household head, (l) the number of living children, (m) wanted fertility, (n) attempt to avoid or stop pregnancy and unmet need for contraception?

H₀3: There is no significant association between (a) age, (b) age at first sex, (c) residence, (d) contraceptive discontinuation, (e) region, (f) religion, (g) household wealth, (h) years of education, (i) knowledge about family planning, (j) exposure to media, (k) characteristics of household head, (l) the number of living children, (m) wanted fertility, (n) attempt to avoid or stop pregnancy and unmet need for contraception.

H_a3: There is a significant association between (a) age, (b) age at first sex, (c) residence, (d) contraceptive discontinuation, (e) region, (f) religion, (g) household wealth, (h) years of education, (i) knowledge about family planning, (j) exposure to media, (k) characteristics of household head, (l) the number of living children, (m) wanted fertility, (n) attempt to avoid or stop pregnancy and unmet need for contraception.

Determinants of unmet need for contraception

Unmet need for contraception was significantly associated with the respondent's current age, age at first sex, age of household head, years of education, region, the type of place of residence, wealth index, frequency of listening to the radio, number of living

children, ever trying to stop a pregnancy, relationship to the household head and sex of household head. Religion and occupation were not associated with the Unmet need for contraception (Table 37).

Table 37

Unmet Need for Contraception and Demographic and Socioeconomic Factors

	Likelihood Ratio Chi-Square (G ²)	df	Test (2-sided)
Respondent's current age*	34.8	5	0.000
Age at first sex*	12.3	5	0.031
Age of Household head*	13.8	5	0.017
Years of education*	42.6	5	0.000
Region	114.6	70	0.001
Type of place of residence (Rural/ urban)	15.4	5	0.009
Highest educational level	39.3	15	0.001
Religion	22.2	30	0.848
Wealth Index	39.5	20	0.006
Ideal number of children	75.9	60	0.081
Household has a radio	13.0	10	0.222
Frequency of listening to a radio	25.7	10	0.004
Household has a television	15.1	10	0.127
Frequency of watching television	21.1	10	0.021
Frequency of reading newspapers	4.8	10	0.906
Use of internet	9.9	10	0.452
Frequency of using internet	18.2	15	0.251
Owns a mobile phone	13.6	5	0.018
Occupation	39.9	35	0.263
Number of living children	76.4	15	0.000
Ever trying to stop a pregnancy	497.1	10	0.000
Relationship with Household head	89.1	40	0.000
Sex of Household head	15.7	5	0.008

* *Quantitative variables, association determined used multinomial regression conducted separately for each variable.*

Unmet need and contraceptive discontinuation

Of the 121 respondents who discontinued a family planning method, 46 (38%) had an unmet need for contraception and this contributed 18.6% of the total unmet need among unmarried teenagers (Table 37). Out of the 121 respondents who discontinued a

method, 35 (28.9%) had switched to another method, while about one-third (40, 33.1%) did not have an unmet need or reported being infecund (Table 38).

Table 38

Unmet Need and Reason of the Last Discontinuation

	Reason of the last discontinuation											Total	Percent
	Became pregnant	Wanted to become pregnant	Husband disapproved	Side effects	Access, availability	Wanted a more effective method	Inconvenient to use	Infrequent sex, husband away	Cost	Other	Don't know		
Unmet need for spacing	1	4	6	19	1	1	0	6	2	3	0	43	35.5
Unmet need for limiting	0	0	0	3	0	0	0	0	0	0	0	3	2.5
Using for spacing	1	3	2	6	0	5	3	6	3	2	1	32	26.4
Using for limiting	0	0	1	1	0	0	0	1	0	0	0	3	2.5
No unmet need	0	17	4	8	1	0	3	2	0	2	0	37	30.6
Infecund, menopausal	0	0	0	2	0	0	1	0	0	0	0	3	2.5
Total	2	24	13	39	2	6	7	15	5	7	1	121	100

Multivariate Analysis**Multinomial Logistics regression analyses**

Under this section, I conducted multivariate Logistics regression adjusted for significant confounders only. Logistic regression is used to predict a categorical variable from a set of predictor variables (Peng, Lee, & Ingersoll, 2002). To analyze the data using multinomial logistic regression, I first checked that the data can be analyzed using multinomial logistic regression by satisfying the following six assumptions: a) The dependent variable should be measured at the nominal level; b) one or more independent

variables are continuous, ordinal or nominal (including dichotomous variables); c) observations are independence and the dependent variables have mutually exclusive and exhaustive categories; d) there should be no multicollinearity; e) there is a linear relationship between any continuous independent variables and the logit transformation of the dependent variable and f) there are no outliers, high leverage values or highly influential points(Vatcheva, Lee, McCormick, & RahbAR, 2016).

Logistic regression is often chosen if the predictor variables are a mix of continuous and categorical variables and/or if they are not nicely distributed (logistic regression makes no assumptions about the distributions of the predictor variables). Binary logistics regression is used when the dependent variable is dichotomous; however, if there are more than two levels, the multinomial logistics regression is always used (Peng, Lee, and Ingersoll, 2002).

Multicollinearity occurs when two or more independent variables that are highly correlated are assessed simultaneously in a regression model. When the predictor variables are highly correlated the common interpretation of a regression coefficient of one predictor as measuring the change in the expected value of the response variable due to one unit increase in that predictor variable when holding the other predictors constant may be practically impossible (Vatcheva, Lee, McCormick, & RahbAR, 2016).

According to Vatcheva, Lee, McCormick, & Rahbar (2016) most of the researchers do not report multicollinearity diagnostic when analyzing data using regression models yet multicollinearity yet this test can easily be done using the ‘collinearity diagnostics’ available under ‘Linear’ regression in SPSS.

Logistic regression model for predicting sexual activity among teenage girls

Under this section, I will be studying predictors of sexual activity among teenage girls in Uganda. Religion and 'Household has a radio' were excluded from the model as they were found not to be significantly associated with sexual activity at the bivariate level. Next, I conducted a pairwise correlation between the variables using SPSS, to identify and remove variables that showed multicollinearity and those that were theoretically insignificant (Vatcheva, Lee, McCormick, & Rahbar, 2016). The pairwise correlation test revealed a high correlation between Highest education level and years of education ($X^2 = 0.448, p < .001$) as well as the highest educational attainment and literacy ($X^2 = 0.860, p < 0.001$). So, I eliminated both the highest education level and literacy and retained years of education. There was also a high correlation between Frequency of watching TV and wealth index ($X^2 = 0.526, p < .01$); age at first sex and number of living children ($X^2 = 0.456, p < 0.001$), number of living children and the respondents' age ($X^2 = 0.379, p < .001$). By running the logistic regression as linear regression, I put each of the independent variables in the box as a dependent variable in turns; I was able to get the collinearity diagnostics from SPSS. I confirmed the multicollinearity among the independent variables using the Variance inflation factor (VIF) from the linear regression analysis taking a conservative cut of $VIF < 3.3$ (Kock & Lynn, 2012). I consequently eliminated the number of living children and the frequency of watching television from the model. Table 38 shows the predictor model for sexual activity using the multinomial regression analysis. The reference group was teenage girls who never had sexual activity.

It was only the respondent's age at the time of the survey that was a significant predictor of sexual activity ($P = .000$) at an alpha level, the p -value of 0.05 (Table 39)

Table 39

Predictors' Unique Contribution to Sexual Activity (N=4,014)

Description	B	Std. Error	Wald	Df	P	Odds Ratio
Intercept	-16.270	749.312	0.000	1	0.983	
Respondent's current age	-0.186	0.053	12.528	1	0.000	0.830
Region	-0.019	15.842	0.000	1	0.999	0.981
Type of place of residence	1.177	235.971	0.000	1	0.966	3.244
Education in single years	0.076	29.843	0.000	1	0.998	1.079
Knowledge of Family Planning	0.051	160.282	0.000	1	1.000	1.053
Age at first sex	3.359	15.761	0.045	1	0.831	28.768
Ideal Number of children	0.000	7.562	0.000	1	1.000	1.000
Ever tried to delay or avoid getting pregnant	-1.773	138.934	0.000	1	0.990	0.170
Age of household Head	-0174	162.176	0.000	1	0.994	0.309
Sex of Household Head	-0.015	5.310	0.000	1	0.998	0.985
Frequency of reading newspapers or magazines	-0.265	99.056	0.000	1	0.998	0.767
Frequency of listening to radio	0.510	80.543	0.000	1	0.995	1.666
Frequency of using internet	-1.026	501.123	0.000	1	0.988	0.358

a. The reference category is: Never had sex.

By culling the model to exclude all predictors that did not show significant association in the above model, multinomial logistic regression models were fitted for the sexual activity with adjustments for the respondent's age at the time of the survey. The resultant model was statistically significant, $X^2(15) = 5654.932$, Nagelkerke $R^2 = .852$, $p < .001$ (Table 39). The model shows that compared to teenage girls who have never had sex, sexually active teenagers are more likely to be older. The odds ratio of 2.35 means that for every unit increase in the age of the respondents the odds of a person being sexually active changed by a factor of 2.351, meaning that as teenagers grow older, they were more likely to be sexually active (Table 40).

Table 40

Multinomial Logistics Regression Model for Predictors of Sexual Activity Among Sexually Active Teenagers

	B	Std. Error	Wald	df	Sig.	Odds Ratio	95% Confidence Interval for Exp(B)	
							Lower Bound	Upper Bound
Intercept	-15.749	0.658	573.469	1	0.000			
Respondent's current age	0.855	0.038	512.021	1	0.000	2.351	2.183	2.532

a. The reference category is: Never had sex.

Education in single years, the age of the household head, and the number of living children were significant predictors of contraceptive use (Table 41).

Table 41

Predictors' Unique Contribution to the Use of Modern Contraceptives (N=700)

Description	B	Std. Error	Wald	df	P	Odds Ratio*
Intercept	-1.225	2.182	0.315	1	0.574	
Respondent's current age	-0.209	0.112	0.067	1	0.796	0.971
Region	0.001	0.033	0.000	1	0.985	1.001
Type of place of residence	-0.0698	0.377	3.420	1	0.064	0.498
Education in single years	0.283	0.056	25.618	1	0.000	1.328
Wealth Index	0.007	0.114	0.004	1	0.952	1.007
Ideal Number of children	-0.007	0.012	0.373	1	0.541	0.993
Number of living children	1.110	0.207	28.698	1	0.000	3.033
Age of household Head	0.017	0.008	4.615	1	0.032	1.017
Frequency of reading newspapers or magazines	-0.138	0.314	0.194	1	0.660	0.871
Frequency of listening to radio	0.286	0.144	3.923	1	0.048	1.331
Frequency of watching television	-0.004	0.193	0.000	1	0.984	0.996

*Confidence intervals have been included in the final model in table 41.

By culling the model to exclude all predictors that did not a significant association, the resultant model was statistically significant, $X^2(15) = 99.181$, Nagelkerke $R^2 = 0.149$, $p < .001$.

The model shows that for every single unit increase in the years of education, age of household head, and the number of living children, there were corresponding changes by a factor of 37% in teenagers using modern contraception compared to those who did not intend to use contraception. For example, changing the number of living children by one unit, resulted in 2.875 times (Table 42).

Table 42

Multinomial Logistics Regression Model for Predictors of Using Modern Contraceptives Among Unmarried Teenage Girls

Contraceptive use and intention ^a	B	Std. Error	Wald	df	Sig.	Exp(B)	95% Confidence Interval for Exp(B)	
							Lower Bound	Upper Bound
Intercept	-	0.465	35.631	1	0.000			
	2.777							
Education in single years	0.315	0.049	42.203	1	0.000	1.371	1.246	1.508
Age of household head	0.015	0.008	3.847	1	0.050	1.015	1.000	1.030
Number of living children	1.056	0.190	30.879	1	0.000	2.875	1.981	4.172

a. The reference category is: Does not intend to use contraceptives.

In the multivariate model, all the independent variables showed an insignificant prediction of unmet need for contraception, despite being significant at the bivariate level

Only the number of living children was a significant predictor for the unmet need for contraception (Table 43).

Table 43

Predictors' Unique Contribution Unmet Need for Spacing (N=700)

Unmet need for spacing ^a	B	Std. Error	Wald	df	Sig.	Odds Ratio	95% Confidence Interval for Exp(B)	
							Lower Bound	Upper Bound
Intercept	15.822	911.492	0.000	1	0.986			
Respondent's current age	-0.016	0.341	0.002	1	0.962	0.984	0.504	1.921
Religion	-0.014	0.018	0.566	1	0.452	0.986	0.952	1.022
Type of place of residence	1.476	0.904	2.667	1	0.102	4.376	0.744	25.731
Region	-0.106	0.095	1.246	1	0.264	0.899	0.747	1.083
Education in single years	0.065	0.184	0.126	1	0.723	1.067	0.745	1.530
Knowledge of any method	-6.467	303.824	0.000	1	0.983	0.002	3.768E-262	6.405E+255
Age at first sex	0.258	0.248	1.084	1	0.298	1.294	0.796	2.103
Ideal number of children	0.019	0.102	.036	1	0.850	1.020	0.835	1.246
Number of living children	0.318	0.656	0.235	1	0.628	1.374	0.380	4.967
Ever used anything or tried to delay or avoid getting pregnant	-0.410	0.424	0.937	1	0.333	0.663	0.289	1.523
Sex of household head	1.835	1.352	1.842	1	0.175	6.265	0.443	88.685
Age of household head	-0.020	0.021	0.957	1	0.328	0.980	0.941	1.021
Frequency of listening to radio	-0.240	0.440	0.298	1	0.585	0.786	0.332	1.862
Frequency of watching television	0.293	0.633	0.214	1	0.643	1.340	0.388	4.633
Frequency of using internet last month	-0.461	0.810	0.323	1	0.570	0.631	0.129	3.086

a. The reference category is Infecund, menopausal.

Summary

In this section, I present the results of a re-analysis of the 2016 Uganda Demographic and Health Survey (UDHS). Altogether, 18,506 WRA were interviewed during the survey, of which 4,276 (23%) were aged between 15-19 years. Only 6.1% of

teenage girls were formerly married. Among the unmarried teenagers, 700 (17%) were sexually active. Univariate, bivariate, and multivariate analyses were done that revealed the importance of the individual, behavioral, and environmental factors in sexual activity, contraceptive use, and unmet need for family planning in Uganda.

Sexual activity among teenage unmarried women was found to be significantly associated with the current age of the respondent, the age at first sex, region, place of residence (rural/ urban), education status, occupation, wealth index, frequency of listening to the radio, frequency of listening to television, frequency of reading newspapers, owning a mobile phone and the use of the internet. Sexual activity was not significantly associated with religion and whether the household owned a radio.

Contraceptive use was significantly associated with the age of the respondent, residence, region, household wealth, years of education, Number of living children, fertility intentions (ideal number of children), ever trying to stop a pregnancy, exposure to media Religion did not significantly affect the use of modern contraceptives. Contraceptive use was however not significantly associated with the age at first sex, religion, characteristics of the household head, occupation, use of the internet, frequency of reading newspapers, and knowledge about family planning.

Unmet need for contraception was significantly associated with age, residence, contraceptive discontinuation, region, and religion, household wealth, characteristics of household head, years of education, owning a mobile phone, desire to avoid or stop a pregnancy, number of living children and characteristics of the household head. Unmet

need for contraception was not significantly associated with religion, fertility intentions, and occupation.

In the next and final section of this work, I discussed these findings in the context of other publications on similar studies. Besides, I proposed a functional theory and strategies that, if applied and implemented reduce unintended teenage pregnancies in Uganda. The analysis was done using SPSS version 25 where univariate, bivariate, and multivariate analyses were done.

Section 4: Application to Professional Practice and Implications for Social Change

Introduction

Teenage pregnancy has remained high in Uganda, with one in every four teenage girls either pregnant or carrying a baby (UBOS, 2016). Ugandan women start engaging in sexual activity and childbirth early in their lives and only remember to use contraceptives after delivering more than two children (PMA2018/Uganda, 2018). I used the UDHS 2016 for 4,276 women who were aged between 15 and 19 years. Overall, 18,506 WRA were interviewed during the UDHS, of which 4,276 (23%) were aged between 15-19 years. The average age of respondents was 17.4 years (median age was 18 years). Most teenage girls (57.8%) reported that they never had sex before. Approximately half (50.5%) of those who had had sex before reported initiating sexual activity between 15 and 16 years, with the earliest sex debut reported at 19 years. Only 6.1% of teenage girls were formerly married and 17% of the unmarried teenage girls were sexually active. More than two in every 100 (2.2%) unmarried teenagers reported having been forced into sexual intercourse, mostly by a person well known to them. Condom use with the most recent partner was reported by 76% of women who reported having had sex in the 12 months preceding the survey. Most respondents (78.9%) felt confident that they could ask their partners to use a condom.

Of the 15 regions, most of the respondents were from the Bunyoro region (11.7%) and 82.1% resided in rural areas. Close to three quarters (74.3%) of the sexually active teenage women had primary level as their highest educational attainment. Approximately three quarters (75.1%) of them had less than 8 years of education and one in every three

girls (32.6%) could not read at all. Most of the respondents were Catholics (41.1%), followed by Anglicans at 28.6%.

Most of the households were headed by males (78.1%). The lowest age of a household head was 15 years and the oldest was 98 years. Most of the respondents were daughters of the household heads (53.9%), whereas 9.9% were spouses of the household head.

Only 3.6% of the respondents read newspapers or magazines at least once per week, of whom only 61.3% had heard of family planning in newspapers/ magazines in a few months preceding the survey. Although 40.7% of the respondents came from households with no radio at all, a much higher proportion (60.9%) reported having heard of family planning on the radio in the last few months before the survey. More than eight in 10 respondents (86.6%) came from households without television sets and only 13.3% of the respondents had heard of family planning on television, representing slightly more than half (52.5%) of those who watched television. Approximately one in every four participants owned a mobile phone but only 2.1% heard about family planning by text message. An overwhelming majority (94%) of the respondents never used the internet. Knowledge about family planning was very high with 99% of the respondents aware of any family planning method.

Slightly more than half (50.6%) of the respondents were from the poorest and poor wealth quintiles. When asked about their 'wanted fertility, 79.1% of the respondents preferred an ideal number of four children and above. Although more than half (54.6%)

of the sexually active unmarried teenage girls had no living child, 8.5% had experienced a repeat pregnancy.

The contraceptive prevalence rate among unmarried teenage women was 29.3%, which is much lower than the prevalence in the general population, which was at 39% (UDHS, 2016). with modern methods contributed 27.3 % and traditional methods 2.0% of the Contraceptive Prevalence Rate. Among the users of contraceptives, only 3% were using contraceptives for limiting childbearing, with 97% using for delaying/spacing childbirth. The pattern of contraceptive use significantly varied by region. Among the nonusers, 72.1% intend to use contraception in the future. The most common method of contraception was injectables (54%), male condoms (27%), and implants (10%). Overall, only 12% of the current users of modern contraceptives were on LARCs. Most users of modern contraceptives obtained from the public sector facilities (53.7%).

Results showed that the unmet need for contraception among the sexually active unmarried teenage girls was at 35.3%, of which 96.3% was an unmet need for delaying/spacing a pregnancy. Approximately three quarters (74%) of the women with unmet need for contraception preferred to use contraceptives later rather than at the time of the survey, 7% were not sure about their future use of contraception, and 19% did not intend to use contraceptives at all. This shows that there is a latent demand for contraception, that can immediately be targeted to increase uptake of modern contraceptives.

The total demand for family planning was 64.6% of which only 54.6 was satisfied by modern contraceptives and 42.3% was an unmet need, and this significantly varied

across the 15 regions, with Karamoja region having the lowest demand for family planning at 26.1% and Teso region having the highest demand for family planning at 78.8%.

The most common reason for not using a contraceptive was the fear of side effects or infrequent sex. Contraceptive discontinuation was highest for injections (50.4%), followed by condoms (28.1%) and was lowest for implants at 0.8%. The main reasons for discontinuing a contraceptive method were health concerns/side effects (32.2%) and the desire to become pregnant (19.8%).

Results of the bivariate analysis showed that sexual activity was significantly related to the respondent's current age ($X^2 = 210.9, p < .01$), the age at first sex ($p < .01$) the region of residence ($p < .01$) type of place of residence (rural versus urban) ($p < .05$), education in single years ($p < .01$) wealth index ($p < .01$) frequency of listening to the radio ($p < .01$) frequency of reading newspapers/ magazines ($p < .01$) owning a mobile phone ($p < .01$) use of the internet ($p < .01$) the sex of a household head ($p < .01$), and the age of household head ($p < .01$). Results from the multinomial regression analysis showed that the current age of respondents was a significant positive predictor of sexual activity among teenagers ($OR = 2.183, p < .01$). Sexual activity was found not to be significantly associated with religion and the household owning a radio.

Contraceptive use and intention to use a method were significantly associated with the age of respondent ($p < .01$), years of education ($p < .01$), region ($p < .01$), type place of residence ($p < .01$), wealth index ($p < .01$), frequency of listening to the radio ($p < .01$), frequency of watching television ($p < .01$), owning a mobile phone ($p < .05$),

Wanted Fertility ($p < .01$), Age of Household head ($p < .05$), number of living children ($p < .01$), and ever trying to stop a pregnancy ($p < .01$). The predictors of the use of modern contraceptives were the respondent's education (OR=1.37, $p < .01$) and the number of living children (OR=2.875, $p < .01$). The age of the household head was a weak positive predictor of contraceptive use (OR=1.015, $p = .05$). Contraceptive use and intention were not significantly associated with the age at first sex, religion, knowledge about family planning methods, reasons for discontinuation, reading of newspapers or magazines, the use of the internet, and relationship with the household head.

Unmet need for contraception was significantly associated with the age of the respondent ($p < .01$), the age at first sex ($p < .05$), age of household head ($p < .05$), region ($p < .01$) type of place of residence ($p < .01$) years of education ($p < .01$), wealth index ($p < .01$) frequency of listening to the radio ($p < .01$) frequency of watching television ($p < .05$) owning a mobile phone ($p < .05$) the number of living children ($p < .01$) ever trying to stop a pregnancy ($p < .01$) relationship with the household head ($p < .01$), and sex of household head ($p < .01$). Unmet need for contraception was not significantly associated with the religion, wanted fertility, the use of the internet, and the frequency of reading newspapers/ magazines. Predictors model for unmet need was not significant meaning that I could not use independent variables to predict the unmet need for contraception.

Interpretation of the findings

Under this subsection, I describe how the findings in this study confirm, disconfirm, or extend knowledge about sexual activity, contraceptive use, and unmet

needs among unmarried teenagers by comparing them with what has been found in the peer-reviewed literature described in Section 1.

General issues and sexual activity, contraceptive use and unmet need for contraception

Most of the respondents (93.9%) were not married and only 17.4% of them were sexually active. While the initiation of sexual activity is a part of normal behavior and development, sexual behavior, especially if this involves engaging in sexual activity among adolescents exposes them to negative reproductive health risks as it increases the period adolescents are exposed to the risk of sexually transmitted infections or unintended pregnancy (Pringle et al, 2017). Some young people, who engage in coitus lack adequate knowledge of contraception, are either unable to access family planning services, careless about it, or like to experiment (The FANTA project, 2018). Available data indicates that Uganda currently has one of the highest maternal mortality rates in the world and a large proportion of these deaths are among young females aged 10-24 years (Hussain, 2013; Index Mundi, 2018). Unsafe abortion is usually a response to an unwanted pregnancy that could have been prevented using an effective contraceptive method (Nsubuga, Sekandi, Sempeera, & Makumbi, 2016). While contraceptive non-use may result from lack of knowledge, findings indicate that unmarried sexually active had adequate knowledge of contraceptives and still engage in indiscriminate unsafe sex (Nsubuga, Sekandi, Sempeera, & Makumbi, 2016).

The modern contraceptive prevalence rate was found to be low at 27.3% and this varies by region. This is lower than among married WRA, which was at 35% (UBOS,

2016). Unmet need for contraception was in the segment of the population was 35.5%, which is higher than in the general population of women's reproductive age, which is at 28% (UBOS, 2016).

The total demand for family planning among currently unmarried sexually active women aged 15-19 years was 64.6%, of which 54.6% was satisfied by modern methods. The demand for family planning among unmarried teenagers is lower than that of 67% among currently married women in Uganda (UBOS, 2016).

Individual/ demographic factors

Sexual behavior of respondents and contraceptive use

Results showed that less than half of the respondents, 1,695 (42.2%) had ever had sex. The mean age at coitarche was 16 years (minimum of 9 years, maximum=19 years). Only 5.7% of the sexually experienced participants had two or more partners in the 12 months preceding the survey. The main predictor of sexual activity was the respondents' current age (OR=2.351, p.01). A similar study among girls in tertiary institutions showed that the mean age at first sex was higher, at 19.1 ± 3.6 years (Eze, Obiebi, & Akpofure, 2018). A study by Somba, Mbonile, Obure, & Mahande (2014) among undergraduate female students also showed that while coitarche was at 19-24 years, the majority (70.4%) of the students have had sexual intercourse.

Results showed that 99% of the unmarried sexually active teenage girls were knowledgeable about contraceptives. This was similar to the study by Somba, Mbonile, Obure, & Mahande (2014) where all participants knew about contraception. Knowledge of at least one contraceptive method among female teenagers 15-19 years in Ghana was

found to be slightly lower at 86.6% (Boamah et al., 2014). Knowledge about contraception was however not found to be significantly associated with contraceptive use. A study by Nsubuga, Sekandi, Sempeera, & Makumbi (2016) also found that high knowledge about contraceptive methods was not directly translated into the uptake of contraceptives.

Despite the universal knowledge of contraception, only 27.2% of sexually active teenage girls reported using modern contraceptives. The most commonly used contraceptive method was injection (54%). The use of other methods such as condoms (27%), implants (10%), pills (5%), IUD (2%), and Lactational Amenorrhea (2%) was low. The study by Boamah et al. (2014) among adolescents, however, found that condoms were the most commonly used contraceptive method (82.0%) and injection use was as low as 0.9%. A study among university students in Uganda also found that male condoms (34.5 %) were the commonest methods (Nsubuga, Sekandi, Sempeera, & Makumbi, 2016).

Respondents Age

This study found that the respondent's current age was the main predictor of sexual activity ((OR=2.351, $p = .01$) and is significantly associated with contraceptive use. contraceptive use ($p < .05$) and unmet need for contraception ($X^2=12.2, p < .01$). Most of the sexually active respondents (63.4%) were older teenage girls aged 18 and 19 years. Contraceptive use and unmet need for contraception also increased with the current age of respondents. Smith, Harney, Singh, & Hurwitz (2017) also found that older

adolescents were significantly more likely to use a long-acting reversible contraceptive method than younger ones.

Socioeconomic factors

Despite the implementation of Universal Primary and Secondary Education, Uganda, like many sub-Saharan African countries, still faces major challenges in providing quality and accessible basic education to children and adolescents. Results from this study found that the years of education was a predictor of contraceptive use (OR=1.37, $p < 0.01$). This study also found that most of the respondents (74.3%) only attained primary education. This is a recipe for early sexual activity and low contraceptive use as higher educational attainment is likely to delay initial intercourse (Zhang et al., 2016) and the increase the use of modern contraceptives (Asiimwe, Ndugga, Mushomi, & Ntozi, 2014; Emina et al., 2014). Illiterate women or women with no education are also likely to miss out on media and communication regarding family planning (Labat et al., 2018).

Findings from my study showed that poverty levels are very high, with over half (50.6%) of the sexually active unmarried teenage girls coming from the poor and poorest households. Wealth index was found to be significantly associated with sexual activity ($p < .01$), contraceptive use ($p < .01$), and unmet need for contraception ($p < .01$). Similar studies among married women showed that poorer women or women from poor households are much less likely to use modern contraceptives than their wealthier counterparts (Adebowale et al., 2014; Adebowale, Gbadebo, & Afolabi, 2016; UBOS, 2016 and Ugaz, Chatterji, Gribble, & Banke (2016).

Most of the respondents (82.1%) resided in the rural areas of their respective regions, with only 125 (17.9%) residing in urban areas. This study also found that the type of place of residence (rural or urban) was significantly associated with sexual activity ($p < .01$), contraceptive use ($p < .01$), and unmet need for contraception ($P < .01$). The urban-rural divide in contraceptive use is thought to be modified by several factors such as education, socioeconomic status of women or their families, and access to services (Andi et al., 2014).

While over half (54.6) of all sexually active unmarried teenage girls did not have a living child, about 45% had at least one living child, with 8.5% of them having had repeat teen births. The number of living children was a strong predictor of the use of modern contraceptives (OR=2.875, $p < .01$) and unmet need for contraception ($p < .01$). Alene & Atalell (2018) also found that women with a high number of living children were more likely to use contraceptives as compared to those women with a low number of living children.

Most of the respondents (64.6%) were involved in some form of income-generating activity. The respondents' occupation was found to be significantly associated with sexual activity ($p < .01$). Contraceptive prevalence among the unemployed teenage women (28.0%) was slightly higher than in the employed (27.0%). The association of occupation was however not significant for contraceptive use and unmet need for contraception. This finding contradicts findings among older women, which revealed that contraceptive use was higher among employed women (67%) than that of unemployed

women (Islam et al., 2016). A study among WRA in Bangladesh also showed that employed women used more contraception (68.1%) compared to the unemployed (59.8%) (Hossain, Khan, Ababneh, & Shaw, 2018).

Most of the respondents (41.1%) were Catholics, followed by Anglican (28.6%), with the minority being Baptists (1, 0.1%). Religion was not found to significantly affect sexual activity, contraceptive use, or unmet need for contraception among unmarried teenage women. This agrees with the findings by Bakibinga et al. (2016) which indicated that religion and ethnicity had no significant impact in facilitating or aiding or hampering contraceptive uptake by rural women. A study by (Wusu, 2015) concluded that religion alone was inadequate in predicting the use or non-use of modern contraceptives.

The findings from my study showed that short-term methods (injections, pills, and male condoms) contributed 86.7% of the discontinuations and the main reason for discontinuation was side effects (32.2%) and the desire to become pregnant (19.8%). Out of the 121 respondents who discontinued a family planning method, 38% had an unmet need for contraception and this contributed 18.6% of the total unmet need among unmarried teenagers. Of the 121 respondents who discontinued a method, (28.9%) simply switched to another method, while about one-third (33.1%) did not have unmet need. The findings are consistent with Cleland, Harbison, & Shah (2014) who found that as family planning programs mature and address barriers to contraception, contraceptive use increases, and users become more concerned about side effects and health impacts of modern contraceptives. Discontinued users now constitute a large proportion of women

with unmet need. Jain, Obare, RamaRao, & Askew (2013) found that women who had discontinued the use of a modern method and subsequently had an unmet need at the time of the survey accounted for 38% of the total estimated unmet need. Kiran, Sanjay, & Rajesh (2016) and Modey, Aryeetey, & Adanu (2014) found an association between contraceptive discontinuation with the duration of use, age, parity, contraceptive method, religion, and contraceptive intention.

Listening to the radio was significantly associated with sexual activity ($p < .01$), contraceptive use ($p < .05$), and unmet need for contraception ($p < .01$). Sexual activity was also found to be significantly affected by the frequency of watching television ($p < .01$), frequency of reading newspapers ($p < .01$), using the internet ($p < .01$), and owning a mobile phone ($p < .01$).

My study found that the respondent's age at the time of the survey was the main predictor of sexual activity among unmarried teenage girls. The predictor model showed that compared to teenage girls who have never had sex, sexually active teenagers are more likely to be older, with every unit increase in the age of the respondents, increasing the odds of sexual activity by a factor of 2.351.

The main predictors of contraceptive use were the number of living children and the years of education. The age of the household was not a strong predictor of contraceptive use. A single unit increase in the number of living children resulted in almost a 2-fold increase in the likelihood of using a modern contraceptive, while a single unit increase in the years of education resulted in 37% increase in the likelihood of using modern contraceptives among teenage women.

Barriers to contraceptive use

Substantial numbers of adolescents experience the negative health consequences of early, unprotected sexual activity such as unintended pregnancy, unsafe abortions, pregnancy-related mortality and morbidity, and sexually transmitted infections including human immunodeficiency virus (HIV); as well as its social and economic costs. Sexually active unmarried adolescents face several barriers in obtaining contraception and in using them correctly and consistently (Chandra-Mouli et al.,2014).

The main reasons unmarried teenage women were not using contraceptives were opposition to the use of contraceptives by respondents, their partners, or others (45.7%), fear of side effects (30%). This is consistent with findings among married women who reported that the most common reasons for their non-use of contraceptives were infrequent sex and concerns regarding side effects or health risks as well as insufficient information concerning methods (Cleland, Harbison, & Shah, 2014; Sedgh & Hussain, 2014). While adolescents are aware of the availability of contraceptive services, they lack a comprehensive knowledge about contraception and contraceptives, which leads to negative attitudes towards using the services (Lebese, Maputle, Ramathuba, & Khoza, 2013). Cultural health belief, attitudes, and sociocultural norms were also identified as a barrier to the uptake and use of contraceptives (Lebese, Maputle, Ramathuba, & Khoza, 2013; Kabagenyi, Reid, Ntozi, & Lynn, 2016).

In this study, despite 97.4% of the unmarried teenagers having had attained primary education, only 64.2% were able to read a whole sentence, and only 2.6% had no education at all. The average years of education were 6.43 years (SD=2.8)

This study showed that 72.1% of sexually active teenage women who were not using modern contraceptives intend to use them in the future, this is indicative of latent demand for family planning. Bawah et al., (2019) recommended that family planning programs can increase contraceptive prevalence by targeting the latent demand.

Analyze and Interpret the Findings in the Context of the Theoretical and/or Conceptual Framework

Bandura's (1986) SCT formed the theoretical framework for this study. The theory posits that a greater part of an individual's knowledge acquisition is directly related to observing others within the context of social interactions, experiences, and outside media influences. By observing a role model performing a behavior and the consequences of the behavior, people remember the sequence of events to guide subsequent behaviors or engagement in the behavior they already learned (Bandura, 1986). According to Bandura's (1986) concept of reciprocal determinism, environmental stimuli, and reinforcement contingencies influence and interact with personal attributes of personality characteristics; cognitive factors; and skills to influence the nature, frequency, and intensity of behavior.

According to Andersen (1995), risks and benefits of engaging in a new health behavior such as sexual activity or the use of modern contraceptives, are greatly influenced by demographic and socio-economic factors such as age, gender, ethnicity, and the social structure, as measured by wealth index, residence or education attainment.

Interventions based on SCT are more effective in increasing contraceptive use than any other health behavior models (Lopez et al., 2016).

In line with the Bandura's SCT, the commencement and continuation of sexual activity or contraceptive use by adolescents are affected by the individual's perceptions about the benefits or risks of engaging in sexual activity or contraception vis-à-vis the attendant benefits. The decision to engage in practice will also be modified by the environment, which may become either an enabler or a barrier to the practice. The broader environment includes family, peers, role models, friends, neighborhoods as well as the social services available (Andersen, 1995). The SCT is premised on an understanding of risks and benefits of engaging in new behavior, developing self-efficacy, and assessing outcome expectations as influenced by the behavior (Hsu et al., 2015; Kelder et al., 2015).

Bandura (1986) identified two key factors shown to minimize behavioral responses: the individual factor of self-efficacy and the environmental factor of social support. Social support in the form of information sharing, emotional support, and physical support is mostly provided by relatives, same-gender friends, or romantic partners (Harling et al., 2018). While this study did not specifically include any self-efficacy or social support variables, the characteristics of the household head were anticipated to provide some indication of social support. Within the context of sexual behavior and contraception, health interventions aimed at improving self-efficacy and increasing social support and resources to delay coitarche and avoiding unintended pregnancies may help increase contraceptive uptake, reduce unplanned teenage pregnancies and sexually transmitted diseases.

The early years of sexual debut (median 17 years), the low modern contraceptive use (27.3%) and high unmet need for contraception (35.3%) among unmarried teenagers may be related to the high illiteracy levels, with almost three-quarters of teenagers (74.3%) having attained Primary level as their highest educational attainment, of whom 59.6% did not complete primary. It is therefore important to improve the educational attainment of the teenage girls by keeping them in school to delay their sexual experience but also increase their literacy levels to improve their uptake of health information from health campaigns.

Similarly, perceptions about and eventual uptake of health behaviors are shaped by poverty. The household wealth index was significantly associated with contraceptive use ($X^2= 33.2, p < .01$). With over half (50.6%) of the respondents coming from the lowest and second lowest (poorest and poor) wealth quintiles, their perception of severity and susceptibility are likely to be negatively affected. Likewise, access and affordability to health or educational services are also likely to be negatively impacted by poverty. Improving education, will ensure teenage girls spend more time schooling, exposing them less to sexual temptations, improve the individual's sense of their susceptibility to unplanned sexual acts and pregnancy, educated girls will have better employment leading to improved wealth index that will further reduce the barriers to contraception. Thus, improving the socioeconomic status of families will reduce unplanned teenage pregnancies in Uganda.

Similarly, in line with SCT, environmental factors, including the type of relationship in the family (household head and siblings), the region of residence, type of

place of residence (urban/rural), health systems and society/public policy are equally important in influencing the sexual and contraceptive behaviors of teenagers (Andersen, 1995).

Limitations of the study

The secondary data for this study was from nationally representative samples and the findings are therefore generalizable to the entire Ugandan population. Furthermore, both size and power were adequate and fully representative of the Ugandan population. The dataset was previously validated, and over the years, the DHS studies are trustworthy, reliable, and very valid in describing national indices.

Hypothesis testing and use of Multivariable regression analysis minimized the potential of confounding effects, in which the presence of an extraneous variable distorts the true relationships between examined variables (Kahlert, Gribsholt, Gammelager, Dekkers, & Luta, 2017).

The inherent limitation of cross-sectional studies not being able to establish a causal relationship between the variables also applies to this study due to the inability to ensure temporal precedence (i.e., that the predictor and mediating variables preceded the criterion variable). For example, it may have been that the sexual behavior of the teenager caused her to get pregnant and quit school, or that sexual activity and pregnancy were due to her being out of school (Lewis, Litt, & Neighbors, 2015).

Secondly, the current secondary data analysis did not exhaustively explore the factors that may be responsible for sexual activity and contraceptive uptake by unmarried teenage women in Uganda as respondents and other key stakeholders were not

interviewed using qualitative approaches to establish the root cause of the current sexual and contraceptive behaviors of teenagers.

Thirdly, at the bivariate analysis level, the risk estimates (odds ratios) could not be computed for all the variables as some of the cells had zero counts. While literature exists on how to match adjustments for a 2 X 2 contingency table, where one of the cells has a zero count, no provision has been made for higher level tables in SPSS (Ruxton, Neuhäuser, & Freckleton, 2013)

Recommendations

The government of Uganda should develop targeted interventions and processes to improve sexual behavior and contraceptive practices among teenagers in Uganda by helping to educate teenagers and communities on the dangers of early sexual activity, the severity, and susceptibility of teenage births and the need to use effective contraception to avoid unplanned pregnancies for those that are already sexually active. The government should continually improve the socioeconomic status of families and improve access to health information and services. The Ministry of Health should educate healthcare workers on the provision of accurate contraceptive information and administration of the different contraceptive methods at the appropriate levels of care.

A study involving both quantitative and qualitative data collected primarily by the researcher is recommended. Although this may be more expensive and time involving, it will produce better insight into the real and root causes of sexual activity, contraceptive use, and unmet needs among sexually- active unmarried teenage women in Uganda.

My study also gives sexual and contraceptive behaviors of unmarried teenagers at a point in time. It does not provide any trends to guide family planning programming with progress over the years. With this study as the baseline, it is recommended that a study or studies be designed to look at the variables and how they are changing with time, given the interventions being implemented by the government and other stakeholders. Finally, although education level was found to significantly relate to sexual activity and contraceptive practices, the relationship between educational level and literacy should be further explored using qualitative studies, especially given the finding that many of the respondents could not read a full sentence.

Implications for Professional Practice and Social Change

I demonstrated that demographic, socioeconomic, and environmental factors could positively or negatively affect sexual and contraceptive practices by unmarried teenage women, which includes most schooling teenagers in Uganda. In this study, I am the first to look at all sexual behaviors, contraceptive use, and unmet need for contraception among unmarried women in the 15-19-year age bracket in Uganda.

Professional Practice

Results from my study show that secondary data analysis is cost and time effective and able to provide relevant information for decision-making at all levels within a very short time. This will encourage scholar-practitioners in Uganda to begin using the several secondary datasets that are available in the country such as hospital-based data; programming data by development partners; national datasets like the National

Population and Housing Census, etc. to provide information for Uganda's healthcare practice.

Additionally, applying the findings can enhance awareness and understanding of how effective prevention of teenage sexual practices can be implemented. For teenagers who are already sexually active, unintended pregnancies should be prevented by the provision of effective contraception choices, including LARCs.

After the defense of my doctoral study, I intend to disseminate the results of this study through multiple channels including presentations, professional conferences, and peer-reviewed journals. I will share the results of the study with the Division of Reproductive and Infant Health of the Ministry of Health. Besides, I will discuss with the and the Uganda Bureau of Statistics how the study can be expanded for further analysis outside of the capstone project.

Positive Social Change

At the individual and family level, this study has generated information that shows that all the people that interact with an adolescent girl – the household head, the siblings – all have significant parts to play in determining her eventual sexual and contraceptive behavior. In male-dominated societies, such as in Uganda, even unmarried teenagers, and yield substantial rights to their male partners, who have the biggest say on the couple's sexual and contraceptive practice. By making them know that they wield so much power and are central in making the final decision of having sex or taking up a contraceptive method, the male partners will appreciate it better if they are involved in information sharing about the benefits of delaying sexual activity and using contraception

for the already sexually-active teenagers. Since the number of surviving children was found to influence contraception and unmet need for contraception, this may serve as an entry point for family planning, especially during antenatal visits by teenagers who experienced repeat teenage pregnancies to ensure they eventually take up post-partum family planning soon after their second delivery.

At the community and society level, these findings may help reduce increase awareness of the dangers of early sexual activity, teenage pregnancies, and large families among the communities. The findings of this study could also be used to increase the accessibility and availability of health services, as part of the broader community, to improve reach and coverage family planning services. This study has also visually presented the performance, nationally, in terms of contraceptive prevalence, demand for family planning, and the use of modern contraceptives in all the 15 regions of Uganda. This will help the Ministry of health to develop tailored interventions to reduce unmet needs and improve contraceptive use among sexually active teenagers. The Ministry of Health will also use these maps to drill-down to better understand and quantify the existing latent demand for family planning and develop appropriate interventions to tackle the identified factors.

Teenage girls who get pregnant suffer from social and economic consequences and they are more likely to drop out of school and carry on with the vicious cycle of poverty, posing a big problem to society and country at large (Lewis, Litt, & Neighbors, 2015). Findings from my study will, therefore, positively influence family planning policy development, and implementation and might help the country harness the

demographic dividend educating the young people and reducing fertility. This, in the long run, will lead to Uganda's contribution to the global Sustainable Development Goals (Figure 17).

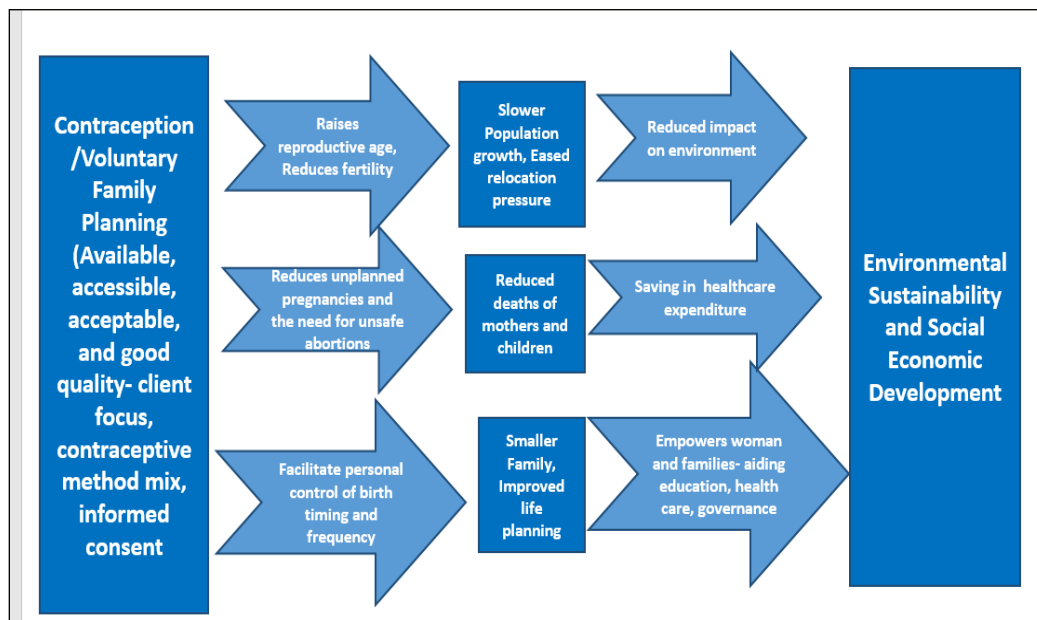


Figure 17. Benefits of family planning.

Conclusion

High-risk sexual behavior was common among the sexually active unmarried teenage female respondents. Unmarried teenagers started sexual activity at an early age and most of those who had started sex were sexually active. Most of the respondents had knowledge of contraception but the rate of contraception use is still low and the unmet need for contraception was high. There is a need for promotion of sexuality education at an appropriate age in schools and promotion of adolescent reproductive health education for the out-of-school teenagers on the benefits of Planned Parenthood and the use of the available contraceptive services amongst those who are already sexually active.

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Appendix A: ICF Approval to Download DHS Data

Dear Lawrence Were:

This is to confirm that you are approved to use the following Survey Datasets for your registered research paper titled: "Sexual Activity, Contraceptive Use and Unmet Needs Among Unmarried Teenage Women in Uganda This resea".

Uganda

For restricted surveys, you must also request special permission from the Implementing Agencies. If approved, the restricted datasets will be provided to you by FTP.

To access the datasets, please login at: https://www.dhsprogram.com/data/dataset_admin/login_main.cfm. The user name is the registered email address, and the password is the one selected during registration.

The IRB-approved procedures for DHS public-use datasets do not in any way allow respondents, households, or sample communities to be identified. There are no names of individuals or household addresses in the data files. The geographic identifiers only go down to the regional level (where regions are typically very large geographical areas encompassing several states/provinces). Each enumeration area (Primary Sampling Unit) has a PSU number in the data file, but the PSU numbers do not have any labels to indicate their names or locations. In surveys that collect GIS coordinates in the field, the coordinates are only for the enumeration area (EA) as a whole, and not for individual households, and the measured coordinates are randomly displaced within a large geographic area so that specific enumeration areas cannot be identified.

The DHS Data may be used only for the purpose of statistical reporting and analysis, and only for your registered research. To use the data for another purpose, a new research project must be registered. All DHS data should be treated as confidential, and no effort should be made to identify any household or individual respondent interviewed in the survey. Please reference the complete terms of use at: <https://dhsprogram.com/Data/terms-of-use.cfm>.

The data must not be passed on to other researchers without the written consent of DHS. However, if you have coresearchers registered in your account for this research paper, you are authorized to share the data with them. All data users are required to submit an electronic copy (pdf) of any reports/publications resulting from using the DHS data files to: references@dhsprogram.com.

Sincerely,

Bridgette Wellington

Bridgette Wellington
Data Archivist
The Demographic and Health Surveys (DHS) Program

Appendix B UBOS Oversight and Data Use Agreement

Date: **April 22, 2019**

Our employee/practicum student, **Lawrence Were** is involved in the **a Doctoral study on the use of modern contraceptives and unmet needs among unmarried teenage women in Uganda using the data from the 2016 Uganda Demographic and Health Survey** initiative which will be conducted under our organization's supervision within the scope of our standard operations. We understand that **Lawrence Were** seeks to write about this initiative as part of a doctoral project for Walden University. To this end, we agree to share a de-identified dataset with the student for doctoral project purposes, as described below.

I understand that the student will not be naming our organization in the doctoral project report that is published in Proquest.

The student will be responsible for complying with our site's research policies and requirements, including the requirements for Walden University IRB clearance.

The Walden University Institutional Review Board (IRB) will be responsible for ensuring that the student's published doctoral project meets the university's ethical standards regarding data confidentiality (outlined below). All other aspects of the implementation and evaluation of the initiative are the responsibility of the student.

The doctoral student will be given access to a Limited Data Set ("LDS") for use in the doctoral project according to the ethical standards outlined below.

This Data Use Agreement ("Agreement"), effective as of **April 22, 2019** ("Effective Date"), is entered into by and between **Lawrence Were** ("Data Recipient") and the **Uganda Bureau of Statistics** ("Data Provider"). The purpose of this Agreement is to provide Data Recipient with access to a Limited Data Set ("LDS") for use in the doctoral project **in accord with laws and regulations of the governing bodies associated with the Data Provider, Data Recipient, and Data Recipient's educational program**. In the case of a discrepancy among laws, the agreement shall follow whichever law is more strict.

- 1. Definitions. Unless otherwise specified in this Agreement, all capitalized terms used in this Agreement not otherwise defined have the meaning established for purposes of the "HIPAA Regulations" codified at Title 45 parts 160 through 164 of the United States Code of Federal Regulations, as amended from time to time.*

2. Preparation of the LDS. Data Provider shall prepare and furnish to Data Recipient a LDS in accord with any applicable HIPAA or FERPA Regulations
3. Data Fields in the LDS. No direct identifiers such as names may be included in the Limited Data Set (LDS). In preparing the LDS, Data Provider shall include the data fields specified as follows, which are the minimum necessary to accomplish the doctoral project: [The data required is from the 2016 Uganda Demographic and Health Survey. Specifically data from the household questionnaire (household characteristics and deaths); and the woman's questionnaire (respondents characteristics, reproduction, contraception, pregnancy and postnatal care).
4. Responsibilities of Data Recipient. Data Recipient agrees to:
 - a. Use or disclose the LDS only as permitted by this Agreement or as required by law;
 - b. Use appropriate safeguards to prevent use or disclosure of the LDS other than as permitted by this Agreement or required by law;
 - c. Report to Data Provider any use or disclosure of the LDS of which it becomes aware that is not permitted by this Agreement or required by law;
 - d. Require any of its subcontractors or agents that receive or have access to the LDS to agree to the same restrictions and conditions on the use and/or disclosure of the LDS that apply to Data Recipient under this Agreement; and
 - e. Not use the information in the LDS to identify or contact the individuals who are data subjects.
5. Permitted Uses and Disclosures of the LDS. Data Recipient may use and/or disclose the LDS for the present project activities only.
6. Term and Termination.
 - a. Term. The term of this Agreement shall commence as of the Effective Date and shall continue for so long as Data Recipient retains the LDS, unless sooner terminated as set forth in this Agreement.
 - b. Termination by Data Recipient. Data Recipient may terminate this agreement at any time by notifying the Data Provider and returning or destroying the LDS.
 - c. Termination by Data Provider. Data Provider may terminate this agreement at any time by providing thirty (30) days prior written notice to Data Recipient.

- d. For Breach. Data Provider shall provide written notice to Data Recipient within ten (10) days of any determination that Data Recipient has breached a material term of this Agreement. Data Provider shall afford Data Recipient an opportunity to cure said alleged material breach upon mutually agreeable terms. Failure to agree on mutually agreeable terms for cure within thirty (30) days shall be grounds for the immediate termination of this Agreement by Data Provider.
- e. Effect of Termination. Sections 1, 4, 5, 6(e) and 7 of this Agreement shall survive any termination of this Agreement under subsections c or d.

7. Miscellaneous.

- a. Change in Law. The parties agree to negotiate in good faith to amend this Agreement to comport with changes in federal law that materially alter either or both parties' obligations under this Agreement. Provided however, that if the parties are unable to agree to mutually acceptable amendment(s) by the compliance date of the change in applicable law or regulations, either Party may terminate this Agreement as provided in section 6.
- b. Construction of Terms. The terms of this Agreement shall be construed to give effect to applicable federal interpretative guidance regarding the HIPAA Regulations.
- c. No Third Party Beneficiaries. Nothing in this Agreement shall confer upon any person other than the parties and their respective successors or assigns, any rights, remedies, obligations, or liabilities whatsoever.
- d. Counterparts. This Agreement may be executed in one or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument.
- e. Headings. The headings and other captions in this Agreement are for convenience and reference only and shall not be used in interpreting, construing or enforcing any of the provisions of this Agreement.

IN WITNESS WHEREOF, each of the undersigned has caused this Agreement to be duly executed in its name and on its behalf.

Appendix C: WALDEN University IRB Approval Granted, Conditional Upon Partner
Approval

Dear Mr., Were,

This email is to notify you that the Institutional Review Board (IRB) has approved your application for the study entitled, "Use of modern contraceptives and unmet needs among unmarried teenage women in Uganda," conditional upon the approval of the research partner, as documented in the notification of approval, which will need to be submitted to the Walden IRB when obtained. The researcher may not commence the study until the Walden IRB confirms receipt of that notification of approval. Our records indicate that you will be analyzing data provided to you by the Uganda Bureau of Statistics as collected under its oversight. Since this study will serve as a Walden doctoral capstone, the Walden IRB will oversee your capstone data analysis and results reporting. The IRB approval number for this study is 08-29-190562742.

This confirmation is contingent upon your adherence to the exact procedures described in the final version of the documents that have been submitted as of this date. This includes maintaining your current status with the university and the oversight relationship is only valid while you are an actively enrolled student at Walden University. If you need to take a leave of absence or are otherwise unable to remain actively enrolled, this is suspended.

If you need to make any changes to your research staff or procedures, you must obtain IRB approval by submitting the IRB Request for Change in Procedures Form. You will receive confirmation with a status update of the request within 10 business days of submitting the change request form and are not permitted to implement changes prior to receiving approval. Please note that Walden University does not accept responsibility or liability for research activities conducted without the IRB's approval, and the University will not accept or grant credit for student work that fails to comply with the policies and procedures related to ethical standards in research.

When you submitted your IRB materials, you made a commitment to communicate both discrete adverse events and general problems to the IRB within 1 week of their occurrence/realization. Failure to do so may result in invalidation of data, loss of academic credit, and/or loss of legal protections otherwise available to the researcher.

Both the Adverse Event Reporting form and Request for Change in Procedures form can be obtained at the Documents section of the Walden website:

<http://academicguides.waldenu.edu/researchcenter/orec>

Researchers are expected to keep detailed records of their research activities (i.e., participant log sheets, completed consent forms, etc.) for the same period they retain the original data. If, in the future, you require copies of the originally submitted IRB materials, you may request them from Institutional Review Board.

Please note that this letter indicates that the IRB has confirmed your study meets Walden University's ethical standards. You may not begin the doctoral study analysis phase of your doctoral study, however, until you have received the **Notification of Approval to Conduct Research** e-mail. Once you have received this notification by email, you may begin your study's data analysis.

Appendix D: Certificate of Completion-Ethics and Compliance Training-CITI

COLLABORATIVE INSTITUTIONAL TRAINING INITIATIVE (CITI PROGRAM)

COMPLETION REPORT - PART 1 OF 2
COURSEWORK REQUIREMENTS*

* NOTE: Scores on this [Requirements Report](#) reflect quiz completions at the time all requirements for the course were met. See list below for details. See separate Transcript Report for more recent quiz scores, including those on optional (supplemental) course elements.

• **Name:** Lawrence Were (ID: 8060716)
 • **Institution Affiliation:** Walden University (ID: 2906)
 • **Institution Email:** lawrence.were@waldenu.edu
 • **Phone:** +256772409703

• **Curriculum Group:** Student Researchers
 • **Course Learner Group:** Same as Curriculum Group
 • **Stage:** Stage 1 - Basic Course

• **Record ID:** 31344064
 • **Completion Date:** 23-Apr-2019
 • **Expiration Date:** N/A
 • **Minimum Passing:** 60
 • **Reported Score*:** 76

REQUIRED AND ELECTIVE MODULES ONLY	DATE COMPLETED	SCORE
History and Ethical Principles - SBE (ID: 490)	18-Apr-2019	3/5 (60%)
Assessing Risk - SBE (ID: 503)	18-Apr-2019	4/5 (80%)
Informed Consent - SBE (ID: 504)	18-Apr-2019	4/5 (80%)
Privacy and Confidentiality - SBE (ID: 505)	23-Apr-2019	3/5 (60%)
Unanticipated Problems and Reporting Requirements in Social and Behavioral Research (ID: 14928)	23-Apr-2019	4/5 (80%)
Belmont Report and Its Principles (ID: 1127)	23-Apr-2019	3/3 (100%)
Research with Children - SBE (ID: 507)	23-Apr-2019	4/5 (80%)

For this Report to be valid, the learner identified above must have had a valid affiliation with the CITI Program subscribing institution identified above or have been a paid Independent Learner.

COLLABORATIVE INSTITUTIONAL TRAINING INITIATIVE (CITI PROGRAM)

COMPLETION REPORT - PART 2 OF 2 COURSEWORK TRANSCRIPT**

** NOTE: Scores on this Transcript Report reflect the most current quiz completions, including quizzes on optional (supplemental) elements of the course. See list below for details. See separate Requirements Report for the reported scores at the time all requirements for the course were met.

- Name: Lawrence Were (ID: 8060716)
- Institution Affiliation: Walden University (ID: 2908)
- Institution Email: lawrence.were@waldenu.edu
- Phone: +256772409703
- Curriculum Group: Student Researchers
- Course Learner Group: Same as Curriculum Group
- Stage: Stage 1 - Basic Course
- Record ID: 31344064
- Report Date: 23-Apr-2019
- Current Score**: 78

REQUIRED, ELECTIVE, AND SUPPLEMENTAL MODULES	MOST RECENT	SCORE
Belmont Report and Its Principles (ID: 1127)	23-Apr-2019	3/3 (100%)
Assessing Risk - SBE (ID: 503)	18-Apr-2019	4/5 (80%)
Informed Consent - SBE (ID: 504)	18-Apr-2019	4/5 (80%)
Privacy and Confidentiality - SBE (ID: 505)	23-Apr-2019	3/5 (60%)
Research with Children - SBE (ID: 507)	23-Apr-2019	4/5 (80%)
Unanticipated Problems and Reporting Requirements in Social and Behavioral Research (ID: 14928)	23-Apr-2019	4/5 (80%)
History and Ethical Principles - SBE (ID: 490)	18-Apr-2019	3/5 (60%)

For this Report to be valid, the learner identified above must have had a valid affiliation with the CITI Program subscribing institution identified above or have been a paid Independent Learner.