

**OBSTETRIC OUTCOMES AND FACTORS ASSOCIATED WITH
ADOLESCENT PREGNANCIES AT THE UNIVERSITY TEACHING
HOSPITAL LUSAKA, ZAMBIA**

BY

DR. ANDREW KUMWENDA BSc. HB, MBChB, Pg. Dip., MPhil, MPH

A dissertation submitted to the University of Zambia in partial fulfillment of the requirements of the degree of master of medicine in obstetrics and gynaecology

**THE UNIVERSITY OF ZAMBIA
LUSAKA**

2017

COPYRIGHT DECLARATION

BY DR. ANDREW KUMWENDA

2017

All rights reserved, no part of this dissertation may be reproduced, stored in retrieval system or transmitted in any form by any other means, electronic, mechanical, photocopying or recording without prior consent from author.

DECLARATION

I declare that this dissertation herein presented for the degree of master of medicine in obstetrics and gynaecology has not been previously submitted either wholly or in part for any other degree at this or any other university nor is it being currently submitted for any other degree.

SIGNED _____

—

DR ANDREW KUMWENDA

APPROVED BY

PROF BELLINGTON VWALIKA (SUPERVISOR)

APPROVED

BY _____

—

(SUPERVISOR)

DECLARATION

I hereby state that this dissertation is entirely the result of my own personal effort. The various sources to which I am indebted have been clearly indicated in the bibliography and acknowledgements

SIGNED: _____

DR. ANDREW KUMWENDA

CERTIFICATE OF APPROVAL

This dissertation of **Dr Andrew Kumwenda** has been approved as fulfilling part of the requirements for the award of the degree of **Master of Medicine (obstetrics and gynaecology)** by the University of Zambia.

EXAMINER

Name_____Signature_____Date_____

Name_____Signature_____Date_____

Name_____Signature_____Date_____

—

Abstract

Adolescent pregnancies are a major health concern in Zambia. Obstetric outcomes of and factors associated with adolescent pregnancies seen at the UTH were not clearly understood, defined and documented. This study explored this aspect.

This was a comparative prospective cross sectional study. A purposeful sample of 200 consenting pregnant adolescents and women aged between 20 and 30 years who were admitted in labour and in a ratio of 1:1 was studied.

A total of 3,456 women aged between 14 and 30 years delivered at the UTH between September and October, 2015 out of which 480 (13.9%) were adolescents. Of the 100 adolescents studied, 62(62 %) had dropped out of school due to pregnancy ($p < 0.001$, AOR 14.6; 95% CI: 5.15 - 41.53) with 81(81 %) of their pregnancies being unplanned. Factors associated with adolescent pregnancies noted from the study included mean age at coitarche ($p < 0.001$), early marriages ($p < 0.001$; AOR 14.6, 95% CI: 4.642 - 45.99), primary education ($p < 0.002$; AOR 4.522, 95% CI: 1.758 - 11.634), having a boyfriend ($p < 0.001$; AOR 12.70, 95% CI: 4.04 - 39.91) and contraceptive use. There were 95(95%) adolescents who had never used a contraceptive before compared to 40(40%) older women ($p < 0.001$). Adolescents were also significantly associated with first degree perineal tears ($p < 0.001$; AOR 3.46, 95% CI: 1.83 - 6.56) and preterm deliveries ($p < 0.026$, AOR 2.60, 95% CI: 1.16 - 5.78). Furthermore, although not statistically significant, more adolescents 22(22%) had low birth weight babies compared to 14(14%) older women ($p < 0.132$) and 11(11%) had pregnancy induced hypertension versus 7(7%) older mothers ($p < 0.323$). In addition, out of the 10 documented caesarean sections among the study participants, 8(80%) were among adolescents ($p < 0.052$). Several factors and adverse obstetric outcomes are associated with adolescent pregnancies seen at the UTH. Although adolescent pregnancy is reducing, it remains high and contributing significantly to discontinuation of school. Key stakeholders including the ministry of health and its cooperating partners need to continue targeting adolescents with appropriate health messages including an emphasis on increased access to and utilization of effective contraceptives.

Acknowledgements

This dissertation would not have been possible without the unwavering support, encouragement and guidance from my supervisor, Prof. Bellington Vwalika.

I would also like to thank my wife Pauline and my triplet sons – Caleb, Joshua and Samuel for their support and patience with me during the time that I undertook this study.

I am also grateful to nurse midwife Ms Sheila Mweendo from the obstetric ward at the UTH for helping with the data collection, the Medical Partnership Initiative (MEPI) through award number R24TW008877 from the Fogarty International Center for the financial support and Dr. Mushota Kabaso, Dr. Gershom Chongwe and Dr. Dale Mudenda for their inputs and guidance on data analysis.

Lastly but not the least, I thank all the women who participated in the study.

Table of Contents

| | |
|---|------|
| COPYRIGHT | iv |
| DECLARATION | iv |
| STATEMENT | v |
| CERTIFICATE OF APPROVAL | vi |
| ABSTRACT | vii |
| ACKNOWLEDGEMENTS | viii |
| LIST OF TABLES | xiii |
| LIST OF FIGURES | xiv |
| LIST OF ABBREVIATIONS AND ACRONYMS | xv |
| DEDICATION | xvii |
| CHAPTER 1: STUDY BACKGROUND | 1 |
| 1.1 Introduction | 1 |
| 1.2 Problem statement..... | 3 |
| 1.3 Research question..... | 4 |
| 1.4 Objectives..... | 4 |
| 1.5 Definitions..... | 5 |
| 1.6 Problem analysis | 6 |
| 1.7 Variables of interest | 7 |
| CHAPTER 2: LITERATURE REVIEW | 8 |
| 2.1. Introduction..... | 8 |
| 2.2. Incidence of adolescent pregnancies | 9 |

| | |
|---|-----------|
| 2.2.1. Global perspectives | 9 |
| 2.2.2. Regional perspectives..... | 11 |
| 2.2.3. Local perspectives | 11 |
| 2.3 Factors associated with adolescent pregnancies | 13 |
| 2.3.1 Socio-demographic factors..... | 13 |
| 2.3.2 Family structure and stability..... | 15 |
| 2.3.3 Educational factors..... | 15 |
| 2.3.4 Factors associated with early sexual initiation and early marriages | 16 |
| 2.3.5 Factors associated with contraceptive use..... | 17 |
| 2.4 Obstetric outcomes and complications of adolescent pregnancies | 19 |
| 2.4.1 Maternal outcomes | 20 |
| 2.4.2 Fetal and neonatal outcomes | 22 |
| CHAPTER 3: RESEARCH METHODOLOGY | 24 |
| 3.1 Study design..... | 24 |
| 3.2 Study setting..... | 24 |
| 3.3 Target population | 24 |
| 3.4 Study Population | 24 |
| 3.5 Inclusion criteria..... | 24 |
| 3.6 Exclusion criteria | 25 |
| 3.7 Study period | 25 |
| 3.8 Participant recruitment..... | 25 |
| 3.9 Sampling procedure and sample size | 25 |

| | |
|---|-----------|
| 3.10 Data collection | 26 |
| 3.11 Data analysis | 28 |
| 3.12 Ethical considerations | 28 |
| CHAPTER 4: RESULTS | 30 |
| 4.1. Socio-demographic characteristics of the study participants | 30 |
| 4.2. Menstrual, sexual behavior, partnerships and practices..... | 32 |
| 4.3. Family structure and stability..... | 33 |
| 4.4. Traditional initiation ceremony and exposure to sex education..... | 34 |
| 4.5. Knowledge and use of contraceptives..... | 35 |
| 4.6. Obstetric history and antenatal care utilization..... | 36 |
| 4.7. Maternal and fetal conditions and complications..... | 37 |
| 4.8. Results of the multivariate logistic regression analysis | 40 |
| CHAPTER 5: DISCUSSION | 43 |
| 5.1. Socio-demographic characteristics of the study participants | 43 |
| 5.2. Sexual behavior, partnerships and practices | 48 |
| 5.3. Family structure and stability..... | 49 |
| 5.4. Traditional initiation ceremony and exposure to sex education..... | 50 |
| 5.5. Knowledge and use of contraceptives..... | 52 |
| 5.6. Obstetric history and antenatal care utilization..... | 53 |
| 5.7. Maternal and fetal conditions and complications..... | 53 |
| 5.8. Study limitations | 55 |

| | |
|---|----|
| CHAPTER 6: CONCLUSIONS AND RECOMMENDATIONS | 57 |
| 6.1. Conclusions | 57 |
| 6.2. Recommendations | 59 |
| REFERENCES | 60 |
| APPENDICES | 77 |

LIST OF TABLES

| | |
|--|----|
| Table 1: Operational definition of terms..... | 5 |
| Table 2: Variables of interest..... | 7 |
| Table 3: Socio-demographic characteristics | 32 |
| Table 4: Summary of knowledge and utilization of contraception's | 38 |
| Table 5: Maternal and fetal conditions and obstetric outcomes..... | 40 |
| Table 6: Results of multivariate logistic regression analysis. | 42 |

LIST OF FIGURES

| | |
|---|---|
| Figure 1.6. Problem analysis diagram..... | 6 |
|---|---|

ABBREVIATIONS AND ACRONYMS

| | |
|----------|--|
| AOR | Adjusted odds ratio |
| CI | Confidence Interval |
| CPD | Cephalopelvic disproportion |
| CSO | Central Statistical Office |
| ERES | Excellence in Research Ethics and Science |
| Hb | Haemoglobin |
| IRB | Institutional Review Board |
| IUCD | Intrauterine Contraceptive Device |
| MOESVTEE | Ministry of Education, Science, Vocational Training and Early Education |
| MOH | Ministry of Health |
| NICU | Neonatal Intensive Care Unit |
| OR | Odds ratio |
| SPSS | Statistical Package for Social Sciences |
| STI | Sexually Transmitted Infection |
| UNICEF | United Nations Children’s Fund |
| UNESCO | United Nations Educational, Scientific and Cultural Organization |
| USA | United States of America |
| UK | United Kingdom |
| UTH | University Teaching Hospital |

| | |
|------|--------------------------------------|
| WHO | World Health Organization |
| ZDHS | Zambia Demographic and Health Survey |
| ZSBS | Zambia Sexual Behaviour Survey |

DEDICATION

I dedicate this dissertation to all the adolescents and older women who accepted to participate in the study.

CHAPTER ONE: STUDY BACKGROUND

1.1 Introduction

The term “adolescent” is usually used synonymously with “teenager” (World Health Organization (WHO), 2004). According to the WHO (1986), the adolescence period is between ages 10 and 19 years. Therefore, “adolescent pregnancy” implies pregnancy in a woman aged between 10 and 19 years and before reaching full somatic development (WHO, 2004; Kurth et al., 2010).

Adolescent pregnancies have been a matter of concern at the global level largely because of the risks to the health and well-being of the underage mothers (Ogunlesi et al., 2013; Kirby et al., 2011). The growing concern about the several consequences of adolescent pregnancies is particularly so in sub-Saharan Africa where adolescent childbearing rates are the highest in the world (Ezegwui, Ikeako & Ogbuefi, 2012). According to the WHO (2011), adolescents who are 15 - 19 years old are twice as likely to die during pregnancy or childbirth when compared to women aged 20 years and above. On the other hand, adolescents below 15 years of age are five times more likely to die during pregnancy or childbirth (WHO, 2011). Adolescents tend to have higher levels of medical complications involving both the mother and the baby when

they are pregnant (Bouzas, Cader & Leão, 2014; Pergialiotis et al., 2014). In addition, there are adverse social effects of school-age pregnancies such as sudden termination or stoppage of education, disruption of the family system and assuming duties and responsibilities of parenthood prematurely, for which they are not prepared (Ogunlesi, et al., 2013).

For Zambia, the issue about adolescent pregnancies is a topical one particularly that 45.4% of the total population is under the age of 15 years (Central Statistical Office (CSO), 2012). Adolescents account for over a quarter (27%) of the total population in Zambia and have a significant influence on health trends in the country (Ministry of Health (MOH), 2011). Adolescent pregnancy, especially unplanned, is a major health concern in Zambia with the current low use of any contraceptive standing at 10.6% among adolescents (CSO, MOH, ICF international, 2014) and 42% prevalence of early marriages (Mann, Quigley & Fischer, 2015).

Factors associated with adolescent pregnancies and their obstetric outcomes for those seen at the UTH were not clearly understood, defined and documented. Being an issue of public health concern in the country, it was important that the subject of adolescent pregnancy, its

outcomes and associated factors were studied further as part of the continuing efforts to reduce the adverse obstetric outcomes. In addition, there was need to generate new evidence that could be used to influence change and improve the service delivery to adolescents, particularly at the UTH, in Lusaka which receives the pregnant adolescents that are referred for delivery with diverse pregnancy related complications from the different health institutions across the country.

1.2 Problem statement

Adolescent pregnancies have become a major social and public health problem in Zambia. Three in ten women aged 15 -19 years in Zambia have either given birth or are currently pregnant (MOH, 2011). It was also almost 20 years ago when the last retrospective study on obstetric outcomes of teenage pregnancies was done at the UTH, Lusaka by Kasonde (1997). No follow up study had ever been done to look at and address some of the confounding factors observed in that study with some of the important recommendations. Gaps still existed in the knowledge on the obstetric outcomes and associated factors of adolescent pregnancies seen and managed at UTH, which is the highest health institution in Zambia. The existing information on obstetric outcomes of and associated factors for adolescent pregnancies seemed inadequate and old. In the meantime, the UTH continued to attend to

adolescent pregnant women almost every day with many of them referred from local clinics within and outside Lusaka for various reasons and pregnancy related complications. In view of this, there was need to generate new evidence and establish what was prevailing in terms of associated factors and obstetric outcomes. The evidence could be used to influence change towards improving obstetric service delivery to adolescents.

1.3 Research question

What are obstetric outcomes of and the factors associated with adolescent pregnancies attended to at UTH, Lusaka, Zambia?

1.4 Objectives

1.4.1 General objective (Aim)

The study aimed at investigating and comparing obstetric outcomes and factors associated with adolescent pregnancies and pregnancies of older women seen at the UTH, Lusaka, Zambia.

1.4.2. Specific Objectives

1. To determine obstetric outcomes associated with adolescent pregnancies and those of older Women at UTH over an eight weeks' period from September to October 2015.

2. To identify factors associated with adolescent pregnancies and pregnancies of older women in the same period (eight weeks).
3. To compare the obstetric outcomes and associated factors between the two age groups and determine the scale of adolescent pregnancy at the UTH, Lusaka.

1.5 Definitions

In table 1 below, the operational definitions used in this study are defined.

Table 1: Operational definition of terms.

| Variable | Definition |
|------------------------|--|
| Adolescence period | Period between ages 10 & 19 years |
| Older women | Maternal age from 20 to 30 years |
| Early marriage | Marriage of a female below the age of 18 years |
| Early sexual debut | Initiation of sex before age 16 years |
| Level of education | Highest stage in academic achievement |
| Sex education | instruction on issues relating to human sexuality |
| Risky sexual behaviour | Sexual habits predisposing to pregnancy and sexually transmitted infections (STIs) |
| Anaemia | Haemoglobin (Hb) level below 11g/dl |
| Preterm delivery | Delivery before 37 completed weeks |
| Low birth weight | Birth weight less than 2500g irrespective of gestational age |

1.7 Variables of interest

Table 2 highlights the variables of interest studied.

Table 2: Variables of interest

Dependent variable:

Adolescent pregnancy

Independent variables

Patient characteristics e.g. age, parity, marital status, education level, employment status

Early marriage; early sexual debut; Condom use; Sex education; Contraceptive use; Knowledge of contraceptives

Antenatal care utilization

Maternal conditions e.g. hypertensive disorders in pregnancy

Labour outcomes e.g. preterm delivery

Fetal outcomes e.g. Low birth weight

CHAPTER TWO: LITERATURE REVIEW

2.1. Introduction

Young maternal age at delivery is a risk factor for adverse obstetric outcomes occurring in all races, faiths, socioeconomic statuses and regions of the world (Ayuba & Gani, 2012; Kurth et al., 2010). As Ezegwui et al. (2012) note, a number of studies have reported an increase in pregnancy complications related to adolescent pregnancies. These include anaemia, hypertensive disorders of pregnancy, preterm labour, a higher analgesia requirement, sudden infant death syndrome, low birth weight babies and cephalopelvic disproportion leading to a high incidence of operative deliveries. Other health risks include high incidence of sexually transmitted infections (STIs) including Human Immunodeficiency Virus (HIV) particularly among the unmarried teenagers (Ezegwui et al., 2012). As Vwalika (2003) observed, the prevalence of STIs among adolescents in Lusaka was 26.4% from those sampled at the time and yet the majority of them could not access appropriate STI management services for various reasons. Besides the observed health risks, adolescent pregnancies result in termination of academic pursuits, low job opportunities, loss of self-esteem and repeat pregnancies (Hoffman, 2006) (as cited by Kirby et al, 2011; Ezegwui et al., 2012). According to the WHO (2004), adolescent pregnancy may be considered as arising from risky sexual behaviour. In order to reduce

their high rates of unintended pregnancies and STIs including HIV, adolescents must reduce their sexual risk behaviours through the initiation of sex later, having sex with fewer sexual partners or through consistent condom use or other forms of contraception (Kirby et al., 2011).

2.2. Incidence of adolescent pregnancies

The incidence of adolescent pregnancies seems to be on the rise in most parts of the world although some countries have seen a downward trend over the years (Ogunlesi et al., 2013). According to the WHO (2008), about 16 million girls between the ages of 15 and 19 years and another one million below the age of 15 years give birth every year and this accounts for approximately 11% of all births worldwide. Furthermore, the WHO (2008) notes that an estimated 95% of the births take place in developing countries. Worldwide, the rates of adolescent pregnancies range from 143 per 1000 in some sub-Saharan African countries to 2.9 per 1000 in South Korea (Treffers, 2003) (as cited by Ezegwui et al., 2012). For Zambia, the total fertility rate among adolescents is 141 births per 1000 women (CSO, MOH, ICF international, 2014).

2.2.1. Global perspectives

Among the 15 - 19 years adolescents, an estimated 72 out of every 1000 of them became pregnant in 2006 in the United States of America (USA) (Kirby et al., 2011). This implied that, cumulatively, more than 30% of

teenagers in USA became pregnant approximately once by the age of 20 years and more than 80% of the pregnancies were unplanned (Kirby et al., 2011; WHO, 2011). According to the United Nations Children's Fund (UNICEF) (2001), the USA has the highest teenage birth rate among the developed nations while the United Kingdom (UK) has the highest in Europe at 30.8 per 1000. However, recent data seems to suggest that the number of adolescents aged 15 - 17 years getting pregnant in England and Wales has declined (Arie, 2014). Overall, among the rich nations, the proportion of adolescents aged 15 - 19 years who give birth each year varies from less than 3 per 1000 in South Korea to more than 70 in the USA (UNICEF, 2001).

Studies have shown variations in teenage pregnancy incidence. For instance, Kumar et al. (2007) found an incidence of 4.1% from their retrospective study done in India compared to 10% and 10.4% from two other studies there. The retrospective study done by Mahavarkar, Madhu & Mule (2008) found a 10% incidence of teenage pregnancy while that by Talawar & Venkatesh (2013) found a 10.4% and all were done in India. Mahavarkar et al. (2008) concluded that teenage pregnancies were a common occurrence in rural India despite various legislations and government programs being in place. On the contrary, a study by Kovavisarach et al. (2010) done in Thailand found a teenage

pregnancy incidence of 12.29% compared to a 6.85% in Nepal found by Suwal (2012).

2.2.2. Regional perspectives

In sub-Saharan African countries, one in five adolescent females give birth each year and so, almost every female is likely to have a child by age 20 years (WHO, 2004). In the Middle East and North Africa, the regional average rate of births per 1000 females aged 15 - 19 years is 56 compared to 25 in Europe (WHO, 2004). The adolescent pregnancy incidence seems to vary across the African continent too. For instance, a cross-sectional analysis of 5,997 deliveries by Fouelifack et al. (2014) in a Yaoundé hospital found an adolescent pregnancy incidence of 9.3%. This was higher than the 1.3% found by Ogunlesi et al. (2013) and 1.6% by Ezegwui et al. (2012) in two different Nigerian hospitals. On the other hand, a study among young South African youths found an adolescent pregnancy incidence of 19.2% among those aged 12 - 19 years (Machunu et al., 2012) while Uganda's incidence is around 24%. According to Rutaremwa (2013), this incidence in Uganda is actually one of the highest in sub-Saharan Africa.

2.2.3. Local perspectives

Over a quarter of Zambia's population is made up of adolescents and about 42% of girls are married before age 18 years with a high

adolescent pregnancy rate as noted above. According to MOH (2011), sexual relationships among young people in Zambia begin during adolescence. The country also has a high fertility rate of 5.3 births per woman (CSO, MOH, ICF international, 2014). With this high fertility rate, the number of adolescent pregnancies has continued to rise over the past decade from a crude figure of 3, 663 in 2002 to 13, 634 in 2009 (MOESVTEE, 2009) (as cited by Restless Development, 2014). By 2011, the figure reached a peak of 15,707 (MOESVTEE, 2013). In 2013, 14, 928 pregnancies were recorded in schools across the country with 1, 367 (9.2%) from Lusaka province alone besides those that may not have been in school and not reported on (MOESVTEE, 2013). As Restless Development (2014) observes, adolescents with no education accounted for 54% of those who had started childbearing in Zambia and this number may not have been noted by the education sector adolescent pregnancy statistics. The problem then could be much bigger than the statistics seem to suggest. Similarly, Vwalika (2003) observed that pregnancy and STIs were highest among adolescents with low education level. For instance, it was noted that adolescents with primary education only had a 50.5% STI incidence compared to 24.8% among those with senior secondary education from the women studied (Vwalika, 2003). In the 1980s, the incidence of adolescent pregnancy in the local population attending the UTH in Lusaka was 22.5% (Wadhawan, Narone & Narone,

1982). At that time, the leading obstetric complications were cephalopelvic disproportion (CPD) (3.6%) and acute toxemia (2.2%). In 1996, the incidence was around 20 percent (Kasonde, 1997). The 2009 Zambia Sexual Behaviour Survey (ZSBS) reported that 26% of the female adolescents already had a pregnancy.

2.3 Factors associated with adolescent pregnancies

The increase in the adolescent pregnancies in developing countries is attributed to several factors. These include early age of marriage, cultural permissiveness and low socioeconomic status of parents. Other factors include lack of knowledge of sexuality education, peer group influence, lack of knowledge and / or ineffective use of contraceptives, sexual coercion and family instability and disorganization that may arise from poverty (Ezegwui et al., 2012; WHO, 2011). On the other hand, the low rates of teenage pregnancies seen in western European countries have been attributed to good sex education, high levels of contraceptive use and traditional values (Adamson et al., 2001) (as cited by Ezegwui et al., 2012).

2.3.1 Socio-demographic factors

There are some socio-demographic factors known to be associated with adolescent pregnancies in different settings. A number of studies have demonstrated that young people from socio-economically disadvantaged backgrounds were more likely to be parents in their young age. For

instance, the risk of becoming adolescent parents is significantly greater among those with persistent financial difficulties throughout childhood and those whose parental economic status deteriorated during childhood (according to Kiernan, 1997; Russell (2002) (as cited by Imamura et al., 2006). Areas with high levels of deprivation seem to have higher conception rates. According to Brandshaw, Finch & Miles (2005) (as cited by Imamura et al., 2006), deprivation was able to explain three quarters of the area variation in teenage pregnancies in England. Furthermore, the study by Ezegwui et al. (2012) found that the majority (75.7%) of teenage pregnancies were associated with unemployed mothers compared to 23.8% of unemployed controls. Ezegwui et al. (2012) also found that all the controls were married while 60.8% of the adolescent mothers were married. In the Yaoundé study by Fouelifack et al. (2014), 79.4% of the adolescent mothers were single compared to 50.1% of the older women and they had poorer outcomes compared to the adults. This is consistent with the findings of another study by Hoffman (2006) (as cited by Kirby et al, 2011) who found that adolescent mothers were more likely to be single compared to non-adolescent mothers. This increases the chance of them and their children to live in poverty.

2.3.2 Family structure and stability

Some studies have been done before to investigate whether family disruption influenced the likelihood of teenage pregnancy. For instance, Vikat et al. (2002) (as cited by Imamura et al., 2006) found that female teenagers who did not live with both of their parents had a higher likelihood of becoming pregnant. The risk of pregnancy was even higher for those adolescents living in stepfamily compared to those living in a one-parent family. On other hand, it has also been noted that living with both parents up to age 16 years seems to be protective against early pregnancy resulting in adolescent motherhood (Wellings et al., 2001) (as cited by Imamura et al., 2006).

2.3.3 Educational factors

According to Wellings et al. (2001) (as cited by Imamura et al., 2006), sexually active adolescents who left school early (at the minimum school leaving age of 16 years) were more likely to become pregnant. In line with this, Ezegwui et al. (2012) found from their study that the majority (68.9%) of teenage pregnant women only had primary education contrary to the 14.3% among the controls. A similar study done by Ayuba & Gani (2012) in Nigeria also found that the majority of adolescent mothers had less formal education compared to non-adolescents.

2.3.4 Factors associated with early sexual initiation and early marriages

The increase in incidence of adolescent pregnancies in some settings has been attributed to early sexual initiation and early marriages. According to Wellings et al. (2001) (as cited by Imamura et al., 2006), early sexual initiation (before 16 years) was associated with early pregnancy significantly and independently. This is consistent with findings from a similar study by Edgardh (2000, 2002b) (cited by Imamura et al., 2006) who found that among sexually active females aged 17 years, those who began having intercourse before 15 years were more likely to report pregnancy compared to those who experienced their first intercourse at a later age.

According to CSO, MOH, ICF international (2014), 11.7% of women aged 15 - 19 years had their first sexual intercourse at 15 years and 58% of those aged between 25 - 49 years had sex by 18 years of age in Zambia. In addition, the majority of the young people practiced unsafe sex with low condom use as noted in the 2009 ZSBS. Coupled with this is the concern that some of the socio-cultural and religious norms and practices around encourage early marriage and unprotected sex (Restless Development, 2014). According to Restless Development (2014), these issues remain a key hindrance to reducing adolescent

pregnancies in Zambia. It is also estimated that about 80% of adolescents in Zambia are introduced to sex very early on in their lives through the initiation ceremonies that are practiced among almost all the tribes of the country when a girl reached puberty (Kapungwe, 2003). Among most Zambian tribes, the initiation ceremony was an integral part of a girl's growing up and sex was a major theme during those ceremonies (Kapungwe, 2003).

2.3.5 Factors associated with contraceptive use

Adolescents' success in avoiding getting pregnant often depends on having access to contraceptive information, methods and services (Blanc et al., 2009). Although there is a wide variation in terms of contraceptive use among the adolescents across the different regions of the world, the contraceptive use remains low when compared to older women. In a number of African countries for instance, the contraceptive prevalence ranges between 20 - 40% (Blanc et al., 2009). According to the Zambia 2013 - 14 DHS, the proportion of adolescents aged 15 - 19 years currently using any modern method of contraception is 10.6%. Therefore, the majority of the adolescents are not using any method of contraception. The study by Chaibva et al. (2009) in Zimbabwe also highlighted challenges with contraceptive use as contributing to adolescent pregnancies. The study revealed that some of the participants failed to use contraceptives correctly because of lack of

knowledge and problems in accessing family planning services. Similar findings were reported by Dahlback et al. (2007) (as cited by Chaibva et al. 2009). Other studies have revealed a high contraceptive failure rate among the adolescents attributed to several factors including the tendency by the adolescents to use less effective methods than the older women. In addition, method discontinuation is high among the adolescents (Blanc et al., 2009).

2.3.6 Antenatal care utilization by pregnant adolescents

The poor obstetric outcomes seen among the adolescent mothers have to some extent been attributed to none or poor utilization of antenatal care services. For example, a retrospective study by Ezegwui et al. (2012) whose objective was to determine the current incidence of teenage pregnancies and their obstetric outcomes at their teaching hospital in Enugu Nigeria found that the majority (58.1%) of the teenage mothers were not booked as opposed to the older mothers. The unbooked pregnant teenagers probably never received any antenatal care and this could have contributed to the pregnancy outcomes they found. A similar finding was noted from another Nigerian study by Ayuba & Gani (2012) who also found that pregnant teenagers were significantly more likely to be unbooked. In the Zimbabwe study by Chaibva et al. (2009) (as cited by Ayuba & Gani, 2012), there was an observed late or non-utilization of prenatal services which was attributed to transport costs and the

costs for the prenatal services themselves. In a similar manner, the adolescents studied by Vwalika (2003) from the study that looked at assessing adolescent health services in the context of STI management in Lusaka revealed that 65.5% of them could not access the services due to lack of money. From the study by Chaibva et al. (2009) which sought to identify factors that influenced adolescents' non utilization of antenatal care services in Bulawayo, Zimbabwe, reasons for not utilizing the services included religious factors, that the adolescent mothers were feeling well with their babies kicking, financial constraints and fears of disclosing their pregnancies to their parents. Fear of being tested for HIV during antenatal care has also been cited as a barrier to utilization of antenatal care services in some settings (Ayuba & Gani, 2012). The observations of poor pregnancy outcomes among teenagers related to non-utilization of prenatal care services rather than just the biological age of the teenagers is also shared by Loto et al. (2004) and Ebeigbe (2007).

2.4 Obstetric outcomes and complications of adolescent pregnancies

Complications during pregnancy and labour and delivery are the second commonest cause of death for 15 - 19 years old girls globally (WHO, 2014). The complications associated with adolescent pregnancies may be due to physical immaturity of the adolescent mothers, adverse social

and economic factors that accompany pregnancy at an early age and inadequate or non-utilization of antenatal care (Ezegwui et al., 2012). Because of the anatomical and physiological immaturity, adolescent pregnancies are prone to more maternal complications (Fouelifack et al., 2014). Loto et al. (2004) are of the view that obstetric complications are high among adolescents who give birth without attending antenatal care services.

2.4.1 Maternal outcomes

Studies examining obstetric outcomes of adolescent pregnancies have revealed varying results. For instance, one study undertaken at the University of Nigeria Teaching Hospital to determine the incidence and obstetric outcome of teenage pregnancies seen and managed there found 47.3% of the teenagers and 22.9% controls having had clinical malaria (Ezegwui et al., 2012). Anaemia was found in 32.4% of the teenagers and 24.8% of the controls. However, there was no statistically significant differences in the incidences of eclampsia and antepartum haemorrhage between the teenagers and the controls. No statistically significant differences in the incidences of spontaneous vertex delivery (P 0.068) and breech delivery (P 0.775) were also noted in the two groups. In addition, the teenagers who had assisted breech delivery presented as unbooked patients and presented late in labor. There were 6.8% cases of vacuum extraction among the teenagers compared to 2.9%

among the controls. Among the cases, 61.7% of them required an episiotomy compared to 28.7% of the controls. This finding is similar to what Fouelifack et al., (2014) found in their study in Yaoundé, Cameroon. In the Yaoundé study, the adolescent deliveries required significantly twice as many episiotomies compared to the non-adolescents. In terms of caesarean section rates, Ezegwui et al. (2012) noted that the 18.9% rate in the teenagers was significantly higher than the 10.5% among the controls with the main indication being CPD. The caesarean section rate of 83.4% among the adolescents in the Yaoundé study by Fouelifack et al. (2014) was far much higher than that noted by Ezegwui et al. (2012). However, between the cases and controls, there was no significant difference in terms of the caesarean section rates.

On the contrary, a study to compare obstetric and perinatal outcomes in teenage and non-teenage pregnancies in Malaysia done by Sulaiman et al. (2013) revealed that teenage pregnancies were not associated with significantly higher rates of postpartum haemorrhage (PPH), pre-eclampsia or fetal distress compared with adult pregnancies. According to Sulaiman et al. (2013), the long held beliefs about the risks related to adolescent pregnancy were not all justified. Early booking, adequate antenatal care and being delivered by trained health personnel could help with improving the obstetric and perinatal outcome in the

adolescents. In terms of maternal mortality, Fouelifack et al. (2014) found that maternal mortality was higher (6.9%) in non-adolescents than the adolescents (0.5%) and PPH was the commonest cause of death. From the Nigerian study by Ezegwui et al. (2012), teenage pregnant mothers faced higher risks than their adult counterparts during labour and delivery with poor obstetric outcomes and increased perinatal deaths. This conclusion is similar to that by Fouelifack et al. (2014) from their Yaoundé study and that of Kasonde (1997) in Lusaka.

2.4.2 Fetal and neonatal outcomes

Fetal and neonatal outcomes of adolescent pregnancies have also been a focus of some of the studies. For instance, Bouzas et al. (2014) observe that pregnancy during early adolescence is associated with preterm birth and low birth weight. This observation is consistent with the finding by Fouelifack et al. (2014) in the Yaoundé study cited above which revealed that adolescent pregnancies had significantly higher rates of both gestational duration extremes i.e. preterm and postterm deliveries (29.3% versus 24.5% respectively). Another study in Greece also revealed that teenage mothers had significantly higher incidence rates of preterm births and preterm premature rupture of membranes (Pergialiotis et al., 2014). Similar results were again noted by a study by Loto et al. (2004) who found that adolescent mothers had significantly higher incidences of preterm delivery, low birth weight and neonatal

admission when compared to non-adolescents. The results are similar to those of a cross sectional study done in Central Africa that examined whether adolescence was a risk factor for adverse pregnancy outcomes. In this study, it was noted that the probability to deliver an infant with low birth weight was more than doubled in adolescent mothers compared to mothers older than 16 years (Kurth et al., 2010). Concerning infant mortality rates, Huanco et al. (2012) (as cited by Bouzas et al., 2014) found figures significantly higher among teenage mothers than adult women (10.2% versus 6.9%). This was attributed mainly to higher rates of preterm birth, low birth weight and fetal malnutrition. Furthermore, studies have also shown that teenage mothers have significantly higher incidence of Apgar score less than 7 at 5 minutes (Pergialiotis et al., 2014). The retrospective study done by Kasonde (1997) at the UTH, Lusaka revealed that teenagers and non-teenagers had a similar incidence of fresh stillbirths but the incidence of macerated stillbirths and severe birth asphyxia (i.e. apgar score less than 5) were significantly higher among the teenagers than non-teenagers. In addition, teenagers had more babies with low birth weight. These findings are similar to those of the other studies noted above. Kasonde (1997)'s conclusion was that teenagers had less favourable fetal outcomes among other observations made.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Study design

This was a comparative prospective cross sectional study.

3.2 Study setting

The UTH is the largest health institution in Zambia. It serves as a referral hospital for nearly all patients in the country and those from all the 24 local clinics in Lusaka district (including those from private health facilities). Almost all adolescent pregnancies in Lusaka are referred to UTH.

3.3 Target population

All adolescent pregnancies in Lusaka and women aged 20 - 30 years delivering at UTH.

3.4 Study Population

Adolescent pregnancies and women aged 20 - 30 years meeting the eligibility criteria

3.5 Inclusion criteria

- Adolescent mothers and older women aged 20 - 30 years admitted to the labour or postnatal wards at the UTH who consented. Women in the age group 20 - 30 years usually have better obstetric performance and have minimal adverse outcomes (Al-Ramahi & Saleh, 2006).

- Singleton pregnancy - In order to eliminate the influence of multiple pregnancy on birth weight of the newborn, only singleton pregnancies were included as index cases in the study.

3.6 Exclusion criteria

- Known medical conditions like sickle cell disease
- Previous caesarean section
- Women older than 30 years
- Breech presentation

3.7 Study period

Data was collected over an approximately eight week's period (i.e. from 2nd September to 31st October, 2015).

3.8 Participant recruitment

Study participants were recruited from the labour ward after being admitted and were followed up in the postnatal wards where they were interviewed from.

3.9 Sampling procedure and sample size

The sample size was calculated using OpenEpi version 3, a free, web-based, open source, operating system-independent series of programs for use in epidemiology, biostatistics, public health, and medicine that provides a number of epidemiologic and statistical tools for summary data (According to Sullivan, Dean and Soe, 2009). Using this tool and 20% as current magnitude of adolescent pregnancies, a total sample of

200 women was calculated. To provide a 1:1 comparison, 100 older women aged 20 - 30 years and 100 adolescents meeting the eligibility criteria were purposefully selected. The degree of certainty (confidence) chosen for this study was 95% (with a cut off value of the appropriate probability distribution of 1.96) and the margin of error at 5%.

3.10 Data collection

Structured interviews were conducted on adolescents and older women aged 20 to 30 years admitted to the labour and postnatal wards at the UTH, Lusaka, Zambia nearly on a daily basis during the study period using a pretested questionnaire. A list of questions to be covered during the structured interviews were formulated. The interviews were completely voluntary and all the participants who consented were assured of confidentiality and anonymity. A number of themes reflecting the variables noted in the table of variables above were explored during the interviews. The themes were derived from the study aim and the specific objectives. The interviews were conducted in the language preferred by the individual patient including Nyanja (the language widely spoken in Lusaka district), English, and Bemba. The study participants were identified from the register in the labour ward admission room and followed up post-delivery from the postnatal wards where they were sent. The participants were led through a series of

preset questions by the principal investigator and the trained research assistant. The pretested structured questionnaire had predetermined codes for the responses. For example, closed questions requiring an answer to be “Yes” or “No” were coded 1 and 0 respectively while the answer “do not know” was coded as 88. Patient notes in the files and antenatal care cards were reviewed and relevant information extracted. Reviewing the patient files that were by the patients’ bedsides in the labour ward and kept by the ward staff in the postnatal wards helped with extracting data regarding maternal and fetal obstetric outcomes. The same process was used for both the adolescent mothers (i.e. the index cases) and the older women. Maternal outcomes were measured in terms of presence of some specific antepartum complications, mode of delivery and intrapartum and postpartum complications. Indications for caesarean sections were also reviewed. Gestational age at booking was extracted from the antenatal cards. Fetal outcomes were measured in terms of gestational age at birth, live births, stillbirth, birth weight, small for gestational age, whether preterm or not, apgar score at 1 and 5 minutes, admission to the neonatal intensive care unit (NICU) and reason for admission to NICU. The data collection tools were first pilot tested on 20 women and amended accordingly before final data collection was done. That helped with validating the questionnaire and obtaining some assessment of the likely reliability of the data to be

collected (Saunders, Lewis & Thornhill, 2003). According to Fink (1995b) (as cited by Saunders et al, 2003), the minimum number for a pilot for most student questionnaires should be 10.

3.11 Data analysis

While the process of data collection was going on, checking for data accuracy was being done at the end of each day after the data was collected. Double entry of data was also done to minimize typing errors. Quantitative data was captured, cleaned and analyzed using a Statistical Package for Social Sciences (SPSS) version 22. Descriptive statistics were computed for the various variables that were created. The findings on adolescents were compared with those of the older women. Suitable tests of significance were applied for comparing the results. The *chi-square test* was used to test for association among the categorical variables with 0.05 as level of significance. To assess the strength of association among the variables, univariate and multivariate logistic regression analysis was done from which odds ratios were generated at 95% confidence interval.

3.12 Ethical considerations

Ethical approval for the study was obtained from the Excellence in Research Ethics and Science (ERES) converge institutional review board (IRB)(Ethics clearance number 2015-June-006). Each participant was fully informed about the study and participation in the study was

completely voluntary. The importance of the study in adding to the existing body of knowledge and influencing management of adolescent mothers at the UTH was fully explained to all the participants. The participants were assured of confidentiality. The study participants were also informed that it would not be possible to publicly identify any individual who participated in the study or even associate them with their responses after the study. No data that personally identified individuals was collected. All eligible participants were requested to sign or fingerprint a written consent form for participation. Each patient had the right to decline participation. Patients were informed that those who did not sign or finger print the written consent forms would not be interviewed and that their refusal / inability to participate would not have any negative consequences on them. No compensation was given to participants. All the documents relating to the study were kept by the researcher.

CHAPTER FOUR: RESULTS

4.1. Socio-demographic characteristics of the study participants

A total of 3,456 deliveries were conducted during the eight weeks study period. Out of this, 480(13.9%) were adolescents. There were 200 study participants including adolescents and older mothers in a ratio of 1:1 and aged between 14 and 30 years. The mean age for the adolescents and the older mothers were 17.5 years and 23.9 years respectively. There was 1(1%) adolescent aged 14 years and 99(99%) were aged 15 - 19 years. On the other hand, 63(63%) older women were aged 20 - 24 years and 37(37%) were aged 25 - 30 years. The majority i.e. 72(72%) of the adolescents were unmarried compared to 16(16%) older unmarried women. The mean age at marriage for the 28(28%) married adolescents was 16.8 years ($p < 0.001$). Mean age at marriage was protective for adolescent pregnancies with an odds ratio of 0.345 (95% CI: 0.219 - 0.544). In this study, 21(75%) out of the 28 married adolescents and 11(13.1%) older women got married early (i.e. below 18 years of age). Early marriages were statistically and significantly associated with adolescent pregnancy ($p < 0.001$). An adolescent who married early was 14.6 times more likely to be pregnant compared to one who did not marry early (AOR 14.6, 95% CI: 4.642 - 45.990). The mean ages for the partners were 22.6 years for the adolescents and 29.2 years for the older women ($p < 0.001$).

There were 62(62%) adolescents and 6(6%) older mothers who dropped out of school due to being pregnant. Adolescent pregnancy was significantly associated with dropping out of school ($p < 0.001$). There were also more adolescents i.e. 33(67.3%) compared to 16(32.7%) older women who only had primary education and the adolescents with primary education were 2.6 times more likely to be pregnant than those with more than primary education (95% CI: 1.313 - 5.093; p 0.006). Tertiary education on the other hand was noted to be protective for adolescent pregnancy (AOR 0.108; 95% CI: 0.013 - 0.822; p 0.032). Table 3 below highlights some of the socio-demographic characteristics for the study population.

Table 3: Socio-demographic characteristics

| Variable | Adolescents (N=100) No. (%) | Older women (N=100) No. (%) | P value |
|--|--|--|----------------|
| Dropped out of school due to pregnancy | | | < 0.001 |
| Yes | 62 (62) | 6 (6) | |
| No | 38 (38) | 94 (94) | |
| Highest level of education | | | |
| No education: | 0 (0) | 2 (2) | 0.004 |
| Primary: | 33 (33) | 16 (16) | |
| Secondary: | 66 (66) | 73 (73) | |
| Tertiary: | 1 (1) | 9 (9) | |
| Employed | | | 0.002 |
| Yes | 0 (0) | 9 (9) | |
| No | 100 (100) | 91 (91) | |
| Mean age (years) | 17.5 | 23.9 | < 0.001 |
| Drinks alcohol | | | |
| No | 97 (97) | 89 (89) | 0.027 |
| Yes | 3 (3) | 11 (11) | |

4.2. Menstrual, sexual behavior, partnerships and practices

The mean age at menarche was 13.2 years for the adolescents and 13.8 years for the older mothers and significantly associated with adolescent pregnancy (p 0.031). On the other hand, mean age at sexual debut was 15.7 years for the adolescents compared to 18.1 years for the older women and was also significantly associated with adolescent pregnancy (p <0.001). There were 62(31%) women who reported early sexual debut. This included 45(45%) adolescents and 17(17%) older women. The mean

ages for menarche and sexual debut were both protective for adolescent pregnancies with odds ratios of 0.771(95% CI: 0.636 - 0.933; Adjusted p 0.008) and 0.576(95% CI: 0.475 - 0.698; Adjusted p <0.001) respectively. The mean age for the partners to the women was 22.6 years for the adolescents and 29.2 years for the older women. The partners to the adolescents were on average five years older and significantly associated with adolescent pregnancy (p <0.001). The two groups of study participants also differed in condom use at the last sexual intercourse with 95(95%) adolescents not using condoms compared to 85(85%) older mothers (p 0.021). Condom use at last sex was another protective factor against adolescent pregnancy (Odds ratio 0.305; 95% CI: 0.106 - 0.874; p 0.027).

The study revealed that 68(68%) adolescents had boyfriends and those who said so had a 12.7 times more likelihood of being pregnant compared to those without boyfriends (95% CI: 4.039-39.91; p < 0.001). Having a boyfriend whose average age was five years older was significantly associated with adolescent pregnancy.

4.3. Family structure and stability

The study revealed that 63(63%) of the adolescents were not brought up by both parents compared to 52(52%) older mothers and this was not significantly associated with adolescent pregnancies (p 0.166). Parents

to 19(19%) adolescents had either divorced or were on separation compared to 11(11%) (p 0.113) for the older women in a similar situation. The marital status for the parents and / or guardians of the women in this study did not also have any significant association with adolescent pregnancies (p 0.341). However, the parents' or guardian's employment status was statistically and significantly associated with and protective for adolescent pregnancy (p 0.007) (Odds ratio 0.226; 95% CI: 0.076 - 0.670).

4.4. Traditional initiation ceremony and exposure to sex education

There were 52(26%) women who underwent traditional initiation ceremonies when they had reached the age of menarche and this included 30(30%) adolescents versus 22(22%) older mothers. However, undergoing the traditional initiation ceremony was not significantly associated with adolescent pregnancy (p 0.197). Out of all those that underwent the traditional initiation ceremony, 6(11%) felt that the teachings they received had negatively influenced them and caused them to initiate sexual activities early. This included 2(2%) adolescents and 4(4%) older women. In addition, 75(75%) adolescents compared to 88(88%) older women had received sex education before. Exposure to sex education at some point was significantly associated with (and protective for) adolescent pregnancies (odds ratio: 0.426; 95% CI: 0.200 - 0.910; p 0.027). Slightly over half of the women i.e. 106(53%) including

51(51%) adolescents and 55(55%) older women indicated that they had received sex education while at school in different grades. There were 2(2%) older women who said that they had received some sex education from their parents. Grandparents were noted to have had an input in 13(6.5%) of the women on giving sex education including 8(8%) adolescents and 5(5%) older women. The remaining 45(22.5%) women indicated various sources of sex education including clinics, churches, the media, other extended family members and friends among others.

4.5. Knowledge and use of contraceptives

Compared to older women, the adolescents exhibited low levels of knowledge about the different contraceptive methods available. For example, 37(37%) did not seem to have any idea about the combined oral contraceptive pill as compared to 5(5%) of the older women in a similar category ($p < 0.001$). There were 69(69%) adolescents who knew about injectables compared to 82(82%) older mothers ($p < 0.033$). In addition, 91(91%) had no idea about the intrauterine contraceptive device (IUCD) versus 66(66%) older mothers ($p < 0.001$). A total of 21(21%) adolescents had completely no idea of any contraceptive method as compared to 2(2%) older mothers ($p < 0.001$). As can be noted from table 4 below, 5(5%) adolescents had ever used a contraceptive in their lives versus 60(60 %) older mothers ($p < 0.001$). Most of the adolescents i.e. 63(63%) never thought of using contraceptives to prevent pregnancy

while only 15(15%) older women were in this category. Not thinking about contraceptive use was significantly associated with pregnancy (p 0.004). Adolescents who did not think about using contraceptives were 3.15 times more likely to be pregnant compared to those who considered and thought about contraceptives (95 percent CI: 1.452 - 6.822). In addition, 30(30%) adolescents and 23(23%) older women said they could not use contraceptives because they were afraid of side effects, particularly infertility. Fear of side effects of contraceptives was significantly associated with pregnancy (p 0.003). Furthermore, the majority 81(81%) of the adolescent pregnancies were unplanned compared to 46(46%) among older mothers (p 0.001).

4.6. Obstetric history and antenatal care utilization

The mean age at first pregnancy was 16 and 19.4 years for adolescents and older women respectively. There were 36(36%) adolescents that had attended a minimum of four antenatal care visits compared to 28(28%) of the older women. The majority i.e. 88(88%) of the adolescents were in their first pregnancy compared to 38(38%) that of the older women in the same category. There were also 10(10%) adolescents who were in their second pregnancies and 2(2%) who were pregnant for the third time. Overall, 1(1%) of the adolescents complained of having had difficulty with attending antenatal care because the clinic was far

compared to 3(3%) older women who said they had problems attending antenatal care due to transport problems (p 0.311).

4.7. Maternal and fetal conditions and complications

In this study, 24(12%) women had their haemoglobin (Hb) levels checked antenatally and anaemia in pregnancy was noted in 12(6%) of those that had their Hb levels checked. This included 2(2%) adolescents and 10(10%) older women. There was no statistically significant association between anaemia and adolescent pregnancy in this study (p 0.500). The mean antenatal Hb for the adolescents was 11.5g/dl compared to 10.9g/dl for the older women.

Table 4: Summary of knowledge and utilization of contraception's

| Variable | Adolescents (N=100) No. (%) | Older women (N=100) No. (%) | P - value |
|--|--|--|----------------------|
| Has knowledge of the pill | | | 0.001 |
| Yes | 63 (63) | 95 (95) | |
| No | 37 (37) | 5 (5) | |
| Has knowledge of IUCDs | | | 0.001 |
| Yes | 9 (9) | 34 (34) | |
| No | 91 (91) | 66 (66) | |
| Has knowledge of injectables | | | 0.033 |
| Yes | | | |
| No | 69 (69) 31 (31) | 82 (82) 18 (18) | |
| Has knowledge of implants (Jadelle) | | | 0.001 |
| Yes | 12 (12) | 34 (34) | |
| No | 88 (88) | 66 (66) | |
| Has knowledge of condoms | | | 0.001 |
| Yes | 22 (22) | 57 (57) | |
| No | 78 (78) | 43 (43) | |
| Does not know any method of contraception | | | 0.001 |
| Yes | 21 (21) | 2 (2) | |
| No | 79 (79) | 98 (98) | |
| Ever used a contraceptive | | | 0.001 |
| Yes | 5 (5) | 60 (60) | |
| No | 95 (95) | 40 (40) | |
| Planned the pregnancy | | | 0.001 |
| Yes | 19 (19) | 54 (54) | |
| No | 81 (81) | 46 (46) | |

There were 11(11%) adolescents and 7(7%) older mothers who had hypertensive disorders in pregnancy in this study. However, there was no statistically significant difference in terms of hypertensive disorders in pregnancy between adolescent and older women (p 0.323). All the 3(3%) women who had eclampsia were adolescents although with no statistical significance (p 0.202). There was also another 3(1.5%) of the

women who had severe pre-eclampsia including 2(2%) adolescents and 1(1%) older woman (p 0.674).

First-degree perineal tears and preterm birth were significantly associated with adolescents. An adolescent had a 3.5 times likelihood of having a first-degree perineal tear compared to an older woman (95% CI: 1.830 - 6.559; p <0.001). In addition, the study revealed that an adolescent had a 2.6 times likelihood of preterm labour (95% CI: 1.164 - 5.784; p 0.020). Although not statistically significant (p 0.132), there were more i.e. 22(22%) adolescents with low birth weight than older mothers i.e. 14(14%). There was also no significant association between asphyxia and adolescent pregnancies (p 0.351).

Table 5 below gives a summary of the observed maternal and fetal conditions and obstetric outcomes.

Table 5: Maternal and fetal conditions and obstetric outcomes.

| Variable | Adolescents (N=100) No. (%) | Older women (N=100) No. (%) | P - value |
|-------------------------------------|--|--|----------------------|
| Hypertensive disorders in pregnancy | | | 0.323 |
| Yes | 11 (11) | 7 (7) | |
| No | 89 (89) | 93 (93) | |
| Delivered by caesarean section | | | 0.052 |
| Yes | 8 (8) | 2 (2) | |
| No | 92 (92) | 98 (98) | |
| First degree perineal tear | | | <0.001 |
| Yes | 45 (45) | 21 (21) | |
| No | 55 (55) | 79 (79) | |
| Mean birth weight | 2.77 | 3.00 | 0.044 |
| Low birth weight (<2500g) | | | 0.132 |
| Yes | 23 (23) | 14 (14) | |
| No | 77 (77) | 86 (86) | |
| Preterm birth | | | 0.024 |
| Yes | 24 (24) | 12 (12) | |
| No | 76 (76) | 78 (78) | |
| Asphyxia | | | 0.351 |
| Yes | 20 (20) | 15 (15) | |
| No | 80 (80) | 85 (85) | |

4.8. Results of the multivariate logistic regression analysis

After controlling for confounding factors and using the multivariate logistic regression model, the factors and obstetric outcomes highlighted in table 6 below remained significantly associated with adolescent pregnancies. For instance, adolescents had a 14.6 times likelihood of

dropping out of school due to pregnancy compared to non-adolescents (95% CI: 5.154 - 41.53; $p < 0.001$). In addition, adolescents with only primary level education had a 4.5 times likelihood of pregnancy (95% CI: 1.758-11.63; $p 0.002$).

Table 6: Results of multivariate logistic regression analysis.

| Variable | P - value (adjusted) | AOR | 95% CI | |
|--|-------------------------|--------|--------|--------|
| | | | Lower | Upper |
| Factors associated with adolescent pregnancies | | | | |
| Dropped out of school due to current pregnancy | < 0.001 | 14.631 | 5.154 | 41.533 |
| Primary education | 0.002 | 4.522 | 1.758 | 11.634 |
| Mean age at marriage | < 0.006 | 0.229 | 0.080 | 0.652 |
| Early marriage | <0.001 | 14.6 | 4.642 | 45.990 |
| Having a boyfriend | < 0.001 | 12.696 | 4.039 | 39.906 |
| Drinks alcohol | 0.032 | 6.944 | 1.187 | 40.637 |
| Age at sexual debut | <0.001 | 0.576 | 0.475 | 0.698 |
| Condom use at last sex | 0.053 | 0.332 | 0.109 | 1.012 |
| History of having had sex education | 0.028 | 0.208 | 0.051 | 0.841 |
| History of having used contraceptives | < 0.001 | 0.053 | 0.017 | 0.164 |
| Does not know any contraceptive | 0.003 | 10.111 | 2.241 | 45.627 |
| Obstetric outcomes associated with adolescent pregnancies | | | | |
| Caesarean section | | | | |
| Primipara | < 0.001 | 10.973 | 5.260 | 22.888 |
| Multipara | < 0.001 | 0.091 | 0.044 | 0.190 |
| First degree perineal tear | < 0.001 | 3.464 | 1.830 | 6.559 |
| Preterm delivery | 0.020 | 2.595 | 1.164 | 5.784 |

CHAPTER FIVE: DISCUSSION

My study findings suggest that several factors and adverse obstetric outcomes are associated with adolescent pregnancy at the UTH. There has been a reduction in the adolescent pregnancies although still high. Most of the adolescent pregnancies are unplanned and contribute significantly to the adolescents dropping out of school because of pregnancy. The detailed discussion of the key results is given below under different sections. The expectations for this study were met.

5.1. Socio-demographic characteristics of the study participants

Adolescent pregnancies seen at the UTH seem to have reduced from the 22.5% reported by Wadhawan et al. (1982) and the 20% found by Kasonde (1997) to the current 13.9% found in this study. It is possible that the multisectoral interventions being advocated for and being implemented by the responsible arms of government and cooperating partners are producing an impact. There are a number of interventions being put in place including those targeting reduction of early marriages, advocacy through the Ministry of Education to provide age-appropriate sexuality education in schools, provision of adolescent friendly sexual and reproductive health services (SRHS) among others. As observed by Grant & Hallman (2008), the incidence of adolescent pregnancies is on the decline across the sub-Saharan African region although the levels are still high. This is true for the UTH. Compared to

other centers, the frequency of 13.9%% of adolescent pregnancies in this study is still very high. For instance, a 4.1% was found at one teaching hospital in India by Kumar et al. (2007), and a 9.3% incidence was recorded at the Yaoundé central hospital in Cameroun by Fouelifack et al. (2014). Furthermore, a 12.3% incidence was noted at Rajavithi Hospital in Thailand by Kovavisarach et al. (2010) and 6.9% at College of Medical Sciences Teaching Hospital in Nepal (Suwal, 2012).

In this study, although the employment levels were generally low, none of the adolescents was in employment compared to 9(9%) older mothers. The finding is consistent with that by Ezegwui et al. (2012) from one Nigerian study where the majority (75.7%) of teenagers who were pregnant were unemployed. In this study, the adolescents had boyfriends about 5 years older than them on average. This finding is consistent with those from one South African study by Jewkes et al. (2001). According to Jewkes et al. (2001) from their study on the relationship dynamics and teenage pregnancy in South Africa, partners of pregnant teenagers were significantly older. Unemployment can potentially push the adolescents into coercive relationships with men far older than they are for possibly potential economic benefits. This is more so considering the fact that all of the adolescents in this study were unemployed with a majority of them being unmarried. Such

relationships would put the adolescents at risk of unplanned and unintended pregnancies. As Marin, Kirby et al. (2006) observe, sexual relationships between adolescents and males three or more years older are unlikely to be voluntary, less likely to involve use of contraceptives and most likely end up in pregnancy as opposed to relationships among adolescents of the same age. According to Marin et al. (2006), having a boyfriend of any age is associated with an increased chance of sexual initiation. This seems to be consistent with the findings in this study where an adolescent with a boyfriend had a 12.7 times likelihood of pregnancy compared to one who said she did not have a boyfriend.

This study also revealed that a large proportion (72%) of the adolescents were unmarried compared to 16% of the older women. Three quarters of the older mothers in this study were married. This result on marital status is similar to that found in the Cameroun study by Fouelifack et al. (2014) who found that 79.4% of the adolescent mothers were not married compared to 50.1% of the non-adolescents. Marriage was significantly associated with adolescent pregnancies ($p < 0.001$). As the WHO (2012) observes, there is a higher frequency in sexual activity among adolescents who are in stable relationships such as marriage compared to those who are not. In the absence of contraceptive usage, the likelihood of pregnancy is greater in such situations. This study

revealed a prevalence of early marriages of 75% and an adolescent who got married early was 14.6 times more likely to be pregnant than one who did not get married early. The 75% prevalence of early marriages is more than the 60% reported in Eastern Province of Zambia and much higher than the national prevalence of 42% (Mann et al., 2015). As Mann et al. (2015) note, the 42% is among the highest prevalence rates of early marriages in the world. This implies that the problem is large and explains in part how early marriages are largely contributing to the high proportion of adolescent pregnancy noted in this study. With the mean age at marriage for adolescents in the study being 16.8 years, early marriages remain among the significant driving factors for the high levels of adolescent pregnancies seen at the UTH. As concluded by Katayamoyo (2010), there is increased legitimate exposure to sex in a marriage setting and that predisposes the adolescents to pregnancy. As noted from the 2013 - 2014 ZDHS, women who marry early have a more likelihood of having their first child at a younger age on average. In this study, 28(28%) of the adolescents got pregnant in marriage settings.

Alcohol consumption was another factor that was significantly associated with adolescent pregnancies in this study. The study revealed that adolescents who drank alcohol were 6.9 times more likely to fall pregnant than those who did not consume alcohol (95% CI: 1.187

- 40.637; p 0.032). This finding is consistent with what Tilahun & Ayele (2013) found in their study in Ethiopia. According to Tilahun & Ayele (2013), youths who consumed alcohol were almost four times more likely to initiate sexual intercourse earlier than those who did not consume alcohol. In addition, with alcohol consumption, there is a chance of the adolescent engaging in risky sexual behaviour. This would expose these young people to the risk of unintended pregnancy. A clear association between alcohol consumption and engaging in risky sexual behaviour has been demonstrated by several studies (Kaljee et al. 2005; Zablotska et al., 2006). These studies also have found that an absence of or a reduction in alcohol use is associated with a decrease in high-risk sexual behavior.

This study also revealed that education level was significantly associated with adolescent pregnancy. After controlling for confounders in multivariate logistic regression analysis, tertiary education was found to be protective for adolescent pregnancy (AOR 0.108; 95% CI: 0.011 - 1.106). This finding is consistent with the observation by the WHO (2012) that education is a major protective factor for adolescent pregnancy implying that the more years of schooling a woman had, the fewer early pregnancies she got. With more years of schooling, a woman is likely to focus on advancing her career while postponing pregnancy.

In addition, she may be more exposed to sex education over the years of her education, be more aware and knowledgeable about the consequences of unplanned pregnancies and how to prevent them. In addition, she may have knowledge on and use modern contraceptives to prevent the unintended pregnancies. In this study, an adolescent with only primary education had a 4.5 times more likelihood of becoming pregnant compared to others with secondary and tertiary level education. According to WHO (2012), birth rates among women with low levels of education are higher than among those with secondary or tertiary education.

5.2. Sexual behavior, partnerships and practices

Out of all the women with history of early sexual debut, the majority i.e. 45(45%) were adolescents compared to 17(17%) older mothers. This is lower than the 62% of the respondents reporting having started sexual activities between the age of 13 and 15 years in a South African study by Mothiba and Maputle (2012). According to the 2013 - 14 ZDHS, age at which a woman initiates sexual intercourse marks the beginning of her exposure to pregnancy. The 45% of adolescents reporting having initiated sex early in this study is almost double the figure reported by Doyle et al. (2012). Doyle et al. (2012) analyzed national survey data from 24 countries in the sub-Saharan African region and found that up

to 25% of the 15 to 19 years old females had initiated sex before the age of 15 years. However, a wide variation in the proportion of the 15 to 19 years reporting initiation of sex before 15 years of age was observed across the sub-Saharan African region in the studied countries. With almost 50% being adolescents among those that had early sexual debut in the study, early sexual initiation remains another key factor in driving adolescent pregnancies. This is in agreement with other studies elsewhere like that by Edgardh (2000, 2002b) (cited by Imamura et al., 2006) which revealed that among sexually active females aged 17 years, those with history of early sexual debut were more likely to report pregnancy compared to those who experienced their first intercourse at a later age.

This study also highlighted low condom use at the last sexual intercourse among adolescents compared to older women. This is consistent with the 2009 Zambia Sexual Behaviour Survey (ZSBS), which observed that the majority of the young people practiced unsafe sex with low condom use as noted.

5.3. Family structure and stability

Over 50% of the adolescents compared to older mothers in this study indicated that they had not been brought up by both of their parents. This is slightly higher than the 47% finding by Katayamoyo (2010).

However, this finding was not significantly associated with adolescent pregnancy (p 0.166). This is contrary to the findings by Vikat et al. (2002) (as cited by Imamura et al., 2006) who noted that the likelihood of pregnancy among teenagers who did not live with both of their parents was higher. In addition, the marital status for the parents and / or guardians of the women was also not statistically significant but the employment status was protective for adolescent pregnancy.

5.4. Traditional initiation ceremony and exposure to sex education

Slightly over a quarter of the study population underwent the traditional initiation ceremony when they reached the age of menarche. Although over 80% of adolescents in Zambia are introduced to sex very early through the initiation ceremonies as observed by Kapungwe (2003), this study did not reveal a statistically significant association of these ceremonies with adolescent pregnancies (p 0.197). On the contrary, having been exposed to some sex education at some point in life was significantly associated with and was protective for adolescent pregnancies after controlling for confounders (p 0.028). Overall, about 75% of the adolescents reported having received sex education at some point before. This is slightly higher than the findings by Kohler, Manhart & Lafferty (2008) who noted from their study that 66.8% of their female study participants had received sex education before. As Kohler et al. (2008) observed, adolescents who received comprehensive sex education

(CSE) were significantly less likely to report falling pregnant. Sex education was protective for adolescent pregnancy in this study just like it was noted by Kohler et al. (2008). According to the United Nations Educational, Scientific and Cultural Organization [UNESCO] (2009), effective sexuality education can provide adolescents with age-appropriate, culturally relevant and scientifically accurate information that can help them prevent pregnancies and other sexually transmitted infections (STIs). The schools were noted to be the major source of the sex education in this study. This is consistent with the finding by Mchunu et al. (2012) in a South African study where they found that 85% of young women reporting having received sex education from their teachers at school. This highlights the fact that many adolescents could actually be reached with appropriate health messages to prevent unwanted pregnancies through the schools if the CSE was well packaged. This study revealed that only about 1% of parents had ever discussed issues of sexuality with their children. This finding is consistent with those of Kapungwe (2003) who observed that most Zambian parents did not discuss sex matters with their children traditionally. This poses a challenge in the sense that parents need to get actively involved in the sex education for their children.

5.5. Knowledge and use of contraceptives

Studies done before have revealed the fact that adolescents' success in avoiding getting pregnant often depended on having access to contraceptive information, methods and services (Blanc et al., 2009). In addition, in places where they have noted significant drops in adolescent pregnancies, use of effective contraceptives have played a crucial role (Boonstra, 2014). According to Boonstra (2014), teenage pregnancies can decrease either by the teenagers having less sexual encounters or when they become effective contraceptive users. On the contrary, despite contraceptive knowledge and use being noted to be protective for adolescent pregnancies, this study revealed that the adolescents had limited knowledge about the contraceptive methods available compared to the older women and that they were also not effective contraceptive users. Only about 5% of the adolescents in this study reported having ever used contraceptives in their lives when compared to 60% of the older mothers. There seems to be a number of myths about the use of contraceptives present in the communities in which the adolescents live. A critical one noted from this study was the fear of becoming infertile after using contraceptives. The 18.3% overall contraceptive use found in a Ghana study by Nyarko (2015) is more than twice that found in this study. The 5% contraceptive use among adolescents found in this study contrasts sharply with what was found in one study in the USA where

it was noted that 82% of 16 year olds used contraception at first sex (Finer & Philbin, 2013). The other critical challenge that needs to be addressed for the adolescents seen at the UTH is the fact that about 63% of them do not think about contraceptives. This partially explains why a significant proportion of them are dropping out of school due to pregnancy.

5.6. Obstetric history and antenatal care utilization

This study revealed that all the women were booked for antenatal care. This is contrary to the finding by Ezegwui et al (2012) in Enugu Nigeria who reported that the majority (58.1%) of the teenage mothers in their study were un-booked when they compared with the 79% of the older mothers who were booked. Antenatal care utilization was not significantly associated with adolescent pregnancies in this study because the adolescents were coming to the health facilities when already pregnant (p 0.094).

5.7. Maternal and fetal conditions and complications

A number of studies have reported an increase in pregnancy complications related to teenage pregnancy including anaemia, hypertensive disorders of pregnancy, preterm labour and high incidence of operative delivery among others (Ezegwui et al. 2012). This study revealed that out of the 18(9%) women who had hypertensive disorders

in pregnancy, 11(11%) of them were adolescents compared to 7(7%) older mothers. However, this difference was not statistically significant (p 0.323). This finding is consistent with that by Ezegwui et al. (2012). The result does show that hypertensive disorders were higher among the adolescents as seen from other studies like that by Yasmin, Kumar & Parihar (2014) in India. According to Yasmin et al. (2014) study, the prevalence of hypertensive disorders was about 20% among teenagers. In addition, the adolescents had a 4.3 times likelihood of delivering by caesarean section compared to older women (95% CI: 0.882 - 20.591). Out of all the caesarean sections done in this study, 8(8%) were among adolescents and this represented 80% of the caesarean sections done among the study participants. This result, although not statistically significant (p 0.071) was consistent with that of Fouelifack et al. (2014) who reported 83.4% adolescents delivering by caesarean section. The study also revealed that the majority (45%) of first-degree perineal tears were among adolescents compared to 21% among older women and the association was statistically significant. This is contrary to the finding in the Cameroun study by Fouelifack et al. (2014) who found no significant difference between adolescents and non-adolescents. This study also revealed a statistically significant association between preterm delivery and adolescent pregnancies (AOR 2.6; 95% CI: 1.164 - 5.784; p 0.020). This too is in agreement with studies done elsewhere.

For instance, the Ganchimeg et al. (2014) multi-country study on pregnancy and childbirth outcomes among adolescent mothers reported risks of preterm delivery (<37 weeks of gestational age) (AOR 1.60; 95% CI, 1.37 - 1.87) and low birth weight significantly higher among all the adolescent groups examined.

In this study, among the women who had low birth weight babies, adolescents were the majority (22%) compared to 14% among the older women. This finding is also consistent with the findings by Ezegwui et al. (2012) who found that 23% of teenagers in their study had low birth weight compared to 10.5% among the controls. However, for this study, the difference between the two groups was not statistically significant (p 0.132). Other observations made in this study were that there were more adolescents with babies admitted to the NICU [10(10%) versus 5(5%)] (p 0.179) and asphyxia [20(20%) versus 15(15%)] (p 0.351).

5.8. Study limitations

This study had the following limitations:

1. Interviewee or response bias - Some study participants may have chosen not to reveal or discuss certain topics that they may have considered private and sensitive matters. According to Saunders et al. (2003), an interview can be considered as an intrusive process and this must be noted.

2. Being hospital based and the study done at one teaching hospital in Lusaka, Zambia, generalizability of the results to the whole country is limited.
3. Recalling some events in the past was a challenge for some of the study participants.

CHAPTER SIX: CONCLUSIONS AND RECOMMENDATIONS

6.1. Conclusions

This study demonstrated that there has been a decline in the numbers of adolescent pregnancies seen at the UTH over the past 30 years and more. However, the current 13.9% noted in the study remains high and significantly responsible for the large numbers of adolescents dropping out of school. The aspect of dropping out of school has its own negative implications on the adolescents' economical livelihoods in future, their children and families. Career progression is being curtailed and cut shot. With primary school level being significantly associated with adolescent pregnancies, it does indicate that for some, their educational pursuits are really terminated quite early on in life. Despite the Zambian government having the re-entry policy in place through the ministry of education, it is unclear as to how many of these adolescents get re-enrolled in school and subsequently proceed to complete their educational pursuits. The study also revealed that the adolescent pregnancies seen at the UTH have multiple associated factors. These include early marriages, early sexual debut, low knowledge and use of

effective contraception, myths around contraceptive use, having boyfriends (usually much older) and primary level education. Other identified factors included low condom use at last sex, alcohol consumption and exposure to comprehensive sexuality education.

Looking at the identified factors and the reduction in the scale of adolescent pregnancies, it is clear that reducing adolescent pregnancies is feasible but requires a multisectoral approach. One observation from this study is the fact that some of the key interventions like effective utilization of contraceptives that have been linked to successful reductions in adolescent pregnancy rates in some countries are still seriously underutilized by the adolescents. As observed and concluded by many other studies in various regions and countries of the world, this study also reinforced the fact that adolescent pregnancies tend to have an increased association with pregnancy related complications for both the mother and the baby. The study revealed that this situation is still true.

Adolescents form a big portion of the Zambian population and should continue to be viewed as a key target group for appropriate health messages.

6.2. Recommendations

1. Key stakeholders such as the ministry of health with its cooperating partners need to continue targeting adolescents with appropriate health messages including an emphasis on increased access to and utilization of effective contraceptives by all sexually active adolescents.
2. Ministry of education to strengthen the provision of age appropriate comprehensive sexuality education in schools and sensitize the adolescents on the challenges associated with adolescent pregnancies.
3. The women and newborn hospital at the UTH should orient doctors and nurses attending to adolescents in the provision of adolescent friendly health services.
4. The Ministry of Chiefs and traditional affairs together with the Ministry of Justice needs to consider working on and putting in place legislature that discourages early marriages.
5. The ministry of education needs to do a follow up research to see how many of the adolescents who drop out of schools due to pregnancy eventually get re-enrolled and subsequently complete their studies. This will help in deciding the way forward on improving the provision of comprehensive sexuality education in schools.

REFERENCES

1. Al-Ramahi, M. & Saleh, S. (2006). Outcome of Adolescent Pregnancy at a University Hospital in Jordan. *Archives of Gynaecology and Obstetrics*, 273 (4): 207-10. [Online], Available: <http://www.ncbi.nlm.nih.gov/pubmed/16205933>[21.02.15 05:43 AM].
2. Arie, S. (2014). Has Britain Solved its Teenage Pregnancy Problem? *British Medical Journal*, 348:g2561. [Online], Available: <http://www.bmj.com/content/348/bmj.g2561> [28.01.15 23:58 PM]
3. Ayuba, I.I. & Gani, O. (2012). Outcome of Teenage Pregnancy in the Niger Delta of Nigeria. *Ethiopian Journal of Health Sciences*, 22(3):45-50. [Online], Available: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3437979/pdf/EJHS2201-0045.pdf> [24.01.15 06:56 AM].
4. Blanc, A. K, Tsui, A. O, Croft, T. N & Trevitt, J. L. (2009). Patterns and Trends in Adolescents' Contraceptive Use and Discontinuation in Developing Countries and Comparisons with Adult Women, *International Perspectives on Sexual and Reproductive Health*, 35(2). [Online], Available:

<http://www.guttmacher.org/pubs/journals/3506309.html>
[02.02.15 20:18 PM].

5. Boonstra, H.D. (2014). What is Behind the Decline in Teen Pregnancy Rates? *Guttmacher Policy Review*, 17(3). [Online], Available:
<http://www.guttmacher.org/pubs/gpr/17/3/gpr170315.pdf>
[11.03.16 10:15 AM].
6. Bouzas I.C.S, Cader. S.A, & Leão .L. (2014). Pregnancy in Adolescence: A Systematic Review of the Impact of Maternal Age on Clinical, Obstetric and Neonatal Complications in the First Phase of Adolescence. *Adolescence and Health Journal*, 11(3):7-21. [Online], Available:
http://www.adolescenciaesaude.com/detalhe_artigo.asp?id=457&idioma=English [24.01.15 07:27 AM].
7. Central Statistical Office (2012). *Zambia 2010 Census of Population and Housing – Population Summary Report*. Lusaka, Zambia

8. Central Statistical Office (CSO) [Zambia], Ministry of Health (MOH) [Zambia], ICF international, 2014). *Zambia Demographic and Health Survey 2013 – 2014*. Rockville, Maryland, USA.
9. Central Statistical Office, Ministry of Health, University of Zambia & Measure Evaluation (2010). *Zambia Sexual Behavior Survey*. Lusaka, Zambia
10. Central Statistical Office (2012). *Zambia 2010 Census of Population and Housing – Population Summary Report*. Lusaka, Zambia.
11. Chaibva, C.N, Roos, J.H. & Ehlers, V.J. (2009). *Adolescent Mothers’ Non-utilization of Antenatal Care Services in Bulawayo, Zimbabwe*. [Online], Available: <http://www.curationis.org.za/index.php/curationis/article/download> [01.02.15 18:30 PM].
12. Doyle, A. M, Mavedzenge, S. N, Plummer, M.L & Ross, D. A. (2012). The Sexual Behaviour of Adolescents in sub-Saharan Africa: Patterns and Trends from National Surveys. *Tropical Medicine and International Health*, 17(7): 796–807. [Online], Available:

<http://onlinelibrary.wiley.com/doi/10.1111/j.1365-3156.2012.03005.x/pdf> [17.05.16 11.50 AM].

13. Ebeigbe (2007). Obstetric Complications, Intervention rates and Maternofetal Outcome in Teenage nullipara in Benin City, Nigeria. *Tropical Doctor*, 37(2): 79 – 83. [Online], Available: <http://tdo.sagepub.com/content/37/2/79.abstract> [01.02.15 16:30 PM].
14. Ezegwui, H.U, Ikeako, L.C. & Ogbuefi, F. (2012). Obstetric Outcome of Teenage Pregnancies at a Tertiary Hospital in Enugu, Nigeria. *Nigerian Journal of Clinical Practice*, 15(2). [Online], Available: [http://www.njcponline.com/IP: 41.223.117.43](http://www.njcponline.com/IP:41.223.117.43)[21.01.15 17:20 PM]
15. Finer, L.B. & Philbin, J.M. (2013). Sexual Initiation, Contraceptive Use, and Pregnancy Among Young Adolescents. *American Academy of Paediatrics*, 131(5): 1-6. [Online], Available: www.pediatrics.org/cgi/doi/10.1542/peds.2012-3495[19.05.16 07:20].
16. Fouelifack et al. (2014). Outcome of Deliveries Among Adolescent Girls at the Yaoundé Central Hospital. *BMC Pregnancy and*

Childbirth, 14:102. [Online], Available:

<http://www.biomedcentral.com/content/pdf/1471-2393-14-102.pdf> [23.01.2015 02:19 AM].

17. Ganchimeg T. et al. (2014). Pregnancy and Childbirth Outcomes Among Adolescent Mothers: A World Health Organization Multi-country Study (on behalf of the WHO Multi-country Survey on Maternal Newborn Health Research Network). *BJOG An International Journal of Obstetrics & Gynaecology*, 121 (Suppl.1):40-48. [Online], Available:
<http://onlinelibrary.wiley.com/doi/10.1111/14710528.12630/pdf> 2012[14.04.1719:15PM].
18. Grant, M.J. & Hallman, K.K. (2008). Pregnancy-Related School Dropout and Prior School Performance in Kwazulu-Natal, South Africa. *Studies in Family Planning*, 39(4):369-382. [Online], Available: <http://onlinelibrary.wiley.com/doi>. [17.05.16 08:50 AM].
19. Imamura, M, Tucker, J, Hannaford, P, Astin, M, Oliveira da Silva, M, Bloemenka, K.W.M, Karro, H, Olsen, J. & Temmerman, M. (2006). *Reprosta 2: A Systematic Review of Factors Associated with Teenage Pregnancy in the European Union, Final Report*. [Online],

Available:

http://ec.europa.eu/health/ph_projects/2003/action1/docs/2003_1_27_frep_en.pdf[02.02.15 AM]

20. Jewkes, R, Vundule, C, Maforah, F. & Jordaan, E. (2001).
Relationship Dynamics and Teenage Pregnancy in South Africa.
Social Science and Medicine, 52(5):733-744 [Online], Available:
<http://www.sciencedirect.com/Science/article/pii/S027795360001775> [17.05.16 11:50 AM].

21. Kaljee, L. M. et al. (2005). Alcohol Use and HIV Risky Behaviours
Among Rural Adolescents in Kham Hoa Province in Vietnam. *Health
Education Research*, 20(1), Oxford University Press.

22. Kapungwe, A.K. (2003). Traditional Cultural Practices of Imparting
Sex Education and the Fight against HIV/AIDS: The Case of
Initiation Ceremonies for Girls in Zambia. *African Sociological
Review*, 7(1):00. [Online], Available:
<http://www.ajol.info/index.php/asr/article/viewFile/23129/19901>
[30.01.15 22:00 PM].

23. Kasonde, P.N. (1997). Obstetric Outcome in Teenage Pregnancies at the University Teaching Hospital, Lusaka. A Dissertation Submitted to the University of Zambia in Partial Fulfillment of the Requirements for the Degree of Masters of Medicine in Obstetrics and Gynaecology, School of Medicine, University of Zambia. [Online], Available: <http://dspace.unza.zm:8080/xmlui/bitstream/handle/123456789/1332/KasondePN0001.PDF?sequence=1>[26.01.15 01:13 AM].
24. Katayamoyo, P. (2010). Determinants of Teenage Pregnancy in Lusaka District. A Dissertation Submitted to the University of Zambia in Partial Fulfillment of the Requirements for the Degree of Masters in Public Health, School of Medicine, University of Zambia. [Online], Available: dspace.unza.zm:8080/xmlui/handle/123456789/752? 17.05.16 09:03 AM].
25. Kirby, D, Coyle, K, Rolleri, L, Alton, F. & Robin, L. (2011). Reducing Adolescent Sexual Risk. A Theoretical Guide for Developing and Adapting Curriculum-Based Programs. ETR Associates, California, USA.

26. Kohler, P.K, Manhart, L.E. & Lafferty, W.E. (2008). Abstinence-Only and Comprehensive Sex Education and the Initiation of Sexual Activity and Teen Pregnancy. *Journal of Adolescent Health*, (42)4:344-351, [Online], Available: [http://www.jahonline.org/article/S1054-139X\(07\)00426-0/abstract](http://www.jahonline.org/article/S1054-139X(07)00426-0/abstract)[18.05.16 02:15 AM].
27. Kovavisarach, E, Chairaj, S, Tosang, K, Asavapiriyant, S. & Chotigeat, U. (2010). Outcome of Teenage Pregnancy in Rajavithi Hospital. *Journal of the Medical Association of Thailand*, 93(1): 1-8. [Online], Available: <http://www.ncbi.nlm.nih.gov/pubmed/20196404> [24.01.15 18:24 PM].
28. Kumar, A, Singh, T, Basu, S, Pandey, S & Bhargava, V. (2007). Outcome of Teenage Pregnancy. *Indian Journal of Paediatrics*, 74(10): 927 – 931. [Online], Available: <http://www.ncbi.nlm.nih.gov/pubmed/17978452> [19.12.14 00:55 AM].
29. Kurth, F, B elard, S, Mombo-Ngoma, G, Schuster, K, Adegnika, A.A, Bouyou-Akotet, M.K, Kremsner, P.G. & Ramharter, M. (2010).

Adolescence As Risk Factor for Adverse Pregnancy Outcome in Central Africa – A Cross-Sectional Study. *PLoS ONE* 5(12): e14367. doi:10.1371/journal.pone.0014367. [Online], Available: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3004789/pdf/pon_e.0014367.pdf [24.01.15 06:41 AM].

30. Loto, O.M, Ezechi, O.C, Kalu, B.K, Loto, A, Ezechi, L. & Ogunniyi, S.O. (2004). Poor Obstetric Performance of Teenagers: Is it Age or Quality of Care Related? *Journal of Obstetrics and Gynaecology: The Journal of the Institute of Obstetrics and Gynaecology*, 24(4): 395 – 398. [Online], Available: <http://www.ncbi.nlm.nih.gov/pubmed/15203579> [15.01.15 00:45AM].
31. Machunu, G, Peltzer, K, Tutshana, B & Seutlwadi, L. (2012). Adolescent Pregnancy and Associated Factors in African Youth. *African Health Sciences*, 4:426 – 434. [Online], Available: <http://dx.doi.org/10.4314/ahs.v12i4.5> [29.01.15 02:00 AM].
32. Mahavarkar, S.H, Madhu, C.K & Mule, V.D. (2008). A Comparative Study of Teenage Pregnancy. *Journal of Obstetrics and Gynaecology: The Journal of the Institute of Obstetrics and Gynaecology*, 28(6):

604 – 607. [Online], Available:

<http://www.ncbi.nlm.nih.gov/pubmed/19003655> [28.01.15 01:25 AM].

33. Mann, G, Quigley, P. & Fischer, R. (2015). *Qualitative study of child marriage in six districts of Zambia*. Child Frontiers. [Online], Available:
http://www.unicef.org/zambia/Qualitative_study_of_child_marriage_in_six_districts_of_Zambia.pdf[21.05.16 04:40 AM].
34. Marin, B.V, Kirby, D.B, Hudes, E.S, Coyle, K.K & Gomez, C.A (2006). Boyfriends, Girlfriends and Teenagers' Risk of Sexual Involvement. *Perspectives of Sexual and Reproductive Health – A Journal of Peer-Reviewed Research*, 38(2):76-83. [Online], Available:
<https://www.guttmacher.org/about/journals/psrh/2006/boyfriends-girlfriends-and-teenagers-risk-sexual-involvement> [17.05.16 13:15 PM].
35. Ministry of Education, Science, Vocational Training and Early Education (2013). *Zambia Educational Statistical Bulletin*. Lusaka, Zambia

36. Ministry of Health (2011). Adolescent Health Strategic Plan 2011 to 2015. Lusaka, Zambia.
37. Mothiba, T. M. & Maputle, M. S. (2012). Factors Contributing to Teenage Pregnancy in the Capricorn District of the Limpopo Province. *Curationis*, 35(1). [Online], Available: <https://www.curationis.org.za/index.php/curationis/rt/prINTERfriendly/19/63>[14.04.17 17:50 PM].
38. Nyarko, S.H (2015). Prevalence and correlates of contraceptive use among female adolescents in Ghana. *BioMed Central Women's Health*, 15(60). [Online], Available: <http://bmcwomenshealth.biomedcentral.com/articles/10.1186/s12905-015-0221-2>[18.05.16 09:57 PM].
39. Ogunlesi, T.A, Ayeni, V.A, Jagun, E.O. & Ogunfowora, O.B. (2013). Socio-clinical Factors Related to the Perinatal Outcome of Teenage Pregnancies in a Nigerian Teaching Hospital. *Nigeria Journal of Paediatrics*, 40(3): 290-294. [Online], Available: DOI: <http://dx.doi.org/10.4314/njp.v40i3.18> [24.01.15 17:50 PM].

40. Pergialiotis, V, Vlachos, D.G, Gkioka, E, Tsotra, K & Papantoniou, N. (2014). Teenage Pregnancy Antenatal and Perinatal Morbidity: Results from a Tertiary Centre in Greece. *Journal of Obstetrics and Gynaecology*, (19): 1-5. [Online], Available: <http://informahealthcare.com/doi/abs/10.3109/01443615.2014.991285> [24.01.15 15:30 PM].
41. Restless Development (2014). Submission to the Parliamentary Sessional Committee for Youth and Sport for the Third Session of the 11th National Assembly of Zambia. [Online], Available: <http://restlessdevelopment.org/file/submission-to-the-parliamentary-national-assembly-of-zambia-090114-pdf>[29.01.15 18:30 PM]
42. Rutaremwa, G. (2013). Factors Associated with Adolescent Pregnancy and Fertility in Uganda: Analysis of the 2011 Demographic and Health Survey Data, *Social Sciences*, 2(1): 7-13. [Online], Available: <http://article.sciencepublishinggroup.com/pdf/10.11648.j.ss.20130201.12.pdf> [29.01.15 02:15 AM].

43. Saunders, M, Lewis, P. & Thornhill, A. (2003). *Research Methods for Business Students, 3rd Edition*. England, Pearson Education Limited.
44. Sulaiman, S, Othman, S, Razali, N & Hassan, J. (2013). Obstetric and perinatal outcome in teenage pregnancies. *South African Journal of Obstetrics & Gynaecology (19): 3*. [Online], Available: <http://repository.um.edu.my/27038/1/teenage%20pregnancy%20SAJOG.pdf> [20.02.15 19:50 PM]
<http://repository.um.edu.my/27038/1/teenage%20pregnancy%20SAJOG.pdf>
45. Sullivan, K. M., Dean, A., & Soe, M. M. (2009). OpenEpi: A Web-based Epidemiologic and Statistical Calculator for Public Health. *Public Health Reports, 124* (3), 471–474. [Online], Available: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2663701> [30.09.15 18:30 PM].
46. Suwal, A. (2012). Obstetric and Perinatal Outcome of Teenage Pregnancy. *Journal of Nepal Health Research Council, 10(1):52 – 56*. [Online], Available:

<http://www.ncbi.nlm.nih.gov/pubmed/2292638> [21.01.15 18:58 PM].

47. Talawar, T. & Venkatesh, G. (2013). Outcome of Teenage Pregnancy. *IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)*, 6(6): 81 – 83. [Online], Available: <http://www.iosrjournals.org/iosr-jdms/papers/vol6-issue6/m0668183.pdf> [28.01.15 01:42].
48. Tilahum, M. & Ayele, G. (2013). Factors Associated with Age at First Sexual Initiation Among Youths in Gamo Gota, South West Ethiopia: A Cross Sectional Study. *BioMed Central Public Health*, 13:622. [Online], Available: <http://www.biomedcentral.com/1471-2458/13/622> [18.05.16 08:02 AM].
49. UNESCO (2009). International Technical Guidance on Sexuality Education: An Evidence-Informed Approach for Schools, Teachers and Health Educators. Volume 1 – The Rationale for Sexuality Education. Paris, France.

50. UNICEF (2001). *A League Table of Births in Rich Nations. Innocenti Report Card, Issue No.3.* [Online], Available: <http://www.unicef-irc.org/publications/pdf/repcard3e.pdf> [28.01.15 23:12 PM].
51. Vwalika, B. (2003). *An Assessment of Female Adolescent Health Services: A Case of Sexually Transmitted Infections Prevention in Lusaka Zambia. A Dissertation Submitted to the University of Zambia in Partial Fulfillment of the Requirements for the Degree of Masters of Medicine in Obstetrics and Gynaecology, School of Medicine, University of Zambia.*
52. Wadhawan, S, Narone, R.K &Narone, J.N. (1982). *Obstetric Problems in the Adolescent Zambian Mother Studied at the University Teaching Hospital, Lusaka. Medical Journal of Zambia, 16(3):65-68.* [Online], Available: <http://www.ncbi.nlm.nih.gov/pubmed/7186722> [22.01.15 23:55PM]
53. WHO (1986). *Young People's Health - A Challenge For Society. Report of a WHO Study Group OnYoung People And "Health For All By the Year 2000". WHO Technical Report series No. 731. Geneva, Switzerland.* [Online], Available:

http://whqlibdoc.who.int/trs/WHO_TRS_731.pdf [24.01.2015
05:19 AM].

54. WHO (2004). *Adolescent Pregnancy: Issues in Adolescent Health and Development*. Geneva, Switzerland. [Online], Available:

http://whqlibdoc.who.int/publications/2004/9241591455_eng.pdf
[23.01.2015 01:52 AM].

55. WHO (2008). *MPS Notes. Volume 1, No.1. Department of Making Pregnancy safer*. [Online], Available:

http://www.who.int/maternal_child_adolescent/documents/mpsn/notes_2_lr.pdf. [24.01.15 22:00 PM]. Geneva, Switzerland.

56. WHO (2011). *Guidelines on Preventing Early Pregnancy and Poor Reproductive Outcomes Among Adolescents in Developing Countries*. Geneva, Switzerland. [Online],

Available:http://www.who.int/immunization/hpv/target/preventing_early_pregnancy_and_poor_reproductive_outcomes_who_2006.pdf?ua=1[24.01.15 20:12 PM].

57. WHO (2012). *Early marriages, adolescent and young pregnancies. Report by the Secretariat. Sixty-fifth World Health Assembly*.

Provisional Agenda Item 13.4. Geneva, Switzerland. [Online],

Available:

http://apps.who.int/gb/ebwha/pdf_files/WHA65/A65_13-en.pdf

[17.05.16 23:37 PM].

58. WHO (2014). Adolescent Pregnancy. *Fact Sheet Number*

364. Geneva, Switzerland. [Online], Available:

<http://www.who.int/mediacentre/factsheets/fs364/en> [22.01.15

04:50 AM].

59. Yasmin, G, Kumar, A & Parihar, B (2014). Teenage Pregnancy - Its

Impact on Maternal and Fetal Outcome. *International Journal of*

Scientific Study, 1 1(6). [Online], Available:

[https://www.researchgate.net/publication/285009365_Maternal_h](https://www.researchgate.net/publication/285009365_Maternal_health)

[ealth](https://www.researchgate.net/publication/285009365_Maternal_health) [17.05.16 15:30PM]

60. Zablotska, I. B. et al. (May 2006). Alcohol Use before Sex and HIV

Acquisition: A Longitudinal Study in Rakai, Uganda. *AIDS*, 20(8):

1191-1196

APPENDICES

Appendix A. Participant information sheet

1. Introduction: My name is Andrew Kumwenda. I am a postgraduate student studying at the School of Medicine, Department of Obstetrics and Gynaecology, University of Zambia. I am gathering information on the outcomes and factors which are associated with adolescent pregnancies at the University Teaching Hospital (UTH), Lusaka, Zambia. The study is being done in partial fulfillment of the Master of Medicine, Obstetrics and Gynaecology (MMed O&G) degree from the University of Zambia. To participate in this study, one needs to be an adolescent aged 10 to 19 years or a woman aged 20 - 30 years and be currently pregnant or just delivered from UTH either by operation (Caesarean section or spontaneous vaginal delivery). Only those who meet the criteria to be involved and accept and give consent will be selected.

2. Confidentiality: The answers you volunteer to any of the questions asked will be completely **confidential**. Your name will not be written on any form and none of the information you give will ever be linked back to you or anyone you mention during the interview as it will be anonymous. It will not be possible to identify the information you give me when I write up the report

3. Risks / Benefits: For your information, there are no known risks associated with participating in this study. As a participant, you may not immediately benefit from the study but the information given will help in improving the health care services provided to adolescents especially when they are pregnant. There is also no compensation for participating

4. Voluntary participation: Participation in the study is completely voluntary

5. Right to withdraw or seek clarification: Furthermore, you do not have to answer questions you are not comfortable with, and you can choose to end the interview at any time if you wished to. You are also free to ask for clarifications on any issue you are not clear about.

6. Provision of standard of care: there will be no negative consequences if you would prefer not to answer certain questions. The usual standard of care will be provided to you like any other patient regardless of your responses given. The care given to you will not be negatively affected by anything that relates to this study.

7. Contact details: If you have any questions about the research and your participation, you can contact me on the following address: Dr Andrew Kumwenda, University Teaching Hospital, Department of Obstetrics and Gynaecology, P/B RW1X, Lusaka. Mobile number: 0976553990; Email: akumwenda@hotmail.org or the Chairman for ERES Coverge IRB, 33 Joseph Mwila Road, Roads Park, Lusaka, Zambia: email: eresconverge@yahoo.co.uk; Phone: +260955155633 or +260955155634

Appendix B. Interviewer administered questionnaire for pregnant and postnatal adolescents at UTH, Lusaka, Zambia

| SECTION 1: Socio-demographic characteristics | | | |
|---|--|---|---|
| ⇒First, I would like to ask some questions about you | | | |
| No. | Questions and filters | Coding categories | Skip to |
| Q101 | How old are you? | Age in completed years..... [][] Don't know.....88 | |
| Q102 | What is your current school status? | Dropped out.....0 At primary1 At Secondary2 At College.....3 At University.....4 | |
| Q103 | What is the highest level of education you attended? | No education.....0 Primary1 Secondary2 College.....3 University.....4 | →Q104 →Q104 →Q105 →Q105 |
| Q104 | Did this pregnancy cause you to drop out of school? | Yes0 No1 No response.....99 | |
| Q105 | What do you do for a living at the moment? | Full time house wife.....0 Businesswoman.....1 Working.....2 I am doing nothing.....3 Other (specify).....4 No response.....99 | |
| Q106 | Who is looking after you at the moment? | Parents0 Self.....1 Husband.....2 Boyfriend.....3 Relative.....4 No response.....99 | |
| Q107 | Who are you currently living with? | Lives with partner.....0 Lives with parents.....1 Lives alone.....2 Lives with a relative.....3 No response.....99 | |
| SECTION 2: Marriage and cohabiting partnerships | | | |
| ⇒Now, I would like to ask you some general questions about marriage and live-in partnerships | | | |
| No. | Questions and filters | Coding categories | Skip to |
| Q201 | What is your marital status? | Married0 Single.....1 Divorced.....2 Separated.....3 Widowed.....4 No response.....99 | →Q202 →Q205 →Q204 →Q204 →Q204 |
| Q202 | Whose decision was it for you to get married? | Personal.....0 Was forced by family.....1 Other (specify).....2 No response.....99 | |
| Q203 | How old were you when you got married? | Age in completed years..... [][] Don't know.....88 No response.....99 | |
| Q204 | How old was your husband when you got married? | Age in completed years..... [][] Don't know.....88 No response.....99 | |

| | | | |
|---|--|---|----------------|
| Q205 | Do you have a boyfriend? | Yes0 No1 No response99 | →Q206 |
| Q206 | How did you end up with pregnancy? | Was defiled0 Raped1 Incest2 Coerced3 NO RESPONSE99 | |
| Q207 | How old is the person who made you pregnant? | Age in completed years.....[][] Don't know88 No response99 | |
| SECTION 3: Family background and upbringing | | | |
| ⇒The next questions are about your upbringing and family background | | | |
| Q301 | Who brought you up? | Both parents0 Single parent1 Step parent2 Extended family member3 No response99 | |
| Q302 | What was the one who brought you up doing when you lived with him / her? | Doing nothing0 Businessman/woman1 Employed2 No response99 | |
| Q303 | Do you know your real parents? | Yes0 No1 No response99 | →Q304 →Q305 |
| Q304 | Are your parents living together at the moment? | Yes0 No1 No response99 | |
| Q305 | What happened? | Separated0 Divorced1 Both are dead2 Mum died3 Dad died4 Other (specify)5 | |
| SECTION 4: Psychosocial life | | | |
| ⇒The next questions are about your psychosocial life | | | |
| No. | Questions and filters | Coding categories | Skip to |
| Q401 | Do you drink alcohol? | Yes0 No1 No response99 | →Q402 →Q403 |

| | | | |
|--|---|---|----------------|
| Q402 | Have you ever drunk alcohol before having sex? | Yes0 No1 No response.....99 | |
| Q403 | Do you smoke cigarettes | Yes0 No.....1 NO RESPONSE.....99 | |
| SECTION 5: : Menstrual, sexual history and behavior | | | |
| ⇒READ OUT: I am going to ask some specific questions about sex and your sexual partners in the last 12 months. I know it may be difficult to remember exactly, but I would like you to answer the questions to the best of your knowledge, as this information is very important for this study. Again, this information is all completely private and anonymous and cannot be linked to you or any partner in any way. | | | |
| No. | Questions and filters | Coding categories | Skip to |
| Q501 | How old were you when you saw your menstrual period for the first time? | AGE IN YEARS..... [] DON'T KNOW.....88 NO RESPONSE.....99 | |
| Q502 | At what age did you first have sexual intercourse? | AGE IN YEARS..... [] DON'T KNOW.....88 NO RESPONSE.....99 | |
| Q503 | The last time you had sexual intercourse, did you use a condom? | Yes.....0 No.....1 Do not know.....88 | →Q504 →Q506 |
| Q504 | Who suggested condom use that time? CIRCLE ONE | Myself.....0 My partner.....1 Joint decision.....2 DON'T KNOW.....88 | →Q505 |
| Q505 | What was your reason for using a condom? | Respondent wanted to prevent STDs / HIV...0 Respondent wanted to prevent pregnancy...1 Respondent wanted to prevent both STDs /2 HIV and pregnancy.....3 Did not trust partner / she has other partners4 Partner insisted.....5 | |
| Q506 | What was the main reason why you did not use a condom? | Condoms not available.....0 Trusted partner.....1 Partner is HIV negative.....2 Partner refused.....3 Respondent does not like using condoms...4 Forgot.....5 Partner was drunk.....6 Respondent was very drunk.....7 | |
| Q507 | What is your relationship to the person you had sex with the last time? | Husband.....0 Boyfriend.....1 Casual acquaintance.....2 Do not know him, met for the first time.....3 Other (specify).....4 | |
| Q508 | How many sexual partners do you have? | Only one.....0 Two.....1 Three.....2 More than three.....3 Do not know.....88 | |
| Q509 | Have you ever had sex with a stranger (someone) you met for the first time? | Yes.....0 No.....1 No response.....99 | →Q510 →Q511 |
| Q510 | Did you use a condom the last time you had sex with a complete stranger | Yes.....0 No.....1 No response.....99 | |

| | | | |
|---|--|---|------------------------------|
| | you met for the first time? | | |
| Q511 | Have you ever been paid for sex? | Yes0 No1 No response.....99 | |
| Q512 | Have you ever used drugs during sex with anyone | Yes0 No1 No response.....99 | |
| SECTION 6: Consent for sex and issue of incest | | | |
| ⇒I am now going to ask you a few questions about how exactly this pregnancy came about | | | |
| Q601 | Do you have any close and family relationship with the man who made you pregnant? | Yes0 No1 No response.....99 | |
| Q602 | Did you consent to have sex with the man who made you pregnant? | Yes0 No1 No response.....99 | |
| SECTION 7: Initiation ceremony and sex education | | | |
| ⇒I am now going to ask you a few questions about initiation ceremony | | | |
| No. | Questions and filters | Coding categories | Skip to |
| Q701 | Did you undergo any initiation ceremony? | Yes0 No1 No response.....99 | →Q702 →Q703 |
| Q702 | Did the initiation ceremony influence you in any way to have sex? | Yes0 No1 No response.....99 | |
| Q703 | Did you ever have sex education at any time in your growing up? | Yes0 No1 No response.....99 | →Q704 |
| Q704 | What was your source of sex education? | School.....0 Parents.....1 Grandparents and aunts.....2 Movies.....3 Friends.....4 Initiation ceremony.....5 Other (specify).....6 | |
| SECTION 8: Family planning and access to contraceptives | | | |
| ⇒I am now going to ask you some questions about family planning and access to contraceptives | | | |
| Q801 | KNOWLEDGE OF CONTRACEPTIVE METHODS: Name any method or way by which a woman can delay or avoid pregnancy? | Pill.....0 IUCD.....1 Injectables.....2 Implants – jadelle.....3 Male condoms.....4 Female condoms.....5 Female sterilization.....6 Male sterilization.....7 Lactational amenorrhoea (LAM).....8 Emergency contraception.....9 Other (specify).....10 | |
| Q802 | EVER USE OF CONTRACEPTION: Were you on any contraceptive? | Yes0 No1 No response.....99 | →Q804 →Q803 |
| Q803 | Why were you not on any contraceptive? | I did not know where to get contraceptives.....0 Was shy to get contraceptives at clinic.....1 Was afraid, nurses are not friendly.....2 Was afraid of side effects.....3 Clinic is far from my home.....4 There are no contraceptives at the clinic.....5 | |
| Q804 | Did you plan to have this pregnancy? | Yes0 No1 No response.....99 | |

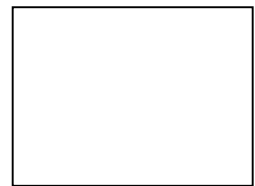
| SECTION 9: Obstetric history and antenatal care utilization | | | |
|---|---|---|------------|
| ⇒I am now going to ask you some questions about pregnancies you have had before other than this one and use of antenatal care services | | | |
| No. | Questions and filters | Coding categories | Skip to |
| Q901 | How many times have you been pregnant before? | Once.....0 Twice.....1 Third time.....2 Four and above.....3 Other (specify).....4 No response.....99 | |
| Q902 | How old were you when you were pregnant for the first time? | AGE IN YEARS..... [][] DON'T KNOW.....88 NO RESPONSE.....99 | |
| Q903 | For this pregnancy, how many times did you go for ANC? | Never.....0 Once.....1 Twice.....2 Three times.....3 Four times.....4 More than four times.....5 No response.....99 | |
| Q904 | Did you face any problems with attending antenatal care? | Yes.....0 No.....1 No response.....99 | →Q905 |
| Q905 | What problems? | Clinic is far.....0 Clinic nurses have a bad attitude towards young people.....1 Did not have transport money.....2 I thought it was not important.....3 I did not want people to know I was pregnant..4 Other (specify).....5 No response.....99 | |
| SECTION 10: Medical conditions in pregnancy | | | |
| ⇒I am now going to ask you some questions about some sicknesses in pregnancy? | | | |
| 1001 | Do you suffer from any sickness which was there before pregnancy? | Yes.....0 No.....1 No response.....99 | →Q100 2 |
| 1002 | What sickness is it? | Sickle cell disease.....0 Diabetes.....1 Asthma.....2 Heart disease.....3 Hypertension.....4 Other (specify).....5 | |
| 1003 | How do you know about the sickness above? | I am on treatment.....0 I go for reviews.....1 I was told by the doctor.....2 Other (specify).....3 No response.....99 | |

That is the end of my questionnaire. Thank you very much for taking time to answer these questions. I appreciate your help.

Appendix C. Record of informed consent

I confirm that I have been fully informed about this study on “Outcomes and factors associated with adolescent pregnancies at the University Teaching Hospital (UTH), Lusaka, Zambia”. Its purpose is also clear to me. I am aware that my participation in the study is purely voluntary and that my answers to any of the questions will remain completely confidential. I also know that I do not have to answer any questions I do not want to and I can choose to end the interview at any time if I wished to. My name will not be written on any form and none of the information I give will ever be linked back to me or anyone I might mention during the interview as it will be anonymous. It will not be possible to identify the information I give when the report is completed.

Participant’s signature:.....Date:.....



Participant’s thumbprint:.....

Date:.....

Witness:.....Date:.....

**Appendix D. Informed assent form for pregnant adolescents aged 10 - 18 years
willing to participate in the study**

I am aware that the research is looking at outcomes and factors associated with adolescent pregnancies at the University Teaching Hospital (UTH), Lusaka, Zambia. I also know that I will be interviewed for about 10 to 15 minutes. I had the information read to me and i have had my questions answered and know that I can ask questions later if I have them.

I agree voluntarily to take part in the research.

Name of participant:.....

Signature of participant:.....

Date:.....Place:.....

If unable to write:

A literate witness will sign. Participants who are illiterate will include their thumb print as well.

I have witnessed the accurate reading of the assent form to the participant, and the individual has had the opportunity to ask questions. I confirm that the individual has given consent freely.

Name of witness (not a parent):..... and Thumb print of participant

Signature of witness:.....

Date:



Place:.....

I have accurately read the assent form to the potential participant, and the individual has had the opportunity to ask questions. I confirm that the individual has given assent freely. I confirm that the individual has not been coerced into giving assent and the assent has been given freely and voluntarily

Name of researcher:.....

Date:.....