

MAKERERE UNIVERSITY

COLLEGE OF BUSINESS AND MANAGEMENT SCIENCES

SCHOOL OF STATISTICS AND PLANNING

FACTORS ASSOCIATED WITH EARLY CHILD BEARING IN EASTERN UGANDA. A CASE STUDY OF UGANDA DEMOGRAPHIC AND HEALTH SURVEY, 2022

BY

MUTONYI JANE

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DECLARATION

I MUTONYI JANE, declare that this dissertation is a result of my own effort and has never been published or submitted to any institution of learning for any award. Where it is indebted to the works of other authors, due acknowledgement has been made to that effect.

Signature: ..... **Date:** 2/11/2026

MUTONYI JANE

21/U/08387/PS

APPROVAL

This is to certify that this work was done by Mutonyi Jane under my supervision and guidance and is now ready for submission.

Signature: ..... Date: 02/11/2026

MR. KEINERUGABA NICHOLAS

DEPARTMENT OF STATISTICAL METHODS AND ACTUARIAL SCIENCES

SCHOOL OF STATISTICS AND PLANNING

DEDICATION

I dedicate this report to my beloved family, Mr Wakhata Alfred, Mrs Wakhata Christine and my siblings for the tremendous work and unwavering support throughout my academic journey. Their advice, encouragement, financial support and devotion towards me have kept me striving for greater heights and to be the best I can be.

May the Almighty God bless you in all your endeavours.

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LIST OF ABBREVIATIONS

UDHS	Uganda Demographic and Health Survey
ICF	Inner City Fund
UBOS	Uganda Bureau of Statistics
WHO	World Health Organization
UNFPA	United Nations Population Fund

ABSRACT

The study aimed to determine the factors associated with early child bearing in Eastern Uganda using the 2022 Uganda Demographic and Health Survey (UDHS). Early child bearing, defined as a first birth before the age of 18 years, is associated with poor maternal and child health outcomes, interrupted education and reduced economic opportunities for women. Its burden remains high in Uganda, and the Eastern region has repeatedly been reported among the regions most affected. A quantitative cross-sectional analysis of secondary UDHS 2022 data was conducted on 3,192 women in Eastern Uganda who had ever given birth. The outcome was age at first birth (before 18 years versus 18 years or older). The explanatory variables were household wealth status, education level, place of residence, employment status, religion, age at first cohabitation and knowledge of contraceptive use. Data were analysed in Stata using descriptive statistics, the Pearson chi-square test and binary logistic regression, and associations were considered significant at $p < 0.05$.

Overall, 1,398 women (43.8%) had their first birth before the age of 18 years. In the bivariate analysis, education level ($p < 0.001$) and household wealth status ($p = 0.002$) were significantly associated with early child bearing, while place of residence, employment status, religion and knowledge of contraceptive use were not. In the multivariable analysis, compared with women with no education, those with secondary education (AOR = 2.53; 95% CI: 1.69–3.79) and higher education (AOR = 5.79; 95% CI: 2.59–12.94) had higher odds of a first birth at 18 years or older, while primary education showed no significant difference. Each additional year of age at first cohabitation increased the odds of a first birth at 18 years or older by about 49% (AOR = 1.49; 95% CI: 1.43–1.54). Household wealth was no longer significant after adjustment, and knowledge of contraceptives was almost universal.

Early child bearing is common in Eastern Uganda, and education and age at first cohabitation are the main factors associated with it. Interventions should focus on keeping girls in school through the secondary level, supporting the return to school of adolescent mothers, delaying the formation of first unions, and improving access to, rather than awareness of, contraceptive services.

CHAPTER ONE

INTRODUCTION

1.1 Back ground of the study

Early childbearing refers to a practice of a woman giving her first birth at a relatively young age, that is an age before 18 years (Grønvik & Fossgard Sandøy, 2018), (Phipps & Sowers, 2002). Early childbearing can pose health risks to both the mother and child, as well as social and economic challenges for the family.

To address early child bearing, governments and development partners have implemented various interventions such as comprehensive sexuality education, promotion of girls' education, expansion of family planning services, adolescent-friendly health services, and policies aimed at preventing child marriage. Despite these efforts, early child bearing remains high in many parts of sub-Saharan Africa due to persistent socioeconomic inequalities, inadequate implementation of reproductive health programmes, cultural practices that encourage early marriage and childbearing, and limited access to youth-friendly reproductive health services(UNFPA, 2023).

Early child bearing is driven by multiple socioeconomic, cultural, and demographic factors, including poverty, low educational attainment, rural residence, unemployment, early marriage, limited access to sexual and reproductive health information and services, and gender inequality (Yakubu & Salisu, 2018). Early childbearing is associated with adverse maternal and neonatal health outcomes, school dropout, reduced employment opportunities, and long-term poverty, thereby affecting not only adolescent girls but also their families and national socioeconomic development (WHO, 2024).

In Uganda, early child bearing remains a significant reproductive health challenge. The Uganda Demographic and Health Survey (UDHS) 2022 reported that 23.5% of girls aged 15–19 years had begun childbearing, with substantial regional disparities observed across the country(UBOS, 2023). However, Eastern Uganda has consistently recorded some of the highest levels of early child bearing, particularly in the Busoga and Bukedi sub-regions having prevalence rates of 28% and 30% respectively as compared to other regions, that is; Central

Uganda (21%), Northern region (23.5%), Western region (22.6%). Previous reports attribute this situation to high poverty levels, limited educational attainment, rural residence, unemployment, and inadequate access to reproductive health services(Wado et al., 2019)

Despite the availability of national evidence, there is limited research focusing specifically on the factors associated with early child bearing in Eastern Uganda using the most recent UDHS 2022 data. This study therefore seeks to examine the association between household wealth status, education level, place of residence, religion, employment status, knowledge of contraceptive methods, age at first cohabitation and early child bearing in Eastern Uganda. The findings are expected to provide evidence to inform policies and programmes aimed at reducing early child bearing and improving adolescent reproductive health outcomes in the region.

1.2 Problem Statement

Early childbearing remains a major public health and socioeconomic concern in Uganda. It is associated with increased risks of maternal and neonatal complications and can disrupt girls' education and future economic opportunities(UNFPA, 2022) .

Previous studies have identified socioeconomic, demographic and reproductive factors associated with adolescent pregnancy and early childbearing in Uganda. Using UDHS data from 2006–2016, (Mbabazi, Catherine et al., 2021) used logistic regression models to examine factors associated with teenage pregnancy and found that household wealth, education, early sexual debut and marriage were important predictors. (Kwagala, Betty & Wandera, Stephen Ojambo, 2021) similarly used multivariable logistic regression to examine early childbearing. These studies demonstrate the usefulness of regression models in simultaneously examining several factors associated with early childbearing rather than considering each factor independently.

Therefore, this study will examine factors associated with early childbearing in Eastern Uganda using the 2022 UDHS as compared to the previous studies that used UDHS data from 2006-2016. Early childbearing will be determined from the respondent's age at first birth, and the selected explanatory variables will be analysed using binary logistic regression. Bivariate analysis will first assess the association between each explanatory variable and early childbearing, followed by multivariable binary logistic regression to determine the independent

associations while controlling for the other factors in the model. The study is expected to provide updated, region-specific evidence to inform interventions aimed at delaying early childbearing and improving adolescent reproductive health outcomes in Eastern Uganda.

1.3 General Objective

To determine the factors associated Early Child Bearing in Eastern Uganda using the 2022 Uganda Demographic and Health Survey data.

1.4 Specific Objectives

1. To determine the prevalence of Early Child Bearing in Eastern Uganda.
2. To assess the association between social demographic factors and Early Child Bearing in Eastern Uganda.
3. To examine the association between social economic factors and Early Child Bearing in Eastern Uganda.

1.5 Significance of the Study

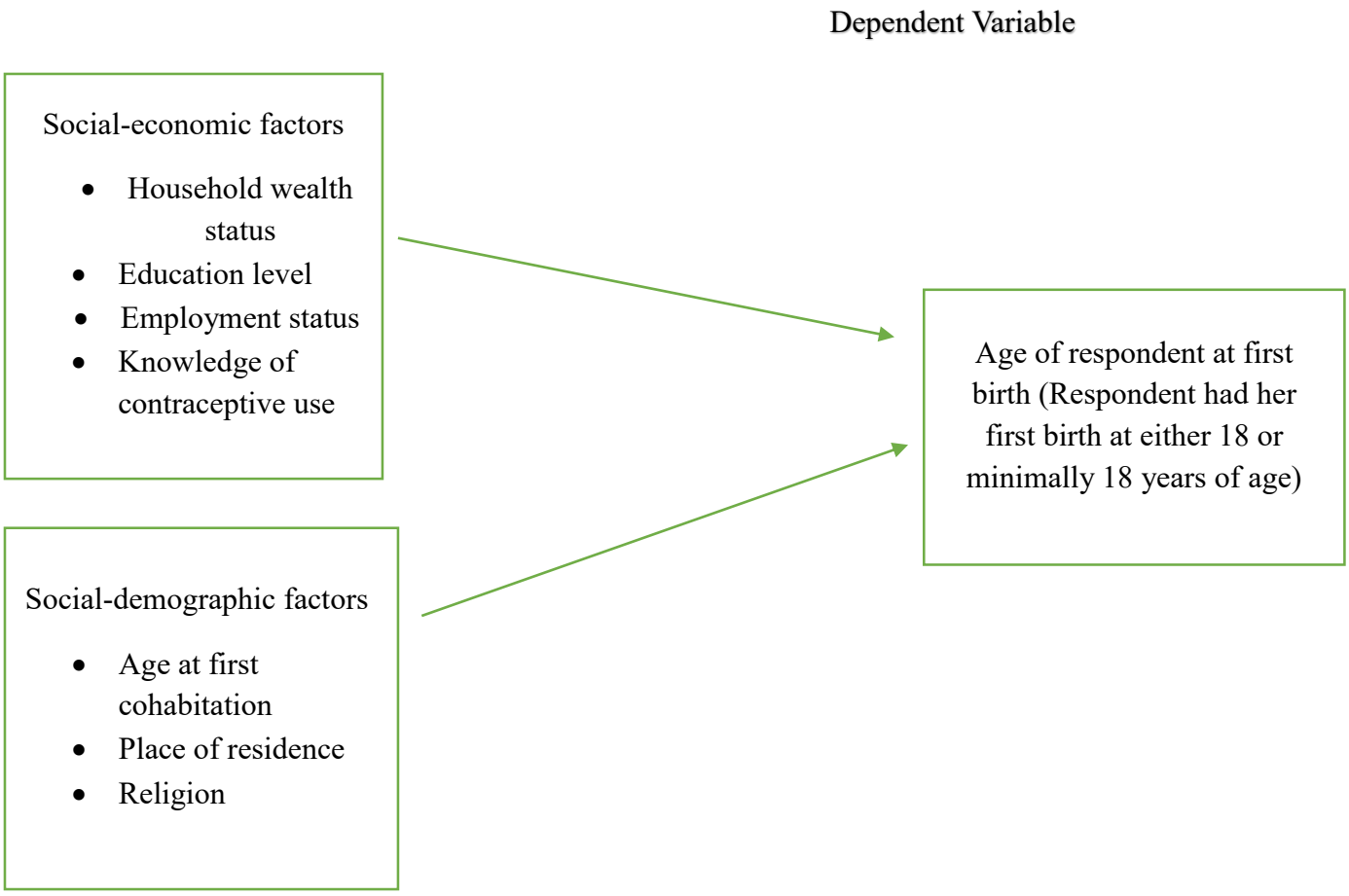
The findings of this study will provide evidence on the factors associated with early child bearing in Eastern Uganda. The results will inform policymakers, health practitioners, and development partners in designing interventions aimed at reducing early child bearing and improving reproductive health outcomes among adolescents.

1.6 Research hypothesis

1. H_0: House hold wealth status is not significantly associated with Early Child Bearing in Eastern Uganda.
2. H_0: Education level is not significantly associated with Early Child Bearing in Eastern Uganda.
3. H_0: Place of residence is not significantly associated with Early Child Bearing in Eastern Uganda.
4. H_0: Employment status is not significantly associated with Early Child Bearing in Eastern Uganda.
5. H_0: Religion is not significantly associated with Early Child Bearing in Eastern Uganda.
6. H_0: Age at first cohabitation is not significantly associated with Early Child Bearing in Eastern Uganda.

7. H_0: Knowledge of contraception use is not significantly associated with Early Child Bearing in Eastern Uganda.

1.7 Conceptual Framework



CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter reviews existing literature on early child bearing, with emphasis on the factors associated with early child bearing. The review is organized according to the study objectives and focuses on household wealth status, age at first cohabitation, religion, education level, place of residence, knowledge of contraceptive use and employment status as determinants of adolescent fertility.

2.2 Concept of Early Child Bearing

Early childbearing refers to a practice of a woman giving her first birth at a relatively young age, that is an age before 18 years (Grønvik & Fossgard Sandøy, 2018). Early childbearing can pose health risks to both the mother and child, as well as social and economic challenges for the family. The prevalence of early childbearing is considered being high in many sub-Saharan (SSA) countries (Seidu et al., 2023). This is one reason why the SSA region has persistently high fertility and population growth. The region, according to the United Nations estimates, is reported to have the highest total fertility rate (TFR) in the world, at 4.7 births per woman during the period 2015 to 2020 (Bongaarts & Casterline, 2013) (United Nations, 2019). As a result, it is anticipated that the continent's population would grow from 1 billion in 2015 to over 2 billion in 2050 and close to 4 billion in 2100 (United Nations, 2019). It is expected that the region's population will experience a significant increase in the negative impacts on human welfare and the environment .(Ezeh et al., 2020) (United Nations Population Fund, 2021)

2.3 Household Wealth Status and Early Child Bearing

Household wealth is an important socioeconomic determinant of reproductive outcomes. Economic disadvantage can restrict access to education, health services and contraceptive information and may increase the likelihood of early marriage and childbearing. Conversely, women from wealthier households may have greater access to education and reproductive health services and may have greater opportunities to delay motherhood. (Amongin, Dinah et al., 2020)found a significant relationship between household wealth and adolescent childbirth among rural Ugandan women. Women from richer and richest households were less likely to report an adolescent childbirth than women from poorer households. Household wealth

remained associated with adolescent childbirth after adjustment for other factors. (Wasswa, Ronald et al., 2021) similarly demonstrated socioeconomic inequalities in teenage pregnancy in Uganda. Their analysis showed that teenage pregnancy was more common among adolescents from poorer households and that wealth status was among the significant predictors of teenage pregnancy. The Eastern region also had a persistently high burden during the period examined.

The relationship between wealth and adolescent first birth is also supported by (Neal et al., 2020). Using DHS data from Uganda, Kenya and Tanzania, the authors found that adolescent first births were strongly associated with poverty, particularly among the youngest adolescents. Evidence from Eastern Uganda is consistent with these findings. (Akol, Mary Sheila, 2022) reported that wealth index was significantly associated with teenage pregnancy at the bivariate level in Eastern Uganda and identified wealth index as one of the factors considered in the final regression analysis. The 2022 UDHS continues to show a socioeconomic gradient in childbearing. The proportion of adolescent women who had begun childbearing decreased with increasing household wealth, demonstrating that poorer adolescents experience a greater burden of early childbearing.

Therefore, household wealth is an important factor to consider when examining early childbearing in Eastern Uganda. The present study will determine whether household wealth index remains independently associated with early childbearing after controlling for demographic, socioeconomic and reproductive factors.

2.4 Place of Residence and Early Child Bearing

Place of residence is an important socio-demographic factor because rural and urban populations may differ in access to education, health services, employment opportunities, reproductive health information and contraceptive services. Differences in social norms and economic opportunities may also contribute to differences in the timing of marriage and childbearing. (Amongin, Dinah et al., 2020) found clear rural-urban differences in adolescent childbirth in Uganda. Using six UDHS datasets, the researchers established that adolescent childbirth was more common among rural women than urban women. In 2016, 60.6% of rural women aged 20–24 reported a first birth before age 20 compared with 39.0% of their urban counterparts. The authors further found that education and age at first sex were associated with

adolescent childbirth in both rural and urban populations, while Eastern region, Muslim religion and poor household wealth were additional determinants among rural women. (Wasswa, Ronald et al., 2021) similarly found that teenage pregnancy was more prevalent among adolescents living in rural areas. Their analysis of the 2006, 2011 and 2016 UDHS showed that the Eastern region consistently had a high burden of teenage pregnancy and that rural residence was associated with higher prevalence.

Evidence specifically from Eastern Uganda is provided by Mukisa (Mukisa, Phillip, 2023), who analysed 1,247 weighted adolescent cases from the 2016 UDHS. Mukisa found that rural adolescents had higher odds of teenage pregnancy than urban adolescents, with rural residence associated with an odds ratio of 2.93 compared with urban residence. Residence remained one of the predictors of teenage pregnancy in the final model. The 2022 UDHS provides more recent evidence that geographical differences remain important. The survey reported that 25% of women aged 15–19 in rural areas had begun childbearing compared with 21% in urban areas. It also reported particularly high levels in the Busoga and Bukedi sub-regions, where approximately 28–30% of women aged 15–19 had begun childbearing.
These findings provide strong justification for including place of residence in the present study and for specifically examining whether rural-urban differences persist in Eastern Uganda.

2.5 Employment Status and Early Child Bearing

Employment status may influence early childbearing by affecting women's economic independence, aspirations and opportunity costs associated with early motherhood. Employment may provide young women with financial resources and alternative life opportunities, potentially encouraging delayed marriage and childbearing. Conversely, economic disadvantage and lack of employment opportunities may increase vulnerability to early unions and pregnancy.

(Mukisa, Phillip, 2023) examined occupational status alongside education, wealth, religion and residence among adolescents in Eastern Uganda using the 2016 UDHS. The study found that occupation was one of the significant predictors of teenage pregnancy. Adolescents with professional occupations had higher odds of teenage pregnancy than those who were not working in the reported model. Evidence from earlier research in Eastern Uganda is somewhat different. (Watangwa, M, 2012) found that work status was not significantly associated with

teenage pregnancy in the study population after analysis. However, the study identified education, marital status and contraceptive use as important predictors.

The contrasting findings suggest that employment status may not have a uniform relationship with early pregnancy or childbearing. The association may depend on the type of employment, age of the respondent, marital status and other socioeconomic characteristics. This inconsistency provides a basis for reassessing employment status using the more recent UDHS 2022 data.

2.6 Education as an Economic Investment

Education is consistently identified as an important factor associated with the timing of first childbirth. Continued education may delay marriage and sexual relationships, increase knowledge of reproductive health, improve future employment opportunities and strengthen young women's ability to make decisions concerning fertility. (Amongin, Dinah et al., 2020) found that education was independently associated with adolescent childbirth in Uganda. Among rural women, those who had completed primary education or attained higher education were less likely to report an adolescent childbirth than women with no education or incomplete primary education. A similar protective relationship was observed among urban women. (Wasswa, Ronald et al., 2021) also identified education as a significant predictor of teenage pregnancy using three rounds of the UDHS. Their analysis demonstrated that teenage pregnancy was associated with socioeconomic and demographic inequalities, including differences in educational attainment.

Evidence from Eastern Uganda supports these national findings. (Mukisa, Phillip, 2023) included education among the explanatory variables in an analysis of teenage pregnancy using the 2016 UDHS in Eastern Uganda. Although education was not retained as an independent predictor in the final model after adjustment for other variables, the study demonstrates the importance of considering education alongside other demographic and socioeconomic factors. In addition, the 2022 UDHS report demonstrates a strong educational gradient in the timing of childbearing. The median age at first birth among women aged 25–49 was 19.2 years among women with no education compared with 24.8 years among women with more than secondary education. Among women aged 15–19, the proportion who had begun childbearing also decreased as educational attainment increased.

Therefore, existing evidence suggests that higher educational attainment is generally associated with delayed childbearing. The present study will assess whether this relationship remains significant among women in Eastern Uganda after controlling for the other factors included in the model.

2.7 Religion and Early Childbearing

Religion may influence early childbearing through religious teachings, social norms and expectations concerning sexual relationships, marriage and childbearing. Religious affiliation may also influence attitudes towards contraceptive use and premarital sexual relationships. However, the effect of religion may differ according to the social and cultural context in which individuals live. (Amongin, Dinah et al., 2020) found an association between religion and adolescent childbirth among Ugandan women. In their analysis of rural women using the 2016 UDHS, Muslim women were more likely to report an adolescent childbirth compared with Anglican women after adjustment for other factors. The association was not equally evident among urban women, suggesting that the relationship between religion and adolescent childbirth may interact with place of residence and other socioeconomic circumstances. Similarly, (Neal et al., 2020) examined adolescent first births in Uganda, Kenya and Tanzania using Demographic and Health Survey data. Their analysis demonstrated differences in adolescent first births according to religion, region, wealth and urban-rural residence. The authors further established that adolescent first births were strongly associated with poverty and lack of education, particularly among the youngest mothers.

However, findings from Eastern Uganda have not been entirely consistent. (Nanyonjo, Florence, 2022) examined teenage pregnancy using the 2016 UDHS and reported that religion was not a statistically significant predictor after multivariable analysis. This difference between studies suggests that the relationship between religion and early childbearing may depend on the population, geographical setting and other factors included in the statistical model.
Consequently, examining religion in the present study is justified because it will determine whether religious affiliation is independently associated with early childbearing among women in Eastern Uganda using the UDHS 2022 data.

2.8 Knowledge of Contraceptives and Early Childbearing

Knowledge of contraceptive methods can influence fertility behaviour by enabling women and adolescents to understand available methods for preventing or delaying pregnancy. However, knowledge alone may not necessarily result in contraceptive use because access, cost, social norms, fear of side effects, partner influence and health-service barriers may affect actual use. The Uganda Bureau of Statistics (UBOS) and ICF (2023) reported that knowledge of contraceptive methods was almost universal in Uganda in the 2022 UDHS, with approximately 99% of women and men knowing at least one contraceptive method. Despite this high level of knowledge, contraceptive use remained considerably lower, demonstrating that knowledge does not automatically translate into contraceptive use.

Evidence from Eastern Uganda suggests that contraceptive-related factors may be important in early pregnancy. (Akol, Mary Sheila, 2022) analysed factors associated with teenage pregnancy in Eastern Uganda and found that knowledge of contraceptive methods was significantly associated with teenage pregnancy at the bivariate level. However, wealth index and marital status were the only factors that remained significant in the logistic regression model. Similarly, (Watangwa, M, 2012) examined demographic and socioeconomic factors associated with teenage pregnancy in high-fertility areas of Eastern Uganda. The study found that education, marital status and contraceptive use had strong influences on teenage pregnancy at multivariable level.

These findings indicate that reproductive knowledge and contraceptive behaviour may play an important role in preventing early pregnancy. Nevertheless, the high level of contraceptive knowledge reported nationally in UDHS 2022 raises an important question: whether differences in knowledge still explain variations in early child bearing within Eastern Uganda. The present study will therefore examine knowledge of contraceptives as an independent factor.

2.9 Age at First Cohabitation and Early Childbearing

Age at first cohabitation is an important factor in early childbearing because entry into a marital or cohabiting union at a young age may increase exposure to sexual activity and pregnancy.

Early union formation can also reduce the opportunity for girls to remain in school and pursue other social and economic opportunities, thereby increasing the likelihood of early motherhood. (Amongin, Dinah et al., 2020) examined trends and determinants of adolescent childbirth in Uganda using six Uganda Demographic and Health Surveys conducted between 1988/89 and 2016. Their analysis considered whether women were in union before their first birth and found that union formation was an important characteristic associated with adolescent childbirth. The authors also found that the proportion of women who were in union before their first childbirth declined from 64.9% in 1995 to 55.8% in 2016. Among rural women, being in union before the first birth was associated with adolescent childbirth alongside education, household wealth, religion and age at first sex.

Evidence from Eastern Uganda further demonstrates the relevance of age at first cohabitation. (Nanyonjo, Florence, 2022), using the 2016 UDHS to examine teenage pregnancy in Eastern Uganda, reported that age at first cohabitation was significantly associated with teenage pregnancy. The study therefore suggests that the timing of entry into cohabitation may influence the likelihood of experiencing pregnancy during adolescence.

More broadly, (Wasswa, Ronald et al., 2021) found that early marriage was associated with teenage pregnancy in Uganda using data from the 2006, 2011 and 2016 UDHS. Their findings showed that adolescents who experienced early marriage had higher levels of teenage pregnancy than those who did not.

Although these studies provide evidence linking early union formation with early pregnancy and childbirth, most of them have relied on UDHS data collected before 2022. The present study therefore seeks to establish whether age at first cohabitation remains associated with early childbearing in Eastern Uganda using the more recent UDHS 2022 dataset.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter describes the methodology used to investigate the factors associated with early child bearing in Eastern Uganda using data from the 2022 Uganda Demographic and Health Survey (UDHS). It presents the study design, data source, study area, study population, study variables and their measurement, inclusion and exclusion criteria, formulation of the dependent variable, data management and statistical analysis techniques.

3.2 Study Design

This study employed a quantitative cross-sectional analytical design using secondary data from the 2022 Uganda Demographic and Health Survey (UDHS). The UDHS is a nationally representative household survey implemented by the Uganda Bureau of Statistics in collaboration with the Ministry of Health under the global Demographic and Health Surveys Program. The survey used a two-stage stratified cluster sampling design. In the first stage, Enumeration Areas (EAs) were selected from the national sampling frame developed from the 2014 Uganda Population and Housing Census. In the second stage, households were systematically selected from each sampled EA. The survey collected data from women aged 15–49 years, men aged 15–54 years, and children under five years, among other household members. The present study analysed data for women that have ever given birth residing in Eastern Uganda.

3.3 Study Area

The study focused on the Eastern region of Uganda.

3.4 Study Population

The source population was comprised of all women who have ever given birth interviewed in the 2022 UDHS. The study population consisted of women who have ever given birth and are usual residents or visitors present in selected households in the Eastern region of Uganda at the time of the survey and have complete information on the outcome variable (age at first birth) and the selected independent variables (education level, household wealth status, place of

residence, religion, age at first cohabitation, knowledge of contraceptive use and employment status). The exclusion criteria of this study were women who have never given birth, respondents from regions other than Eastern Uganda, male respondents, and records with missing, inconsistent, or incomplete information on the variables required for this study.

3.5 Data Source

The study used secondary data obtained from the 2022 Uganda Demographic and Health Survey (UDHS). The survey was implemented by the Uganda Bureau of Statistics in collaboration with the Ministry of Health. Technical assistance was provided by ICF through the Demographic and Health Surveys Program. Financial support was provided by development partners including the United States Agency for International Development and other development partners supporting the DHS Program. The main objective of the survey was to provide nationally representative data on population, maternal and child health, fertility, family planning, nutrition, malaria, HIV/AIDS, and other key health and demographic indicators to guide policy formulation, planning, monitoring, and evaluation of health programmes in Uganda.

3.6 Study Variables

Dependent Variable

The study employed Age at first birth (whether a woman gave birth while below 18 years of age or at minimally 18 years) as the dependent variable.

Independent Variables

The study will employed household wealth status, education level, place of residence, religion, age at first cohabitation, knowledge of contraceptive use and employment status as the independent variables.

Table 3.6.1: The table shows the data dictionary, that is the variable, variable name, coding and unit of measurement

Study Variable	UDHS Code	Coding	Measurement
Dependent variable			
Age of respondent at first birth	V212(derived among women who have ever given birth)	0=less than 18 years born; 1= at least 18 years old	Nominal (Binary)

Independent Variables			
Household wealth status	V190	1=lowest, 2=second, 3=middle, 4=fourth, 5=highest	Ordinal
Educational level	V106	0= No education, 1=Primary, 2= Secondary, 3= Higher	Ordinal
Place of residence	V025	1=Urban, 2= Rural	Nominal
Employment status (Respondent worked in the last 12 months)	V731	0= No, 1= In the past year, = Currently working, 3= Have a job, but on leave last 7 days	Nominal
Age at first cohabitation	V511		Scale
Religion	V130	1=Anglican, 2=Catholic, 3=Muslim, 4=Seventh Dy Adventist, 5= Pentecostal, 6=Baptist, 7= Jehovah's witness, 8= Salvation Army, 9=Others	Nominal
Knowledge of contraceptive use	V301	0= Knows no method 1= Knows only modern method	Nominal

3.8 Data Analysis

Data was analysed using STATA software

3.8.1 Univariate Analysis

Frequencies, percentages, tables, and charts were used to describe the characteristics of respondents and determine the prevalence of early child bearing.

3.8.2 Bivariate Analysis

The Pearson Chi-Square test of independence was used to assess the association between age at first birth and each categorical independent variable. The Chi-square statistic was calculated using the formula:

$$\chi^2 = \sum_{i=1}^{r}\sum_{j=1}^{c}\frac{(Oi_j - Ei_j)^2}{Ei_j}$$

Where $Oi_j = obseved\ value\ Ei_j = expected\ value\ \chi^2 = Chi\ square$; i=1…r, j=1…c; and independent variables; r = the number of categories of independent variables; c = the number of categories of dependent variables.

3.8.3 Multivariate Analysis

Binary logistic regression was used to identify factors independently associated with early child bearing, because the dependent variable, is dichotomous.

The mathematical equation for the log-odds (logit transformation) is structured as:

$\ln\left(\frac{p}{1-p}\right) = \beta_0 + \beta_{1x_1} + \beta_2 X_2 + \beta_3 X_3 + \ldots + \beta_k X_k$

Where:

ln is the natural logarithm, β_0 is the model intercept (constant term), $\beta_1, \beta_2, \beta_3 \ldots, \beta_k$ are the regression coefficients for each respective independent factor, $X_1 + X_2 + X_{3+\ldots}, X_K$ represent the explanatory factors (such as house hold wealth status, educational level, place of residence, employment status, religion, age at first cohabitation, knowledge of contraception use)

3.8.4 Ethical considerations and limitations

This study used secondary data from the 2022 Uganda Demographic and Health Survey (UDHS), so no respondents were contacted and no new data were collected. The UDHS was implemented in line with the standard protocols of the Demographic and Health Surveys (DHS) Program, including ethical review and informed consent from participants. Permission to use the dataset was obtained from the DHS Program, and the data were used only for the purpose for which access was granted. The data files are anonymised and contain no names or other direct identifiers, no attempt was made to identify any respondent, and the results are reported in aggregate form only.

The study has some limitations. First, it used secondary data, so only the variables available in the UDHS 2022 could be examined, and other possible factors such as age at first sexual intercourse and community norms were not included. Second, the cross-sectional design shows associations but cannot establish causation, and variables such as education, household wealth and employment were measured at the time of the survey rather than at the time of the first birth. Third, age at first birth and age at first cohabitation were self-reported and may be affected by recall bias. Fourth, the analysis included only women who had ever given birth and had complete information on the study variables, so the findings apply to mothers in Eastern Uganda and may not be generalisable to other regions. Finally, some categories, such as several religious denominations, had very few respondents, which produced imprecise estimates.

CHAPTER FOUR

PRESENTATION AND DISSEMINATION OF FINDINGS

4.1 Introduction

This chapter presents the findings of the study which were obtained from the UDHS 2022 data set. It presents a summary of the analysis of the data involving univariate analysis i.e. means, minimum, maximum, frequencies and percentages, bivariate analysis using chi-tests, and multi-variate analysis using binary logistic regression.

4.2 Univariate analysis

This is the first stage of analysis which provides a summary of all the variables that were used in the study that is the social-economic factors, social-demographic factors and dependent variable.

Table 4.2.1: A table showing the descriptive summary of the dependent variable, age at first birth

Age Category of the respondent's first birth	Frequency (\n)	Percentage (%)	Cumulative Percentage (%)
<18 years	1,398	43.80	43.80
At least 18 years	1,794	56.20	100.00
Total	3,192	100.00	—

As detailed in Table 4.2.1, the study sample comprised a total of 3,192 participants, divided into two distinct age cohorts. Females that gave birth under the age of 18 accounted for 43.80% (n = 1,398) of the total population, while females that gave birth at 18 years and older constituted the majority at 56.20% (n = 1,794). This distribution reflects a relatively balanced demographic split within the dataset.

Table 4.2.2: A table showing a descriptive summary of the socio-economic factors influencing early child bearing in Eastern Uganda influencing early child bearing in Eastern Uganda

Social-economic factors		**Frequency**	**Percentage (%)**
Educational level	No education	180	5.64
	Primary	2114	66.23
	Secondary	756	23.68
	Higher	142	4.45
House hold wealth Index	Lowest	698	21.87
	Second	858	26.88
	Middle	770	24.12
	Fourth	568	17.79
	Highest	298	9.34
Knowledge of contraceptive method	Knows no method	4	0.13
	Knows modern method	3188	99.87
Employment status (Respondent worked in the last twelve months)	No	1081	33.87
	In the past year	323	10.12
	Currently working	1716	53.76
	Have a job but on leave last 7 days	72	2.25

The results from Table 4.42.2 showed that the majority of the respondents had primary education (66.23%), were in the second household wealth index category (26.88%), knew a modern contraceptive method (99.87%) and were currently working (53.76%).

Table 4.2.3 Showing a descriptive summary of the social – demographic factors influencing early child bearing in Eastern Uganda

Social-demographic factors		**Frequency**	**Percentage (%)**
Religion	Anglican	1161	36.37
	Catholic	829	25.97
	Muslim	497	15.57
	Seventh Day Adventist	24	0.75
	Pentecostal	644	20.18
	Baptist	9	0.28
	Jehovah's witness	4	0.13
	Salvation Army	6	0.19
	Other	18	0.56
Place of residence	Urban	636	19.92
	Rural	2556	80.08
Variable	**Statistic**		
Age at first cohabitation	Mean	18.0047	
	Minimum	9	
	Maximum	39	

The results from Table 4.2.3 showed that the majority of the respondents were Anglican (36.37%) and lived in rural areas (80.08%). The average age at first cohabitation was 18.0 years.

4.3 Bivariate analysis

This the second stage of analysis which provides the measure of association between the dependent variable and independent variable. Cross tabulations were used to analyse the variables and Pearson chi-square tests were used to measure the association.

Table 4.3.1: The table below shows a cross tabulation of education level, religion, household wealth index, knowledge of contraceptive use, employment status, place of residence and age at first birth.

Social-economic factors		Respondent had a first birth while < 18 years of age	Respondent had a first birth while minimally 18 years	Chi-value	P-value
Educational level	No education	109 (7.80%)	71 (3.96%)	Chi (3) =263.0997	p=0.000
	Primary	1092 (78.11%)	1022 (56.97%)		
	Secondary	187 (13.38%)	569 (31.72%)		
	Higher	10 (0.72%)	132 (7.38%)		
Household wealth Index	Lowest	316 (22.60%)	382 (21.29%)	Chi (3) =17.2869	p=0.002
	Second	376 (26.90%)	482 (26.87%)		
	Middle	368 (26.32%)	402 (22.41%)		
	Fourth	235 (16.81%)	333 (18.56%)		
	Highest	103 (7.37)	195 (10.87%)		
Knowledge of contraceptive method	Knows no method	1(0.07%)	3 (0.17%)	Chi (3) =0.5749	p=0.448
	Knows modern method	1397 (99.93%)	1791 (99.83%)		

Employment status (Respondent worked in the last twelve months)	No	452 (32.33%)	629 (35.06%)	Chi (3) =3.9390	p=0.268
	In the past year	150 (10.73%)	173 (9.64%)		
	Currently working	760 (54.36%)	956 (53.29%)		
	Have a job but on leave last 7 days	36 (2.58%)	36 (2.01%)		
Religion	Anglican	492 (35.19%)	669 (37.29%)	Chi (3) =8.3304	p=0.402
	Catholic	354 (25.32%)	475 (26.48%)		
	Muslim	243 (17.38%)	254 (14.16%)		
	Seventh Day Adventist	12 (0.86%)	12 (0.67%)		
	Pentecostal	281 (20.10%)	363 (20.23%)		
	Baptist	5 (0.36%)	4 (0.22%)		
	Jehovah's witness	1 (0.07%)	3 (0.17%)		
	Salvation Army	2 (0.14%)	4 (0.22%)		
	Other	8 (0.57%)	10 (0.56%)		
Place of residence	Urban	266 (19.03%)	370 (20.62%)	Chi (3) =1.2562	P=0.262
	Rural	1132 (80.97%)	1424 (79.38%)		

Results from Table 4.3.1 indicated that education level and household wealth index, were significantly associated with early child bearing while employment status, place of residence, knowledge of contraceptive use, and religion were not.

The results further showed that the majority of the respondents in the early child bearing group had primary education (78.11%), were in the second household wealth index category (26.90%), knew a modern contraceptive method (99.93%), were currently working (54.36%), were Anglican (35.19%) and lived in rural areas (80.97%).

On the other hand, fewer respondents in the early child bearing group had higher education (0.72%), secondary education (13.38%) or no education (7.80%). Fewer were in the highest household wealth category (7.37%), and only 0.07% knew no contraceptive method. Fewer had a job but were on leave (2.58%) or had not worked in the past 12 months (32.33%), and few belonged to the smaller denominations such as Jehovah's Witness (0.07%), Salvation Army (0.14%) and Baptist (0.36%). Only 19.03% lived in urban areas.

4.4 Multivariate analysis

This is the second stage of analysis which provides a summary of how independent variables affect the dependent variable.

Table 4.4.1: The table below shows a binary logistic model regression model explaining how different independent variables affect early child bearing.

Variable	Category	n	Adjusted OR	95% CI	p-value
Educational level	No education	180	1.00 (ref)	–	–
	Primary	2,114	1.28	0.88 – 1.84	0.196

Variable	Category	n	Adjusted OR	95% CI	p-value
	Secondary	756	2.53*	1.69 – 3.79	< 0.001
	Higher	142	5.79*	2.59 – 12.94	< 0.001
Household wealth index	Lowest	698	1.00 (ref)	–	–
	Second	858	0.99	0.78 – 1.25	0.927
	Middle	770	0.79	0.62 – 1.00	0.053
	Fourth	568	0.91	0.69 – 1.19	0.482
	Highest	298	0.71	0.48 – 1.03	0.071
Place of residence	Urban	636	1.00 (ref)	–	–
	Rural	2,556	1.13	0.90 – 1.42	0.284
Employment status	Not working	1,081	1.00 (ref)	–	–
	Worked in the past year	323	0.88	0.66 – 1.18	0.388
	Currently working	1,716	0.97	0.81 – 1.16	0.730
	Has a job, on leave in last 7 days	72	0.74	0.42 – 1.30	0.295
Age at first marriage	Per additional year	3,192	1.49*	1.43 – 1.54	< 0.001
Religion	Other	18	1.00 (ref)	–	–
	Anglican	1,161	0.65	0.23 – 1.89	0.432
	Catholic	829	0.70	0.24 – 2.04	0.519
	Muslim	497	0.57	0.19 – 1.65	0.297
	Seventh Day Adventist	24	0.47	0.11 – 1.96	0.303

Variable	Category	n	Adjusted OR	95% CI	p-value
	Pentecostal	644	0.60	0.20 – 1.73	0.341
	Baptist	9	0.34	0.06 – 2.10	0.246
	Jehovah's Witness	4	1.30	0.08 – 20.61	0.853
	Salvation Army	6	1.58	0.16 – 16.02	0.698
Knowledge of contraceptive methods	Knows no method	4	1.00 (ref)	–	–
	Knows a modern method	3,188	0.51	0.04 – 6.07	0.596

Table 4.4.1 presents the results of the multivariable logistic regression, in which educational level, household wealth index, place of residence, employment status, age at first marriage, religion and knowledge of contraceptive methods were entered simultaneously. The model was statistically significant overall (LR χ^2 (21) = 1,035.21, $p < 0.001$) and explained about 24% of the variation in age at first birth (pseudoR^2 = 0.237). The outcome was coded as first birth at 18 years or older versus before 18 years, so an odds ratio above 1 indicates higher odds of a first birth at 18 years or older, and therefore lower odds of early childbearing. After adjusting for the other variables, educational level and age at first marriage were the only factors significantly associated with age at first birth.

Educational level**.** Education remained significantly associated with age at first birth after adjustment. Compared with women with no education, women with secondary education had about 2.5 times the odds of a first birth at 18 years or older (AOR = 2.53; 95% CI: 1.69–3.79; $p < 0.001$), and women with higher education had about 5.8 times the odds (AOR = 5.79; 95% CI: 2.59–12.94; $p < 0.001$). The odds for women with primary education did not differ significantly from those of women with no education (AOR = 1.28; 95% CI: 0.88–1.84; $p = 0.196$). These findings show that the protective effect of education against early childbearing emerges only at the secondary level and above, and grows with higher attainment, whereas primary education alone is not associated with a significant delay in first birth.

Age at first marriage**.** Age at first marriage had the strongest and most precisely estimated association with age at first birth. Each additional year of age at first marriage increased the odds of a first birth at 18 years or older by about 49% (AOR = 1.49; 95% CI: 1.43–1.54; $p < 0.001$). This reflects the close link between marriage and childbearing in this setting: women who marry later tend to delay their first birth, while early marriage is strongly associated with early childbearing.

Household wealth index**.** Household wealth was not significantly associated with age at first birth in the adjusted model, although the bivariate analysis had shown a significant association. The odds ratios for the middle (AOR = 0.79; 95% CI: 0.62–1.00; $p = 0.053$) and highest wealth categories (AOR = 0.71; 95% CI: 0.48–1.03; $p = 0.071$) were close to the conventional level of significance, but the confidence intervals include 1, and the second and fourth categories showed no clear difference from the lowest category. The loss of significance suggests that the bivariate association between wealth and early childbearing is largely explained by differences in education and age at first marriage between wealth groups.

Place of residence**.** Rural women did not differ significantly from urban women in the odds of a first birth at 18 years or older (AOR = 1.13; 95% CI: 0.90–1.42; $p = 0.284$).

Employment status**.** Employment status was not significantly associated with age at first birth. Compared with women who had not worked in the past 12 months, the odds did not differ significantly for women who had worked in the past year (AOR = 0.88; 95% CI: 0.66–1.18; $p = 0.388$), women who were currently working (AOR = 0.97; 95% CI: 0.81–1.16; $p = 0.730$) or women with a job who were on leave (AOR = 0.74; 95% CI: 0.42–1.30; $p = 0.295$).

Religion. No religious group differed significantly from the reference group ("Other") in age at first birth. The confidence intervals were very wide, especially for denominations with very few respondents such as Jehovah's Witnesses (AOR = 1.30; 95% CI: 0.08–20.61) and the Salvation Army (AOR = 1.58; 95% CI: 0.16–16.02).

Knowledge of contraceptive methods**.** Knowledge of a modern contraceptive method was not significantly associated with age at first birth (AOR = 0.51; 95% CI: 0.04–6.07; $p = 0.596$). Because only four women in the sample knew no method, the estimate is extremely imprecise and cannot support any conclusion about the effect of contraceptive knowledge.

In the adjusted analysis, higher educational attainment (secondary and above) and later age at first marriage were the only factors significantly associated with a delayed first birth among

women in Eastern Uganda. Household wealth, place of residence, employment status, religion and knowledge of contraceptive methods were not significantly associated with age at first birth once other factors were taken into account. These findings are statistical associations and should not be interpreted as causal effects, particularly because education, wealth, employment and residence were measured at the time of the survey rather than at the time of the first birth, and because age at first marriage is closely related to the timing of first birth.

CHAPTER FIVE

DISCUSSION OF FINDINGS, SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents a summary of the findings, discussion of findings, conclusions and recommendations that could be utilized by policy makers, local authorities, municipalities and private companies to amend polices that curb early child bearing.

5.2 Discussion of findings

Of the 3,192 women who had ever given birth, 1,398 (43.8%) had their first birth before 18 years, so more than four in ten mothers in Eastern Uganda began childbearing before adulthood. This supports evidence of a persistently high burden in the Eastern region (Wasswa, Ronald et al., 2021)

Wealth was significantly associated with early child bearing in the bivariate analysis (χ^2 = 17.29, p = 0.002), in line with the 2022 UDHS gradient and earlier studies (Akol, Mary Sheila, 2022) (Neal et al., 2020). It was no longer significant after adjustment (middle AOR = 0.79, p = 0.053; highest AOR = 0.71, p = 0.071), unlike in (Amongin, Dinah et al., 2020), probably because education and age at first cohabitation, which are strongly patterned by wealth, were in the same model and carry much of its effect.

Early first births were most common among women with no education (109 of 180) and primary education (1,092 of 2,114), and least common among those with secondary (187 of 756) and higher education (10 of 142) (χ^2 = 263.10, p < 0.001). After adjustment, secondary education (AOR = 2.53; 95% CI: 1.69–3.79) and higher education (AOR = 5.79; 95% CI: 2.59–12.94) were associated with significantly higher odds of a first birth at 18 years or older, consistent with (Amongin, Dinah et al., 2020; Wasswa, Ronald et al., 2021)and (Uganda Bureau of Statistics, 2023), though not with (Mukisa, Phillip, 2023). Primary education showed no significant difference (AOR = 1.28; p = 0.196), possibly because completed and incomplete primary were not separated.

Residence was not significantly associated with early child bearing in the bivariate analysis (χ^2 = 1.26, p = 0.262) or the adjusted model (AOR = 1.13; 95% CI: 0.90–1.42), although early

births were slightly more common among rural women (1,132 early against 1,424 later) than urban women (266 against 370). This differs from (Amongin, Dinah et al., 2020, Mukisa, Phillip, 2023 and Wasswa, Ronald et al., 2021), possibly because the sample was restricted to Eastern Uganda, where about 80% of respondents were rural, and the model adjusted for education and wealth.

Employment status was not significantly associated with early child bearing ($\chi^2 = 3.94$, $p = 0.268$), nor in the adjusted model, which is consistent with (Watangwa, M, 2012) but differs from (Mukisa, Phillip, 2023). The variable records only whether the woman worked in the past 12 months, not the type of work, and was measured at the time of the survey, usually after the first birth.

Religion was not significantly associated with early child bearing ($\chi^2 = 8.33$, $p = 0.402$), and no denomination differed significantly in the adjusted model, which agrees with (Nanyonjo, Florence, 2022) but differs from (Amongin, Dinah et al., 2020 and Neal et al., 2020). Several denominations had very few respondents, so the estimates were imprecise.

Age at first cohabitation was the strongest predictor of age at first birth: each additional year raised the odds of a first birth at 18 years or older by about 49% (AOR = 1.49; 95% CI: 1.43–1.54; $p < 0.001$). This is consistent with(Amongin, Dinah et al., 2020; Nanyonjo, Florence, 2022; Wasswa, Ronald et al., 2021), who linked early union formation to early pregnancy and childbirth. Because it lies on the pathway between other factors and the first birth, it may absorb part of their effects.

Knowledge of contraceptive methods was almost universal, with only 4 of 3,192 women knowing no method, matching the national figure of about 99% (Uganda Bureau of Statistics, 2023), and it was not significantly associated with early child bearing ($\chi^2 = 0.57$, $p = 0.448$; AOR = 0.51; 95% CI: 0.04–6.07). This is consistent with (Akol, Mary Sheila, 2022) and suggests that access, cost and social norms matter more than awareness, as (Watangwa, M, 2012) found for contraceptive use. The wide confidence interval reflects the very small number of women without knowledge.

5.3 Summary of Findings

The study analysed UDHS 2022 data on 3,192 women who had ever given birth in Eastern Uganda to identify the factors associated with early child bearing. Of these women, 1,398

(43.8%) had their first birth before the age of 18 years, while 1,794 (56.2%) had their first birth at 18 years or older, which shows that early child bearing is common in the region.

In the bivariate analysis, only household wealth status ($p = 0.002$) and education level ($p < 0.001$) were significantly associated with early child bearing, while place of residence, employment status, religion and knowledge of contraceptive use were not. In the multivariable analysis, education and age at first cohabitation were the only factors that remained significantly associated with the timing of the first birth. Women with secondary education (AOR = 2.53) and higher education (AOR = 5.79) had higher odds of a first birth at 18 years or older than women with no education, while primary education showed no significant difference. Each additional year of age at first cohabitation raised the odds of a first birth at 18 years or older by about 49% (AOR = 1.49), making it the strongest factor in the model.

Household wealth lost its significance after adjustment for the other factors, which suggests that its effect operates largely through education and age at first cohabitation. Place of residence, employment status and religion were not significantly associated with early child bearing in either analysis. Knowledge of contraceptive use was almost universal, with only four women knowing no method, and was not significantly associated with early child bearing.

5.4 Conclusions

Based on the findings, the study concludes that early child bearing is common in Eastern Uganda, with more than four in ten mothers (43.8%) having had their first birth before the age of 18 years.

Education and age at first cohabitation are the factors independently associated with early child bearing. The protective effect of education appears at secondary level and above, and primary education alone does not significantly delay the first birth. Age at first cohabitation is the strongest factor, and women who enter their first union later are substantially less likely to have an early first birth.

Household wealth is associated with early child bearing when considered alone, but its effect is largely explained by education and age at first cohabitation, and it is not independently associated with early child bearing once these are accounted for. Place of residence, employment status and religion are not significantly associated with early child bearing, although the estimates for the smaller religious denominations are imprecise.

Knowledge of contraceptive methods is almost universal and does not explain differences in the timing of the first birth, which suggests that other barriers to contraceptive use are more important than awareness.

5.5 Recommendations

Based on the findings and conclusions, the following recommendations are made;

1. Keep girls in school beyond the primary level. The Ministry of Education and Sports and the district local governments in Eastern Uganda should strengthen efforts to ensure that girls move from primary to secondary school and complete it, for example through bursaries and other support for girls from poor households, safe and affordable schooling, and measures to reduce dropout at the point of transition.

2. Support the return to school of girls who become pregnant. Policies on school retention and re-entry for pregnant girls and adolescent mothers should be fully implemented and monitored, so that early pregnancy does not end a girl's education.

3. Delay the formation of first unions. Because age at first cohabitation is the strongest factor associated with early child bearing, the government, local leaders and civil society organisations should enforce the legal minimum age of marriage and strengthen community engagement against early marriage and cohabitation, working with cultural and religious leaders who shape community norms.

4. Shift reproductive health programmes from awareness to access and use. Since knowledge of contraception is almost universal, the Ministry of Health and development partners should concentrate on improving access to adolescent-friendly sexual and reproductive health services, addressing provider and community attitudes, and supporting adolescents to use contraception effectively, rather than on awareness-raising alone.

5. Target the most vulnerable girls. Interventions in Eastern Uganda should prioritise girls with no education or only primary education and those at risk of early union, with particular attention to the sub-regions with the highest burden, such as Busoga and Bukedi (UBOS & ICF, 2023), through life-skills and mentorship programmes.

6. Combine poverty reduction with education and marriage-related measures. Because the effect of household wealth appears to operate through education and age at first

cohabitation, livelihood and social protection programmes for poor households should be linked with measures that keep girls in school and delay marriage.

5.6 Recommendations for further research

1. Future studies should use designs that capture factors at the time of the first birth, such as longitudinal or retrospective life-history studies, to clarify the direction of the relationships observed.
2. Further research should include factors not available in this analysis, such as age at first sexual intercourse, sexual violence, parental characteristics, peer influence, community norms, and access to and use of contraception before the first birth.
3. Qualitative studies should explore the views of adolescent girls, parents, teachers and community leaders to explain why primary education alone does not delay childbearing and why early union formation persists.
4. Subsequent analyses should account for the complex survey design, compare sub-regions within Eastern Uganda, and consider fixed age groups such as women aged 15–19 or 20–24.

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