Demographic and Socio-Economic Determinants of Fertility and Implications among Married Women in Bishoftu Town, Oromiya, Ethiopia.

By

Milkessa Birhanu Dibar

Center for Population Studies

MSc Program in Population Studies

January, 2024

College of Development Studies, Addis Ababa

DEMOGRAPHIC AND SOCIO-ECONOMIC DETERMINANTS OF FERTILITY AND IMPLICATIONS AMONG MARRIED WOMEN IN BISHOFTU TOWN, OROMIYA, ETHIOPIA.

A Thesis Submitted to the College of Development Studies of Addis Ababa University in partial fulfillment of the requirements for the degree of Master of Science in Population Studies.

By

Milkessa Birhanu

January, 2024

College of Development Studies, Addis Ababa

Demographic and Socio-Economic Determinants of Fertility and Implications among Married Women in Bishoftu Town, Oromiya, Ethiopia.

Submitted by: _____ _____ _____

Name of Student Signature Date

Approved for submitted to a thesis assessment committee

1. Terefe Degefa (Prof.) _____ _____

   Advisor Signature Date

2. Mr. Chalachew Arega (MSc.) _____ _____

Department chairperson Signature Date

Addis Ababa University

College of Development Studies

Center for Population Studies

As members of the Examining Board of the final MSc open defense, we certify that we have read and evaluated the thesis prepared by: Milkessa Birhanu Dibar Entitled: Demographic and Socio-Economic Determinants of Fertility and Implications Among Married Women in Bishoftu Town, Oromiya, Ethiopia and recommend that it be accepted as fulfilling the thesis requirement for the degree of Master of Science in Population Studies.

Mr. Chalachew Arega (MSc.)	_____	_____
Chairman	Signature	Date
Dr. Tariku Dejene (Ph.D)	_____	_____
Internal Examiner	Signature	Date
Dr. Abebe Haile (Ph.D)	_____	_____
External Examiner	Signature	Date

Final approval and acceptance of the thesis are contingent upon the submission of its final copy to the CDS through the departmental graduate committee (DGC) of the candidate's major department.

I hereby certify that I have read the revised version of this thesis prepared under my direction and recommend that it be accepted as fulfilling the thesis/dissertation requirement.

Terefe Degefa (Prof.)	_____	_____
Thesis Advisor	Signature	Date
_____	_____	_____
Associate Dean for Graduate Program	Signature	Date

STATEMENT OF AUTHOR

First, I declare that this thesis is my original work and that all sources of material used for this thesis have been duly acknowledged. This thesis has been submitted in partial fulfillment of the requirements for an advanced MSc degree at Addis Ababa University, College of Development Studies and is deposited at the University/College library to be made available to borrowers under the rules of the Library. I solemnly declare that this thesis is not submitted to any other institution anywhere for the award of any academic degree, diploma, or certificate.

Brief quotations from this thesis are allowable without special permission provided that accurate acknowledgment of the source is made. Requests for permission for extended quotation from or reproduction of this manuscript in whole or in part may be granted by the head of the major department or the Dean of the College when in his or her judgment the proposed use of the material is in the interests of scholarship. In all other instances, however, permission must be obtained from the author.

Name: Milkessa Birhanu Signature:_____

Center for Population Studies, College of Development Studies, Addis Ababa

Date of Submission:_____

BIOGRAPHICAL SKETCH

The author was born on July 09, 1994, in Wollega. He attended his Elementary and secondary school education at Haro Nado Elementary school and Menesibu Senior Secondary School respectively. He then joined Haramaya University, College of Computing and Informatics and graduated with a BSc degree in Statistics in July 2014.

ACKNOWLEDGMENTS

First and foremost, I would like to praise and thank God almighty for his endless love and for giving me such an opportunity and achieve my goal. Secondly, I'm extremely grateful to Prof. Terefe Degefa because this endeavor would not have been possible without his uninterrupted advice, constructive suggestions and comments that helped me a lot to write this paper. I am also very grateful to my examiners Dr. Tariku Dejene and Dr. Abebe Haile for their incredible comments and suggestions.

I would like to extend my sincere thanks to my wife Sr. Hawi Alemayehu for her uninterrupted generous support, encouragement, love and caring during all ups and downs of my work. Thanks should also go to all my family, specially my mother Mrs. Waginesh Jawi, my brother Mr. Tekle Birhanu and my sister Mrs. Dame Birhanu. Their belief in me has kept my spirits and motivation high during this process. My appreciation also goes to my friend Mr. Mickael Alemayehu for his support in my work.

Lastly, I would like to acknowledge the Bishoftu City Administration, Bishoftu town Health office, kebele managers, all data collectors, supervisor and all study participants.

LIST OF ABBREVIATIONS

ASFR	Age-Specific Fertility Rate
CBR	Crude Birth Rate
CSA	Central Statistical Agency
EDHS	Ethiopian Demographic and Health Survey
FGDs	Focus Group Discussions
GFR	General Fertility Rate
IRRs	Incidence Rate Ratios
MDGs	Millennium Development Goals
NGO	Non-Governmental Organization
PRB	Population Reference Bureau
PRC	Pew Research Centre
SSA	Sub-Saharan Africa
TFR	Total Fertility Rate
UN	United Nations
UNWPPs	United Nations World Population Prospects
UNDP	United Nations Development Programme
UNFPA	United Nations Population Fund
WHO	World Health Organization

TABLE OF CONTENT

Contents **Page**

LIST OF TABLES

LIST OF FIGURES

DEMOGRAPHIC AND SOCIO-ECONOMIC DETERMINANTS OF FERTILITY AND IMPLICATIONS AMONG MARRIED WOMEN IN BISHOFTU TOWN, OROMIYA, ETHIOPIA.

By:

Milkessa Birhanu: Center for Population Studies, College of Development Studies

ADVISOR: TEREFE DEGEFA (Prof.), Center for Population Studies, College of Development Studies

ABSTRACT

The main objective of the study was to investigate the demographic and socio-economic determinants of fertility and implications among married women in Bishoftu Town, Oromiya, Ethiopia. Interviewer-administered questionnaires were used in a community-based cross-sectional study with 422 randomly chosen respondents in Bishoftu Town. A mixed method study approach (Quantitative and Qualitative study) was used. Primary data were collected from 422 married women in the study area and analyzed using SPSS (Statistical Package for Social Sciences) version 25 software. Simple frequencies, cross- tabulation and regression model were used to analyze the data. Five FGDs have been organized on the 6 major themes [Relationship between mortality and the number of children women want to have; the relationship between educational level of women and the number of children they want to have; the impact of family, neighborhoods and communities on the number of children women want to have; age of first marriage and the number of children women can have in their lifetime and its influences; the relationship between high and low birth rates and national development] and analyzed accordingly. The income of the respondents, the educational status of the women, and age at first marriage significantly determine fertility status among married women in Bishoftu town. About 44.5 % of women who had no education had 5 or more live births but only 2% of women who completed more than secondary school had 5 or more live births. Women with more than secondary school educational status were 58.4% less likely to have high fertility status compared to those who had no education (aIRR=0.416; 95% CI: 0.230-0.753). On the other hand, women who experienced infant mortality were 18.8% more likely to have more children than those who did not experience infant mortality (aIRR=0.812; 95% CI: 0.725-1.002). Women who earn 6000 ETB and above monthly income were found to be 19.8% less likely to have more children when compared to women who earn less than 1000 ETB monthly income (aIRR=0.802; 95% CI: 0.456-1.411). Based on the findings of the study, to decrease high fertility, the government and concerned bodies are expected to avail appropriate mechanisms and control systems that influence women's age at first marriage.

Keywords: *Size, structure, population, fertility status.*

CHAPTER 1: INTRODUCTION

This chapter effectively establishes the foundation for the study by presenting the background, identifying the problem, emphasizing its significance, delineating the objectives and scope, formulating research questions, acknowledging limitations, providing operational definitions, and outlining the overall structure of the thesis.

1.1. Background of the study

The ability to conceive naturally, or fertility, is essential to the health of a population. High fertility has a significant impact on food and resource availability, environmental sustainability, socioeconomic growth at all levels from the national to local, and the health and well-being of women and their families. Fertility is the primary factor that determines the population growth rate. Fertility is the major elements that affect the welfare of the mother. Shorter birth intervals and high fertility can have an impact on a child's chances of survival (Ayele, 2015). Fertility is the most important component in population dynamics when studying population changes over time and helps to shape the population's change and structure. Research conducted in several nations has shown that high rates of maternal, newborn, and child deaths are found in areas with high fertility. Because of decreased fertility rates, global population growth is slowing (Lal S, *et.al* , 2021). On the one hand, population increase is a concern in developing countries, whereas population reduction is an issue in many industrialized ones. A TFR of 5.0 or greater is considered high fertility. The TFR indicates the average lifetime births per woman based on age-specific fertility rates in a given historical period. The majority of nations in the globe are currently nearing the end of their demographic transitions, with fertility at or below replacement, following decades of rapidly changing populations. Sub-Saharan Africa (SSA) is the lone exception to this generalization, where high rates of fertility and population increase persist (Bongaarts, 2020).

To examine changes in a population over time, fertility is the most important factor in population dynamics (Ayele, 2015). *Fertility indicates* the product or output of reproduction. The beginning of fertility is determined by social and cultural factors: early

fertility will either be desired for a society to maximize fertility, which may grant social and economic advantages, or not desired in those societies that encourage later childbearing for demographic, economic and/or social reasons (World Health Organization, 2010). Because of the extensive kinship networks and high economic and social values associated with having children, sub-Saharan Africa has the highest fertility rate in the world compared to many other regions (Hinde and Mturi , 2000). Ethiopia is the second most populated country in Africa behind Nigeria, both of which have issues related to direct and indirect population growth (Aynalem Adugna, 2014). The increase in Ethiopian population has significant demographic implications for the continent of Africa. Despite the current crisis, the nation, which is among the poorest and largest, has managed to sustain high rates of fertility (Getu and Alemayehu, 2008). The estimated annual rate of growth and doubling period of our country Ethiopia was 2.7% and 26 years respectively (Gebremedhin and Betre, 2009).

The UN revised its 2019 projection to predict that the world population will reach 10.9 billion by 2100 and expand slowly until the early 22nd century, rather than peaking by the end of the century. In contrast, the UN now projects that the world population would peak at roughly 10.4 billion people in the middle of the 1980s, according to its 2019 revision (United Nations, 2019) Most countries in the world underwent a marked fertility decline during the 20th century. Between 2015 and 2020, the fertility rates in four of the eight globe regions—Europe and the North American continent, Australia and New Zealand, Eastern and South-Eastern Asia, and Latin America and the Caribbean—were below replacement levels. With an average of roughly 4.7 children per woman, sub-Saharan Africa nevertheless had high fertility. Central and Southern Asia (2.4), Oceania (2.9), except Australia and New Zealand (2.9), and Northern Africa and Western Asia (3.5 births) all maintained intermediate levels of fertility (United Nations, 2021). This fertility decline has been linked to modernization and increased uptake of family planning methods. Positive progress or socio-economic determinants are also usually seen as the main drivers of fertility decline. Since agriculture is the major economic sector in Ethiopia, many families want to have a large number of children. Therefore, they

considered children as an economic asset rather than a liability in rural areas, the children help their families in farming activities, fetching water, caring and performing other activities i.e., the economic importance of children is over a lifetime. Similar to many countries in sub-Saharan Africa, having many children is therefore considered an advantage and gift of God in several Ethiopian rural communities (Ayele, 2015).

The 2005 report of the Department of Economic and Social Affairs of the United Nations (United Nations, 2005) also rated the fertility rate of Ethiopia as one of the top nine countries in terms of population increase from 2000-2050. High fertility has adverse effects on the health of the child and the mother and child's schooling as well. Information on current and cumulative fertility is essential for monitoring population growth. The age at which childbearing begins can also have a major impact on the health and well-being of both the mother and the child. Different theories have been proposed over time regarding the determinants attributed to differential fertility (Krame Karen L., 2021). The socio-cultural theories for example have focused on attitudes and motivational factors at a community level that explain reproduction (Mwatengar, 2017).

Ethiopia is one of the twenty-nine sub-Saharan African countries with high fertility. The majority of the dramatic increase in population is attributed to sub-Saharan Africa and certain regions of Asia, such as Pakistan and northern India, where birth rates are expected to rise well into the 2020s despite further declines in fertility. These are the locations where young women and adolescents are least protected from unintended or early pregnancies, where the mortality rate from unsafe abortion practices is highest, where giving birth is most dangerous, and where surviving childhood is most challenging (Gezae, et al., 2016). The level of current fertility is one of the most important because of its direct relevance to population policies and programmes. Current fertility can be measured using the ASFR, and TFR. The ASFR provides the age pattern of fertility, while the TFR refers to the number of live births that a woman would have had if she were subject to the current ASFRs throughout her reproductive years (15-49 years). The GFR is expressed as the number of live births per 1,000 women of reproductive age, and the CBR is expressed as the number of live births per 1,000 persons in the population.

1.2. Statement of the problem

The factors that affect fertility should be properly defined in order to lower fertility and limit the nation's population growth, as excessive fertility is linked to greater obstetric and medical risks for mothers. The experience of fertility transition across nations highlights the significance of its factor in altering fertility. The factor in altering fertility varies from location to location based on the unique circumstances of the specified area (Nzabona, 2014). Many women have a significant chance of becoming pregnant when they marry young, especially between ages of 20–29 ranges when fertility is at its highest. This leads to high fertility rates because breastfeeding and postpartum amenorrhea are less common in this age group than in older women and because contraception is less effective in this age group (Central Statistical Agency, et al., 2013). Treating the issue of uncontrolled fertility, which opens the door for the betterment of the nation's current socioeconomic issues, requires a thorough understanding of these elements. It would especially significantly benefit the health of women and children.

Every year, the world's population grows by roughly 80 million individuals. If current trends continue, the world's population will reach 9.2 billion by the middle of the 21st. Almost all of the major issues confronting the globe today are linked to fast population expansion. It contributes to health risks, poverty, water scarcity, environmental degradation, and political instability. Ethiopia is the world's 12th most populous country, with a total fertility rate of 4.6 children per woman recently estimated. Though Ethiopia has seen significant reductions in fertility rates, the decreases are not evenly distributed among the country's administrative regions. Fertility has decreased in some areas, while it is increasing in others (United Nations, 2017). The high-fertility countries lag in many development indicators, as reflected in their rate of progress toward achievement of the Millennium Development Goals (MDGs). Fertility is the most important factor that influences a mother's well-being. High fertility and shorter birth intervals can have an impact on a child's survival. Fertility combined with mortality and migration will change the human population structure, with negative consequences for economic growth, human capital production, elderly age dependency and health care, demographic dividend, and

leadership and governance. High fertility puts children's and mothers' health at risk, reduces human capital investment, slows economic progress, and exacerbates environmental challenges (World Bank, 2010). Low fertility has the drawback of reducing population size, not across the board, but only among the young. Low fertility results in an age structure that accelerates future population decrease, a scenario that must be reversed if the population is to be demographically sustainable.

When the fertility rate falls below replacement level (below 2.1), the population grows older and shrinks, which can slow economic growth and strain government budgets. Due to economic interdependencies across ages, fertility rates that are falling or already low will drive rapid population aging in economies around the world. With low fertility, population growth will give way to population decline and population aging will be rapid (Ronald Lee, et al., 2014). Low fertility has the consequence of reducing population size, not across the board, but only among the young. The longer low fertility is maintained, the harder it becomes to reverse population decline. Lower fertility causes population aging, which has an impact on economic growth, work and retirement patterns, family dynamics, governments' and communities' ability to provide enough resources for older persons, and the prevalence of chronic disease and disability (David E. Bloom, et al., 2010).

1.3. Significance of the study

Women are in lower social and economic standing due to their dual roles as producers and reproductive agents. Pregnancy and childbirth in impoverished nations like Ethiopia have an 18-fold increased risk of maternal death compared to developed nations (Feleke Worku and Samuel Gebresilassie, 2008). Comprehending the variables influencing a woman's fertility status would be beneficial in formulating tactics for executing any initiative aimed at addressing uncontrolled reproduction and improving women's position. Finding the causes of the fertility rates and their effects in the Bishoftu town would require finding the causes in other comparable settings across the nation and be crucial in identifying pertinent variables of interest for intervention. For the reasons mentioned above, it would be crucial to conduct a district-level study that aims to address

as many differentiating aspects as feasible. Fertility is regarded as a positive force in population dynamics because it is responsible for biological replacement, and the continuation of human society. Fertility levels determine the age structure of a population which, in turn, governs the social, economic and demographic characteristics of the population.

Fertility is a complex phenomenon that is influenced by a host of social, cultural, psychological, economic and political factors and variables. The effectiveness of population programmes depends on a clear understanding of the interplay between fertility and other variables. The uncontrolled fertility rate affects the socio-economic, demographic and environmental situations of the country. The findings from such a study could potentially inform policies, interventions, or programs aimed at improving the well-being and health outcomes of women within this population group in Bishoftu town, at the regional level, or even more broadly in Ethiopia. Therefore, studying the demographic and socio-economic determinants of fertility and implications is very important to overcome such problems in the future. The study can also play a role in giving proper recommendations regarding the demographic and socio-economic determinants of fertility for governments, NGOs, policymakers and concerned bodies.

1.4. Objective of the study

1.4.1. General objective

The general objective of this study was to investigate the demographic and socio-economic determinants of fertility and implications among married women in Bishoftu town, Oromiya, Ethiopia, 2023.

1.4.2. Specific objectives

The specific objectives of the study were to:

- To investigate the demographic determinants of fertility among married women in Bishoftu, Oromiya, Ethiopia.
- To examine the socio-economic determinants of fertility among married women in Bishoftu, Oromiya, Ethiopia.
- To assess the implications of the demographic and socio-economic determinants of fertility among married women in Bishoftu, Oromiya, Ethiopia.

1.5. Research questions

- How does age at first marriage affect the fertility status of married women in Bishoftu?
- Do the educational status and monthly income of the women affect the fertility status?
- What is the relationship between infant mortality and the number of children women want to have?

1.6. Scope and Limitations of the study

The strength of the study lies in several key aspects. Firstly, the study benefited from the prior training of the interviewers and supervisors involved in data collection. This training likely included instruction on conducting interviews, maintaining consistency, and minimizing potential biases. By ensuring that the interviewers were well-prepared, the study aimed to enhance the quality and reliability of the data collected. Additionally, the regular supervision provided by the principal investigator was another notable strength of the study. The study also employed a pretested questionnaire, which is a strength. This pretesting likely involved piloting the questionnaire with a small sample of participants and making necessary revisions based on their feedback. The use of a pretested questionnaire helps to enhance the validity and reliability of the data collected. Furthermore, the study took steps to minimize bias by employing female interviewers. Given that the study population consisted of married women, using female interviewers can help to establish a sense of rapport and trust between the participants and the interviewers. This approach aims to reduce potential biases and encourage more open and honest responses from the participants.

The study's strength also lies in its efforts to compare the findings with other related observations and contextualize the study's results within the existing body of knowledge and identify any consistencies or discrepancies. This comparative analysis enhances the study's credibility and contributes to the broader understanding of the study topic. Moreover, the study employed a mixed-methods approach by combining quantitative and qualitative data. This approach, known as triangulation, strengthens the study's findings by providing a comprehensive understanding of the research problem It is important to note that the study's focus was limited to married women living with their husbands. While this specificity allows for a deeper exploration of this particular population, it also means that the findings may not be generalizable to other groups or contexts. Therefore, caution should be exercised when applying these findings to broader populations or circumstances beyond the scope of the study.

1.7. Operational definition

Kebele: - the lowest Government administrative hierarchy that exists next to woreda.

Ever use of contraceptives: - refers to the use of contraceptives at least once in her life time in the past up to the time of data collection.

Married women: - refers to those women who are living with their husbands at the time of data collection.

High fertility status: women with the number of children ever born alive greater or equal to five

Low fertility status: women with the number of children ever born alive less than five

Age-specific fertility rates: the number of live births per 1,000 women in the age group.

Total fertility rate: the number of children a woman would have by the end of her reproductive years if she experienced the current rate of childbearing at each age of her childbearing years assuming that she survived to the end of her reproductive age.

General fertility rate: the annual number of births per 1,000 women aged 15-44

Crude birth rate: the total number of births occurring in a given year per 1,000 populations.

1.8. Organization of the Thesis

This thesis is organized into five chapters. Chapter one covers the background of the study, statement of the problem, objectives of the study, research questions, significance of the study, scope and limitations of the study, and operational definition. Chapter two presents a review of related literature which includes an overview of Fertility situations, determinants of fertility, theories of fertility, consequences of low and high fertility, trends of fertility in the world, Africa and Ethiopia, conceptual framework, and research questions. Description of the study area, data source, study design, sampling procedure, sample size determination, measurement tools, and method of data analysis and ethics of the research are included in chapter three. Chapter four discusses about major findings of the study and discussion of the findings. Chapter five, which is the last chapter covers the conclusion and recommendations of the study.

CHAPTER 2: REVIEW OF RELATED LITERATURE

In this chapter, an in-depth exploration of Fertility Situations is presented, providing a comprehensive overview of the factors influencing fertility rates and patterns. The chapter begins by examining the determinants of fertility, which encompass a wide range of social, economic, cultural, and individual factors that shape reproductive decision-making and to provide a comprehensive understanding of the determinants of fertility, a conceptual framework is also presented in this chapter. The conceptual framework integrates the various factors discussed above and illustrates their interrelationships. It highlights the complex interactions between individual, socioeconomic, cultural, and environmental factors in shaping fertility patterns and trends. By examining the overviews of Fertility Situations, exploring the determinants of fertility, and presenting a conceptual framework, this chapter aims to provide a comprehensive analysis of the factors influencing fertility rates and behaviors. This knowledge is crucial for policymakers, researchers, and stakeholders involved in population studies, reproductive health, and family planning programs, as it can inform the development of effective strategies and interventions to address fertility-related challenges and promote sustainable population growth.

2.1. Overview of Fertility Situations

This chapter presents and reviews available related literature on demographic and socio-economic characteristics that are identified as affecting the fertility status of married women in different parts of the world. Fertility is the actual capability of giving life/birth. The size and structure of a population are determined by fertility, one of the three major components of population dynamics. Fertility is thus a major explanatory force in population dynamics and a major counteracting force to population attrition through mortality. Differentials in fertility behavior and fertility levels in different areas and among population strata or characteristics have been among the most pervasive finding in demography (Ramesh Adhikari, 2010). The ten most populous nations in the world included three of the least developed nations: Bangladesh, Ethiopia, and the Democratic

Republic of the Congo. Therefore, while the population of more developed regions was growing at a rate of 0.34 percent per year, the population of less developed regions was growing at a rate of 1.37 percent per year, which was four times faster than the population of more developed regions. The population of the least developed countries as a whole was growing at an even faster rate of 2.3% per year (United Nations, 2009).

An estimated 585,000 women in underdeveloped nations pass away each year from complications related to pregnancy, delivery, and unsafe abortion practices. This equates to around one fatality each minute. In underdeveloped nations, between 25% and 50% of deaths among women of reproductive age are attributable to problems during pregnancy (Feleke Worku and Samuel Gebresilassie, 2008). The major factors that affect fertility are classified in to proximate (direct) and distal (indirect) according to Bongaarts. The proximate factors are bio-behavioral factors, like being sexually active, use of contraceptives, duration of postpartum infecundability, abortion and sterilizing which affect fertility directly, whereas, distal determinants are socio-cultural factors which affect fertility indirectly through affecting the bio-behavioral factors (John Bongaarts, et al., 1984). Human fertility is also responsible for the biological replacement and maintenance of the human species. In fact, fertility is a major counteracting force to population attrition from mortality and therefore, has a significant expansionary force in population dynamics. However, the phase of actual reproductive performance is counted in terms of the physiological potential of a woman to conceive and bear children. This phase is termed the fecund period, which has two extremes, viz., menarche and menopause. In demographic studies, the reproductive span (i.e., the child-bearing period of women is usually taken as between 15 to 49 years of age). Thus, a fecund woman may or may not be fertile but a fertile woman must be fecund. The main events or phenomena associated with fertility are age at menarche and age at menopause. It is found that a later age at marriage reduces fertility. Educational level, economic status, religious attitudes, women's work participation, etc. are other factors affecting fertility in addition to contraception control practices and attitudes (Samson Gebremedhin and Mulugeta Betre, 2009).

Global fertility rates have been declining for the past few decades and they reached a historically low of 2.47 births per woman during 2015–2020 (Lal S, et al., 2021). The only region in sub-Saharan Africa (SSA) where fertility and population growth are still high is an exception to this generalization. According to UN forecasts, sub-Saharan Africa will have a total fertility rate (TFR) of 4.7 births per woman between 2015 and 2020, which is more than double the rate of any other region in the world. Consequently, the continent's population is predicted to increase from 1 billion in 2015 to over 2 billion in 2050 and around 4 billion in 2100 As a result, the population of the continent is expected to grow from 1 billion in 2015 to more than 2 billion in 2050 and nearly 4 billion in 2100 (United Nations, 2019). Fertility patterns in the world have changed dramatically over the last few decades. Global fertility has reached unprecedented low levels, yet stark differences persist in childbearing patterns across countries and regions. Global total fertility is projected to decline to 2.4 children per woman by 2030 and 2.2 children per woman by 2050. In Africa, fertility is projected to decline to 3.9 children per woman by 2030 and 3.1 children per woman by 2050. The UN projects a slower future fertility transition in the SSA than in the 70s in Asia and Latin America (United Nations, 2022).

The situation of SSA in the 1990s was not unlike that of Asia and Latin America in the 1960s: fertility was high, mortality had declined substantially, population growth was rapid, and socioeconomic indicators were low but improving. Despite these similarities, SSA in the 2000s did not follow the path of rapid fertility decline observed in Asian and Latin American countries in the 1970s and 1980s. Fertility declines in SSA over the past two decades have been slow and in several countries, fertility has stalled (Bongaarts, 2020). Fertility patterns can vary widely even within countries. Racial and ethnic minorities may have higher fertility rates than the majority, and families with low incomes or low levels of education typically have more children than those who are affluent or well-educated. Women who work outside the home generally have fewer children than those who stay home and rural families have more children than city

dwellers. In 2006, the number of births per 1,000 people worldwide averaged 21, with extremes ranging from a low of 8 or 9 (mainly in northern and Western Europe and some former Soviet republics) to 50 or more in a few West African nations.

2.2. Determinants of Fertility

There are a lot of factors that affect fertility. Fertility differences among populations and trends in fertility over time can always be traced to variations in one or more of the intermediate fertility variables. The determinants of fertility can be categorized into several key dimensions. Firstly, socioeconomic factors play a crucial role in shaping fertility behavior. These factors include income levels, education, employment opportunities, and access to healthcare and family planning services. Socioeconomic development, particularly improvements in education and income, has been associated with declining fertility rates in many countries. Secondly, cultural and social factors significantly impact fertility decisions. Cultural norms, beliefs, and values surrounding marriage, gender roles, and desired family size influence individuals' reproductive choices. Religious and traditional practices, as well as societal expectations, can shape fertility preferences and behaviors. Additionally, social support systems, such as the availability of childcare facilities and the presence of extended family networks, can influence fertility decisions by providing resources and alleviating the costs associated with childbearing. Furthermore, individual-level factors play a crucial role in fertility outcomes. These include age at marriage, age at first birth, contraceptive use, and desired family size. The timing of marriage and childbearing, as well as the use of contraception, impact fertility rates directly. Moreover, individuals' aspirations and preferences regarding family size and spacing between children also influence fertility decisions. Educational attainment has, in general, a depressing effect on fertility through the adoption of small family norms, knowledge and use of contraceptives, and later ages at first union and birth (Martin, 1995).

It is generally believed that high infant and under-five mortality causes high fertility through the insurance and replacement effect. The “insurance effect” assumes that the

couples adjust their fertility because they expect some of their children to die. “Child replacement effect” involves a deliberate decision of couples to make up for the lost children and is based on the fat their previous childbearing (Belayihun, 2016). Researchers have identified different factors that affect fertility status. These include age at first sex, age at marriage education, dwelling/residence place, contraception awareness and practice as well as children ever born, knowledge of family planning, work status, age at first pregnancy, current pregnancy, not communicating with parents on reproductive health issues (Tariku,et.al., 2019). Analysis using data from rural Ethiopia supports that child/infant mortality had a significant positive effect on the number of children ever born. An increase in the number of children who have died raises the probability of attaining higher fertility (Prashanth Kumar and Gemechis File, 2010). Similar results in South Africa were also found in the study (Dust, 2005), in which he illustrated that under-five mortality had a significant positive effect on fertility status. That is, an increase in the under-five mortality rate increases fertility significantly as the number of children who died increased, and women were exposed to a higher risk of uncontrolled fertility (Ramesh Adhikari, 2010). When the number of surviving children increases, the fertility level correspondingly decreases (Getu and Alemayehu, 2008). The relationship between the educational attainment of parents and the level of fertility generally noted in surveys of sub-SA countries and other parts of the world has been an inverse one. Groups with high educational attainments (either husband or wife) have lower fertility than low educational groups (Dejene, 2000).

Education can affect the birth rate through several channels including changes in the level of contraceptive knowledge, desire for children and economic productivity. Educated women are more likely to postpone marriage, have smaller families and use contraception more than uneducated women. The educational level of the parents (wife or husband) influences access to modern knowledge and new ways of life. In addition, education tends to break down barriers to communication about family planning between spouses (Serbessa, 2002). Similarly, it has important implications in raising family planning discussions like the use of contraception, which ultimately reduces the fertility level and

helps to reach the replacement level of fertility with their husbands. Educational attainment alters parent's perceptions of the advantages of small families brings changes in the status of women, changes the social and economic aspirations, and affects attitudes towards contraception and the ability to understand and make use of particular methods. The empirical findings of a number of studies have supported such an inverse relationship between education and fertility. According to the 2011 Ethiopian demographic and health survey, the total fertility rate at the national level was 4.8 children per woman. The 2014 Ethiopia Mini Demographic and Health Survey reported that in Ethiopia total fertility rate for the three years preceding the survey was 4.1 children per woman. The report also showed that fertility declined between 2005 and 2011, from 5.4 children per woman to 4.8, and then decreased further to 4.1 children in 2014 (CSA, 2014).

Even though the total fertility rate of Ethiopia is less than that of the Sub-Saharan region (5.0), it still is high like many African countries as compared to the world average of 2.5 Ethiopia is the second most populous country in Africa. Ethiopian population is projected to be 130.5 million and 165.1 million by mid-2030 and mid-2050 respectively. This rapid population growth is partly due to a relatively high fertility rate, social, economic and cultural setups in rural parts of Ethiopia are still in favor of having a large number of children. This partly results from the value the society gives to children, preferences relating to the sex of a child, economic needs and old age security. High fertility however has adverse effects on the health of the child and the mother and child's schooling (Population Reference Bureau, 2015).

In countries like Ethiopia where the livelihood of about eighty-five percent of the population depends on agricultural practices on small individual holdings, continuous population growth may result in environmental degradation which ultimately contributes to global warming. Age at first marriage has a major effect on childbearing because women who marry early have, on average, a longer period of exposure to pregnancy and a greater number of lifetime births. Early marriage is directly associated with the early

initiation of childbearing and high fertility which may have adverse effects on the health of mothers and newborns. In most sub-Saharan countries, Ethiopian women marry at a younger age on average which is 17.1 years in 2016 (Teklu, et al., 2013). According to EDHS 2016 total fertility rate of the Oromiya regional state is 5.4.

2.3. Conceptual framework

The conceptual framework presented in Figure 1 captures the key determinants of fertility status, highlighting both demographic and socio-economic factors that can influence an individual or couple's reproductive decisions. Drawing upon existing literature, this framework provides a structured overview of the various elements that play a role in shaping fertility outcomes. Demographic factors play a crucial role in understanding fertility patterns. Age is a fundamental demographic factor, as it affects the biological capacity for reproduction. The age at first marriage and the age at first birth are also important determinants, as they influence the timing of parenthood and the potential duration of the reproductive period. Furthermore, marriage stability, reflecting the duration and quality of the marital union, can impact fertility decisions. Additionally, infant mortality, which measures the probability of a child dying before reaching the age of one, can have implications for fertility choices, as higher infant mortality rates may lead to increased desire for more children. Socio-economic factors encompass a wide range of variables that reflect the social and economic context in which individuals or couples make decisions about their fertility. The desire for more children is a crucial socio-economic factor, as it reflects personal preferences and cultural norms regarding family size. Monthly income, as a measure of economic well-being, can influence fertility intentions and behaviors.

The accessibility and availability of contraception also play a significant role, as they provide individuals with the means to control their reproductive choices. Abortion history, reflecting past experiences with terminating pregnancies, can also shape fertility decisions. Occupational status, which captures the type and stability of employment, can impact the timing and number of children individuals or couples desire. The educational

status of partners is another socio-economic factor that can influence fertility choices, as higher levels of education are often associated with delayed childbearing and lower fertility rates. Finally, communication between spouses serves as a critical factor, as it facilitates shared decision-making and influences the likelihood of reaching a consensus on fertility intentions. By integrating these demographic and socio-economic factors, the conceptual framework provides a comprehensive understanding of the determinants of fertility status. It highlights the complex interplay between individual characteristics, social factors, and economic conditions that shape reproductive behaviors. The framework serves as a valuable tool for researchers and policymakers alike, enabling them to identify and analyze the factors that contribute to variations in fertility rates across different populations and contexts.

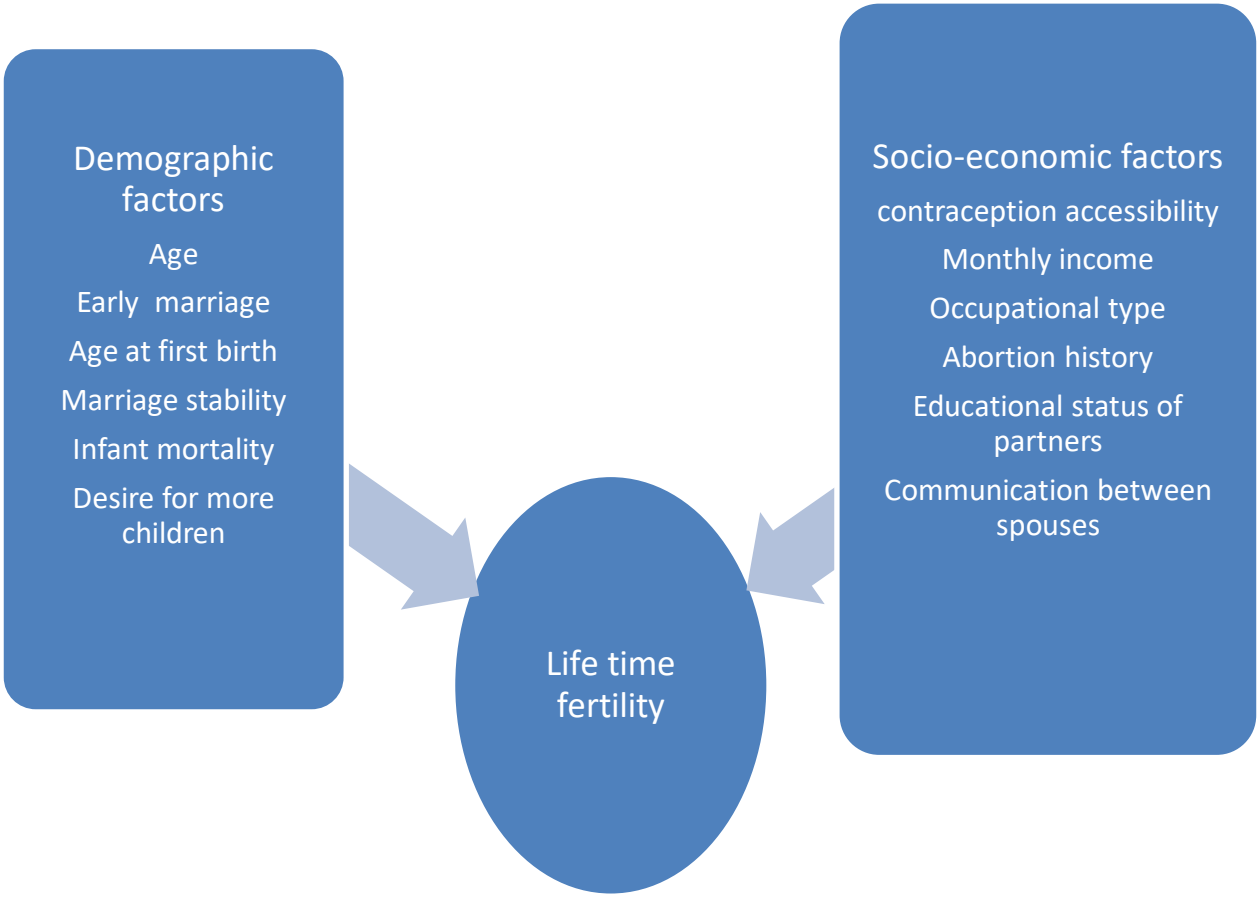

Figure 1: Conceptual Frameworks of the Determinants of Fertility Status

Source: Constructed based on different literatures.

CHAPTER 3: METHODS

In chapter three, the study area, study period and study design, population of the study, sample size determination and sampling technique, eligibility criteria, variables of the study, data collection procedure, data quality assurance and control mechanism have been discussed. Data analysis, Poisson regression, the assumptions of Poisson regression and the ethical consideration have been mentioned.

3.1. Study area, study period and study design

3.1.1. Study area

The study was conducted in Bishoftu town, which is located in the East Shoa zone of the Oromiya Region in Ethiopia. Situated approximately 44 kilometers away from Addis Ababa, the capital city of Ethiopia, Bishoftu holds a prominent position within the region. With an elevation of 1,920 meters, it enjoys a favorable climate and geographical location. Covering an estimated 18,278 hectares of land, Bishoftu boasts a diverse landscape that encompasses both urban and rural areas. The town consists of five rural kebeles, which are administrative subdivisions, and nine urban kebeles, each with its unique characteristics and population dynamics. The total population of Bishoftu is estimated to be 197,557 individuals, as reported by the Bishoftu City Administration Office. Among this population, there are 93,631 males and 103,926 females, representing a relatively balanced gender distribution. The town serves as a hub for economic, social, and cultural activities, attracting residents from various backgrounds and contributing to the overall vibrancy of the community. With its strategic location and significant population, Bishoftu plays a crucial role in the region's development and serves as a vital link between rural and urban areas. The town's rich natural resources and fertile land offer valuable insights into the dynamics of a growing urban center in Ethiopia.

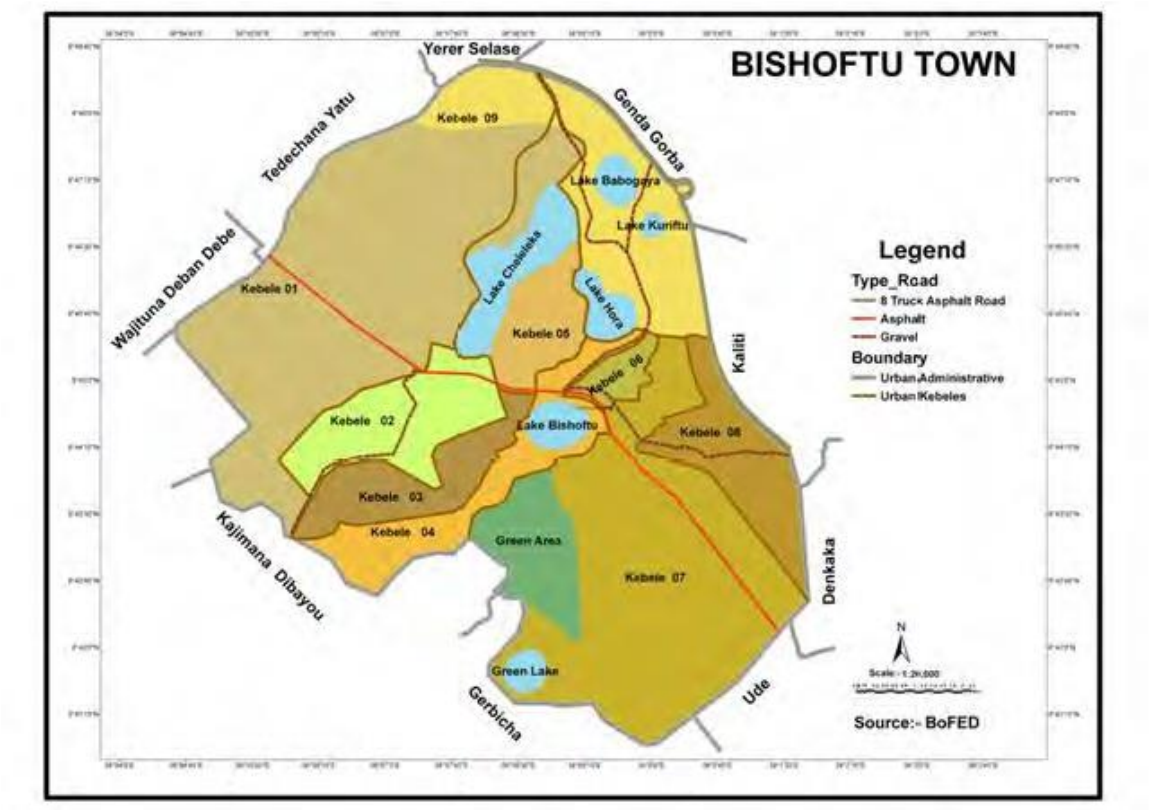

Figure 2: Map of the Study area, Bishoftu Town

(http://www.mwud.gov.et/web/bishoftu)

Source: Bishoftu town Municipal office bulletin, 2023.

3.1.2. Study period

The study's data collection was conducted from July 2023 to August 2023 G.C.

3.1.3. Study design

A Cross-Sectional study design of a mixed method approach (Quantitative approach and qualitative approach) was applied.

3.2. Population

3.2.1. Source population

All married women who are living in Bishoftu town.

3.2.2. Study population

The study populations for this study consist of women who are married and fall within the age range of 15 to 49 years. These women have been chosen as the target group for the study due to their specific demographic characteristics and the relevance of their experiences to the study objectives. In terms of geographical location, the study subjects are selected from selected kebeles in Bishoftu town. Kebeles are administrative subdivisions within Ethiopia, and Bishoftu town is a specific urban area within the country. The decision to focus on women who are married and aged between 15 to 49 years suggests that the study aims to investigate specific aspects of this particular population group. This age range encompasses women who are likely to be in their reproductive years, and marriage status indicates a particular social context that may affect their experiences and health outcomes.

3. 3. Sample size determination and sampling technique

3.3.1 Sample size determination

According to the provided information, the desired confidence level is 95% (which corresponds to a significance level of α = 0.05), and the desired margin of error is 5% (which is equivalent to a value of d = 0.05). The proportion of interest, denoted as p, is assumed to be 0.5, which represents the most conservative estimate when no prior information is available. By substituting these values into the Cochran formula, the calculation proceeds as follows:

n = $\frac{Z_{\alpha/2}2\,P(1-P)}{d^2}$ (Cochran, 1977)

n = [(Z_(α/2))^2 * p * (1 - p)] / d^2

n = [(1.96)^2 * 0.5 * (1 - 0.5)] / (0.05)^2

n = (3.8416 * 0.25) / 0.0025

n = 0.9604 / 0.0025

n = 384.16 ≈ 384.

To account for a potential non-response rate of 10%, an additional 10% of the calculated sample size is added. Therefore, 10% of 384 is 38.4, which is rounded down to 38. Finally, the total required sample size for the study is determined by adding the original calculated size to the adjusted non-response rate: Total sample size = 384 + 38 = 422. Hence, a sample size of approximately 422 is deemed sufficient to draw valid inferences about the population with a 95% confidence level and a 5% margin of error, considering a non-response rate of 10% and an assumed proportion of 0.5.

3.3.2. Sampling technique

The multi-stage probability sampling technique employed in this study aimed to select a representative sample of married women in Bishoftu. With a required sample size of 422 respondents, the process involved several stages to ensure an unbiased and reliable selection. The first stage involved the random selection of kebeles from the entire population of Bishoftu. Kebeles are administrative units or neighborhoods within the town. This random selection helped to ensure that the sample would cover a diverse range of locations within Bishoftu, reducing the potential for bias. In the second stage, after the kebeles were selected, married women respondents were chosen at random from each selected kebele. This random selection aimed to ensure that each married woman in Bishoftu had an equal chance of being included in the study, regardless of her specific kebele of residence and aimed to obtain a representative sample that would accurately reflect the characteristics and perspectives of married women in Bishoftu. The random selection of kebeles and married women respondents helped minimize potential biases and increase the generalizability of the study's findings to the larger population of married women in the town. It is important to note that this sampling technique assumes that the selection of kebeles and respondents within them was truly random and free from any intentional or unintentional biases. Additionally, appropriate statistical methods have been employed to calculate the required sample size of 422 respondents, ensuring that it would be sufficient for their research objectives.

3.4. Eligibility criteria

3.4.1. Inclusion criteria

Married women living in Bishoftu and aged 15 – 49.

3.4.2. Exclusion criteria

Mentally ill women or not hearing or not speaking, Married women aged 50 and above, Unmarried women, divorced women and widowed women.

3.5. Variables

3.5.1. Dependent variable

- Life Time Fertility

3.5.2. Independent variables

- Age
- Educational status
- Income
- History of abortion
- Infant mortality
- Age at first marriage
- Family, neighbors and community's influence.
- Occupation

3.6. Data collection procedure

The data collection process for this study involved the use of a structured questionnaire. The questionnaires used in this study were adapted from the Ethiopian Demographic and Health Survey (EDHS) and the World Fertility Survey (WFS), both of which were originally in English. To ensure the accuracy and consistency of the translation, the English version of the questionnaire was translated into Afaan Oromoo, a widely spoken language in the area of study. The translated questionnaire was then translated back into English to verify the consistency of the translation. The data collection process was

carried out by a team of trained data collectors who conducted face-to-face interviews with married individuals who were selected as the sample for this study. This quantitative data collection process aimed to gather information on various aspects related to the study's objectives. In addition to the quantitative data, qualitative data was also collected through Focus Group Discussions (FGDs). These FGDs were organized based on the residency kebeles (administrative subdivisions) of the married women in Bishoftu, the study's location. The aim of organizing the FGDs according to residency kebeles was to ensure representation from different areas within the study population. Overall, six FGDs were conducted, with each FGD focusing on a specific theme related to the study [Relationship between mortality and the number of children women want to have; the relationship between educational level of women and the number of children they want to have; the impact of family, neighborhoods and communities on the number of children women want to have; age of first marriage and the number of children women can have in their lifetime and its influences; the relationship between high and low birth rates and national development]. These themes were carefully chosen to cover a range of relevant topics. The FGDs provided an opportunity for participants to engage in group discussions, share their perspectives, and provide qualitative insights into the research questions. Four data collectors and two supervisors were trained and collect the data.

3.7. Data quality assurance and control mechanism

A properly designed data collection instrument was developed, taking into consideration the specific objectives of the study and the variables of interest. The instrument was carefully constructed to ensure that it captured the necessary information accurately and effectively. Before the actual data collection process began, a pretest was conducted. This involved administering the data collection tools to 10% of the sample of participants of the study who were similar to the target population. The purpose of the pretest was to assess the validity and reliability of the data collection instruments. During the pretest, the participants' responses were carefully analyzed to identify any potential issues or limitations with the instruments.

This analysis helped to determine if the questions were clear and understandable, if there were any missing or redundant items, and if the response options were appropriate. Based on the findings, necessary modifications were made to improve the instruments and ensure their validity and reliability. To ensure the data collection process was carried out effectively, training was provided to the data collectors and supervisors. The training covered various aspects, including the purpose of the study, the data collection instruments, and the proper techniques for administering the instruments and recording the data. This training helped to ensure that the data collectors and supervisors were well-prepared and knowledgeable about their roles and responsibilities.

Throughout the data collection period, the supervisors and the principal investigator closely monitored the data collection process. They checked the data for completeness, accuracy, clarity, and consistency on a daily basis. This involved reviewing the collected data to ensure that all the required information was recorded, that the responses were accurately captured, that the questions were unambiguous, and that the data were consistent across different participants and time points. If any issues or discrepancies were identified during the data-checking process, appropriate actions were taken to address them promptly. This could involve providing additional training or guidance to the data collectors, making adjustments to the data collection instruments, or conducting further investigations to resolve any inconsistencies or inaccuracies. By conducting regular checks and maintaining high standards of data quality, the supervisors and the principal investigator ensured that the collected data were reliable and valid. This rigorous approach to data collection and monitoring helped to enhance the overall quality and integrity of the study's findings, providing a solid foundation for subsequent data analysis and interpretation.

3.8. Data analysis and presentation

The collected data in this study was entered using EpiData version 4.2, a software tool specifically designed for efficient data entry and management. Once the data was entered, it was analyzed using SPSS (Statistical Package for the Social Sciences) version 25.0, a widely used statistical software package. To examine the characteristics of the participants, descriptive statistics such as frequency, percentage distribution, and mean were employed. These measures provided insights into the demographic and socio-economic profiles of the study population. For the analysis of associations between variables, a bi-variable analysis approach was used. This involved examining the relationships between two variables at a time in order to infer any significant associations or correlations. In addition to quantitative data, qualitative data in the form of Focus Group Discussions (FGDs) were conducted. The major themes were identified from the data. The themes and ideas were then organized and interpreted within the context of the study.

To identify demographic and socio-economic factors that affect the fertility of married women, Poisson regression analysis was employed. Poisson regression is a statistical technique commonly used when analyzing count data, such as the number ever born children in this case. Both bivariate (examining the relationship between each predictor variable and the outcome variable separately) and multivariable analysis (considering multiple predictor variables simultaneously) were conducted. In this study, a p-value of ≤ 0.05 was considered statistically significant. Efforts were made to assess whether the necessary assumptions for the application of Poisson regression were fulfilled. These assumptions include the independence of observations, linearity of the relationship between predictor variables and the log of the outcome variable, and the absence of over-dispersion. The Incidence Rate Ratio (IRR) is a measure derived from Poisson regression that quantifies the change in the rate of the outcome variable (in this case, fertility) associated with a one-unit change in the predictor variable(s). The IRR can be interpreted as the ratio of the expected count of the outcome variable in one group compared to another group while controlling for other variables in the model. To evaluate the

statistical significance of the IRR estimates and to provide a measure of precision, a 95% confidence interval (95% CI) was computed for each IRR. The 95% CI provides a range of values within which we can be 95% confident that the true population parameter lies. If the 95% CI for an IRR does not include the value of 1, it indicates a statistically significant association between the predictor variable and the outcome variable. The relationship between various background characteristics (such as age, education level, socioeconomic status, etc.) and the fertility of married women in Bishoftu town was examined using Poisson regression with IRRs and 95% CIs. This analysis allowed identifying significant associations and assessing the magnitude and direction of these associations. The inclusion of the 95% CIs provided a measure of uncertainty and helped to determine the statistical significance of the findings.

3.9. Poisson Regression

Poisson regression is used to predict a dependent variable that consists of count data given one or more independent variables. It is a generalized linear model form of regression analysis used to model count data and contingency table. A generalized linear model (GLM) is a flexible generalization of ordinary linear regression. The GLM generalizes linear regression by allowing the linear model to be related to the response variable via a *link function* and by allowing the magnitude of the variance of each measurement to be a function of its predicted value. Poisson regression assumes the response variable *Y* has a Poisson distribution, and assumes the logarithm of its expected value can be modeled by a linear combination of unknown parameters. A Poisson regression model is sometimes known as a log –linear model, especially when used to model contingency tables.

Assumptions of a Poisson regression

- The dependent variable consists of count data. Count data is different from the data measured in other well-known types of regression (for instance, linear regression and multiple regression require dependent variables that are measured on a continuous scale, binomial logistic regression requires a dependent variable measured on a dichotomous scale, ordinal regression requires a dependent variable measured on an ordinal scale, and

multinomial logistic regression requires a dependent variable measured on a nominal scale). In contrast, the count variable requires integer data that must be zero or greater.

- There should be one or more independent variables, which can be measured on a continuous, ordinal, or nominal/dichotomous scale. Ordinal and nominal/dichotomous variables can be broadly classified as categorical variables.
- There should be independence of observations. This means that each observation is independent of the other observations; that is, one observation cannot provide any information on another observation.
- The distributions of counts (conditional on the model) follow a Poisson distribution. One consequence of this is that the observed and expected counts should be equal (in reality, just very similar).
- The mean and variance of the model are identical. This is a consequence that the distribution of counts follows a Poisson distribution.

3.10. Ethical considerations

Permission to carry out the study was obtained from the Addis Ababa University; College of Development studies research standards and ethics committee, Bishoftu City Administration and the Bishoftu City Health Office. Accordingly, an official permission letter written from Bishoftu City Health Office was submitted to each kebele. The research purpose, its benefits and the procedures were explained to each potential respondent. The respondents then signed informed written and oral consent. The information that the respondents provided during the study was kept confidential.

CHAPTER 4: RESULTS AND DISCUSSION

In this chapter, the focus is on providing a comprehensive analysis of the descriptive results and determinants of fertility among married women in Bishoftu Town, located in the Oromiya region of Ethiopia. The primary objective is to examine the factors that influence fertility in the study population. The chapter begins by presenting the descriptive results, which provide an overview of the fertility patterns among married women in Bishoftu Town. This includes information such as the average number of children per woman, the distribution of fertility rates across different age groups, and other relevant statistics. These descriptive results serve as a foundation for the subsequent analyses. Following the presentation of descriptive results, the chapter proceeds to discuss the determinants of fertility in Bishoftu Town. This involves conducting a bi-variable Poisson regression analysis, which aims to explore the relationship between fertility and various independent variables. The independent variables may include socio-demographic factors like age, education level, occupation, income, marital duration, and access to healthcare services, among others.

In addition to the bi-variable analysis, a multivariate analysis is also performed. This analysis takes into account multiple independent variables simultaneously to identify the independent effects of each variable on fertility rates while controlling for confounding factors and this helps to better understand the unique contribution of each determinant to the fertility patterns observed among married women in Bishoftu Town. Once the results from the multivariate analysis are obtained, the chapter proceeds to discuss the findings in detail. This discussion involves interpreting and contextualizing the statistical results within the existing body of knowledge on fertility determinants. Overall, this chapter aims to provide a comprehensive analysis of the descriptive results and determinants of fertility among married women in Bishoftu Town, Oromiya Regional State, Ethiopia.

4.1. Results

Table 1: Demographic Characteristics of the Married Women in Bishoftu Town, 2023

Variables	Maximum	Minimum	Mean
Maternal age	19	49	38.09
Maternal age at the first marriage	14	38	20.67
Maternal age at the first birth	15	39	22
Number of children women wish to have	3	9	4.92

The average age of 38.09 years among the study respondents indicates that, on average, the individuals who participated in the study were in their late thirties when the data was collected. This suggests that the study captured information from a relatively diverse age range. Regarding the average age at first marriage for women, which was found to be 20.67 years, it can be inferred that, on average, the women in the study entered into their first marriage at around the age of 20.67 (Table 1). This result provides insight into the timing of marriage in relation to the respondents' overall age. The average age at marriage for women, as indicated by the study, provides an understanding of when women in the study typically entered into their first marriage. This information helps to gauge the timing and prevalence of marriage among the respondents, offering a glimpse into societal norms and cultural practices surrounding matrimony.

Furthermore, as shown in table 1, the average age at which the women became mothers for the first time, 22.1 years, suggests that, on average, the women in the study had their first child at approximately 22.1 years of age. This indicates that many women in the study started their journey into motherhood in their early twenties. The average age at first birth provides valuable information about the respondents' reproductive patterns. By identifying the age at which women in the study became mothers for the first time, it

offers insights into the timing of motherhood and the prevalence of early or delayed childbearing among the sample population.

Additionally, the study provides data on the average number of children the women desired to have, which was found to be 4.92 (table 1). This indicates that, on average, the women expressed a desire to have around 4.92 children. It suggests that the women, as a group, had a higher desired family size than the average number of children they actually had. This could indicate various factors influencing family planning decisions, such as fertility rates, cultural or societal expectations, economic considerations, or personal preferences. The study's data on the average number of children desired by the women offers insights into their family planning intentions.

The figure of 4.92 children per woman indicates that, on average, the respondents expressed a desire for a larger family size than the number of children they had actually given birth to. This information provides a glimpse into the respondents' aspirations and preferences regarding family size. Overall, these statistics contribute to our understanding of the dynamics of marriage, motherhood, and family planning within the studied population.

They highlight the interplay between social, cultural, economic, and personal factors that shape individuals' reproductive decisions. By examining the respondents' age at marriage, age at first birth, total number of live births, and desired family size, the study provides valuable demographic insights into their reproductive timelines and desires, aiding in the analysis of broader trends and patterns related to marriage, motherhood, and family planning. The statistics obtained from the study offer valuable insights into the demographic characteristics of the respondents, specifically in relation to marriage, motherhood, and family planning. By examining factors such as age at marriage, age at first birth, total number of live births, and desired family size, the study sheds light on various aspects of the respondents' reproductive timelines and desires.

Table 2: Socio-economic Characteristics of the Married Women in Bishoftu Town, 2023

Variable	Frequency/size	Percent (%)
Mother's education		
No education	114	27.8
Primary	97	23.7
Secondary	53	12.9
More than secondary	146	35.6
Religion		
Protestant	106	25.9
Orthodox	157	38.3
Muslim	68	16.6
Catholic	30	7.3
Waaqeffataa	39	9.5
Other	10	2.4
Ease of accessing contraception		
Yes	405	98.8
No	5	1.2
Family's Income		
Less than 1000	170	41.5
1000 to 2999	106	25.9
3000 to 5999	63	15.4
6000 and above	71	17.3

Table 2 (Continued)

Variable	Frequency/size	Percent (%)
Infant mortality		
Yes	30	7.3
No	308	92.7
Women's occupation		
Housewife	178	43.4
Merchants	68	16.6
Governmental employee	92	22.4
NGO employee	21	5.1
Other	51	12.4
Abortion history		
Yes	15	3.7
No	395	96.3

In this study, those women who had no education accounted for 27.8% of the total. This implies that nearly 28% of the women who participated in the study did not receive any formal education. On the other hand, women who completed primary education made up 23.7% of the total. This indicates that approximately 24% of the women in the study had completed their primary education. For women who completed secondary education, the data shows that they comprised 12.9% of the total. This means that around 13% of the women surveyed had finished their secondary education. Lastly, women who had more than secondary education made up 35.6% of the total. This suggests that approximately 36% of the women in the study had pursued education beyond the secondary level. Overall, the data highlights the educational distribution among women, with the highest percentage being those who had more than secondary education, followed by those with no education, then those who completed primary education, and finally those who completed secondary education (table 2).

In a study conducted among a group of respondents, it was found that a significant portion of the participants identified with different religious affiliations. The data

revealed that 38.3% of the respondents identified as Orthodox, 25.9% as Protestant, and 16.6% as Muslim. This information suggests that the largest religious group among the respondents was the Orthodox, accounting for 38.3% of the total. Following closely behind were the Protestant respondents, who accounted for 25.9% of the total (table 2). Lastly, the study revealed that 16.6% of the respondents identified as Muslim. It is important to note that this data only represents the respondents' self-reported religious affiliations and does not provide information about their level of religious practice, beliefs, or engagement within their respective faiths.

In this study, it was found that an overwhelming majority of married women, specifically 98.8%, reported that they were able to easily access contraception whenever they needed it. This statistic highlights the success and effectiveness of existing measures and initiatives aimed at improving access to contraception. The study encompassed a diverse range of individuals from various age groups, socioeconomic backgrounds, and geographic locations. It aimed to gather information about their experiences with accessing contraception and to assess the overall availability and effectiveness of reproductive health services. The high percentage of respondents who reported easy access to contraception indicates that significant progress has been made in terms of ensuring that individuals have the means to control their reproductive health. This achievement can be attributed to a variety of factors, including increased awareness and education about contraception, improved healthcare infrastructure, and the implementation of policies and programs that prioritize reproductive health. The availability of contraception plays a crucial role in promoting safe and responsible family planning. It empowers individuals to make informed decisions about their reproductive choices, leading to improved maternal and child health outcomes, reduced unintended pregnancies, and better overall quality of life. However, despite the positive findings of the survey, it is important to acknowledge that there may still be certain regions or communities where access to contraception remains limited. Efforts must continue to focus on reaching these underserved populations and addressing any barriers they may face, such as affordability, lack of information, or cultural stigmas surrounding

contraception. Overall, the survey results indicate that the majority of respondents have experienced little to no difficulty in obtaining contraception when they needed it. This encouraging statistic reflects progress in reproductive health services and underscores the importance of continued efforts to ensure universal access to contraception for all individuals.

According to the study, a significant majority of the women who participated, specifically 93.9 % reported that they have used a contraceptive method at some point in their lives. This indicates a high level of awareness and utilization of contraceptive methods among the married women included in the study. On the other hand, a smaller proportion of the participants, specifically 6.1% (table 2), reported that they had never used a contraceptive method. This suggests that there is a subset of women who have either chosen not to use contraception or have not had access to it. It's important to note that contraceptive use can vary based on various factors such as cultural, socioeconomic, and personal preferences. The study's findings highlight the need for further investigation into the reasons behind the decision to use or not use contraception among the married women who participated in the study. Understanding the factors influencing contraceptive use is crucial for public health initiatives and reproductive healthcare providers to develop targeted interventions, education programs, and policies to promote safe and effective contraceptive use. These efforts can help empower women to make informed decisions about their reproductive health, reduce unintended pregnancies, and improve overall maternal and child health outcomes.

Among the 385 (93.9%) married women who reported ever using contraception, a significant majority, had utilized some form of contraception. Out of this group, the largest proportion, specifically 80.5%, had opted for the injection method as their preferred contraceptive choice. Furthermore, the study revealed that 7.8% of the married women included in the study had relied on the pill as their primary contraceptive method. In addition to the injection and pill methods, the study found that 5.7% of married women had practiced the safe period method as their chosen form of contraception (table 2). The

safe period method, also known as the fertility awareness method, involves tracking the menstrual cycle to identify the most fertile days and avoiding sexual intercourse during that time to prevent pregnancy. It is worth noting that these statistics are specific to the sample of married women who participated in the study and may not be representative of the larger population. Additionally, individual preferences for contraceptive methods can vary based on factors such as personal beliefs, cultural practices, accessibility, and medical advice.

According to the study, approximately 41.5% of the participants who were married reported that their monthly income was less than 1000 Ethiopian Birr (ETB). This suggests that a significant portion of the participants earned a relatively low income. Furthermore, one-fourth of the study participants reported that they received a monthly salary ranging from 1000 to 2999 ETB. This indicates that a considerable portion of the study participants had earned a moderate income. In contrast, only 71 participants, accounting for approximately 17.3% of the study participants, reported that they earned a monthly salary exceeding 6000 ETB (Table 2). This implies that a relatively small proportion of the married women had received a higher income compared to the rest of the group. It is important to note that these findings provide insight into the income distribution among the study participants' wives. However, additional information regarding the sample size and characteristics of the study population would be necessary to draw more comprehensive conclusions about the overall income distribution in the surveyed population.

In the study, a total of married women participated, and among them, 15 individuals, which corresponds to approximately 3.7% of the total, reported having a history of abortion. This information provides insight into the prevalence of abortion among married women in the study population. It is important to note that these findings are specific to the study and may not be representative of the entire population of married women. Further analysis and research would be needed to determine the broader patterns and factors associated with abortion among married women.

Among the study participants, 7.3% of them experienced infant mortality. This finding is both significant and concerning, as it indicates a relatively high rate of infant deaths within the group being studied. The presence of a 7.3% infant mortality rate among the study participants suggests that there may be underlying factors contributing to the deaths of infants within this group (table 2). These factors could include socioeconomic disparities, inadequate access to healthcare, maternal health issues, or other environmental and social determinants of health. Infant mortality is a critical public health issue that requires attention and intervention to reduce the number of deaths and improve overall infant health outcomes. Efforts should be made to identify and address the specific factors contributing to the high infant mortality rate among this population. Reducing infant mortality is a complex challenge that requires a comprehensive approach involving healthcare providers, public health officials, policymakers, and community organizations. By addressing the underlying causes and implementing evidence-based interventions, it is possible to make significant progress in reducing the rate of infant mortality and improving the health and well-being of infants and their families.

According to the study, a significant portion of the occupation of married women who participated in the study were identified as housewives, accounting for 43.4% of the participants. This indicates that a substantial number of married women in the study were primarily engaged in household and domestic responsibilities. In contrast, other occupations were also represented among the participants. Government employees accounted for 22.4% of the participants, indicating that a sizable portion of married women in the study held positions in the public sector. Merchants represented 16.6% of the participants in the study.

In addition, 12.4% of the participants were classified under the category of "other." This catch-all category may include a diverse range of occupations that were not specifically mentioned in the study. The study also found that a small percentage of the participants,

specifically 5.1%, were employed by non-governmental organizations (NGOs). This suggests that a minority of married women in the study were involved in working for non-profit organizations that focus on addressing social or environmental issues. These women likely played a vital role in contributing to the mission and objectives of NGOs, potentially working on projects related to advocacy, development, or humanitarian efforts. Overall, the study revealed a varied occupational distribution among married women participants. While a significant proportion identified as housewives, indicating their primary responsibility in managing household affairs, other occupations such as government employees, merchants, and those in other professions were also represented. The presence of NGO employees further highlights the diverse range of occupations among married women in the study population.

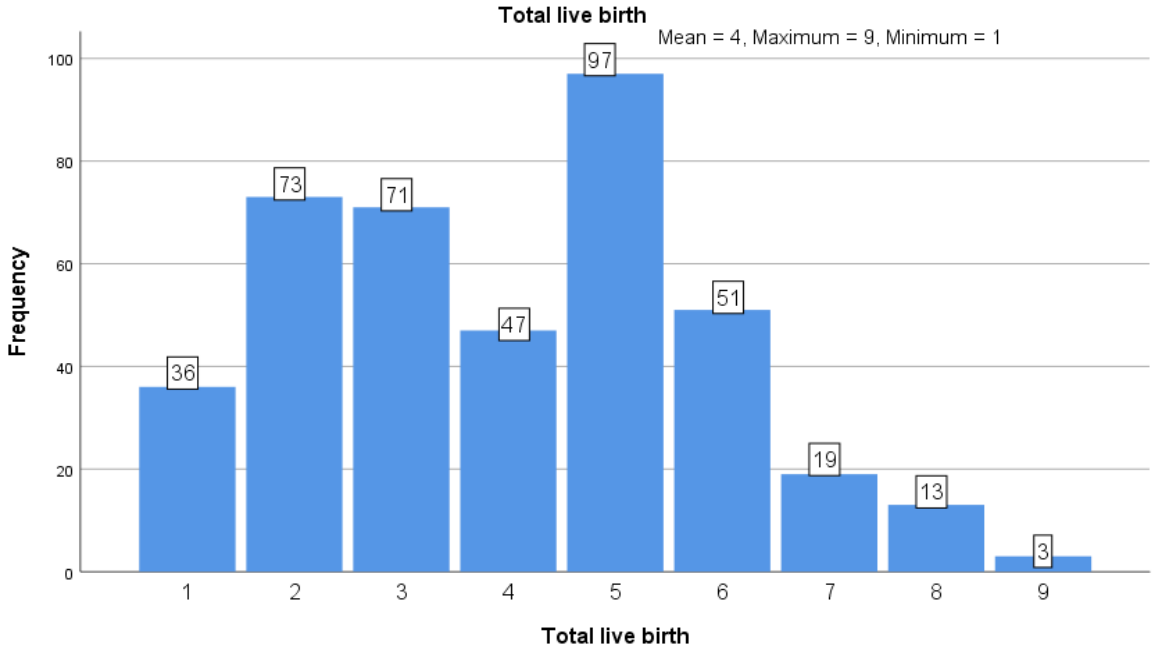

Figure 3: Outcome variable backgrounds of the Married Women in Bishoftu Town, 2023.

The study reveals that the women in the study had, on average, given birth to a total of 4 children. This figure represents the total number of live births experienced by the women in the study. It suggests that, as a group, they had a relatively high fertility rate, with each woman having, on average, four children. The study's findings regarding the total number of live births experienced by the women provide an understanding of their fertility levels. The average of four children per woman suggests that the respondents, on average, had relatively high fertility rates. This information can be indicative of cultural or societal factors, as well as individual preferences, influencing the number of children women have.

In the study conducted to investigate the significant determinants of fertility among married women in Bishoftu town, Oromiya, Ethiopia, bivariate analyses were performed initially to identify potential variables for inclusion in the multivariable analysis. Bivariate analysis involves examining the relationship between two variables at a time to evaluate their association. The researchers examined various demographic, socioeconomic, and reproductive factors that could potentially influence fertility. These factors may include age, education level, occupation, income, marital status, contraceptive use, number of children, and access to healthcare services, among others. For each variable, bivariate analysis was conducted to assess its association with fertility. In this case, variables with a p-value less than 0.2 were considered as candidates for inclusion in the multivariable Poisson regression model. A p-value is a measure of the statistical significance of an association. A p-value less than 0.2 indicates a relatively strong relationship between a variable and fertility, suggesting that the variable may be an important determinant of fertility among married women in Bishoftu town. After identifying the candidate variables, a multivariable Poisson regression model was constructed. This type of regression analysis is commonly used when the outcome variable is a count, such as the number of children, and the predictors are both categorical and continuous variables

Table 3: Bi-Varaible Poisson Regression Analysis of Categorical variables of Married Women in Bishoftu Town, 2023

Variables	uIRR	P-Value
Have you had abortion history?		
Yes	1	
No	0.914(0.809-1.112)	0.594
Ease of accessing contraception		
Yes	1	
No	0.928(0.904 -1.102)	0.421
What is the highest level of schooling you completed		
No education	1	0.039
Primary	0.742(0.602-1.072)	
Secondary	0.545(0.420-0.813)	
More than secondary	0.816 (0.734-1.162)	
What is your total monthly income in Ethiopian birr?		
Less than 1000	1	
1000 to 2999	0.667(0.514-1.236)	0.014*
3000 to 5999	0.762(0.680-1.147)	
6000 and above	0.741(0.560-0.924)	
Have you ever given birth to a boy or girl who was born alive but later died?		
Yes	1	
No	0.695(0.591-0.804)	0.025*
What is your occupation?		
Housewife	1	
Merchants	1.003 (0.840-1.387)	
Governmental employee	1.452 (1.230-1.694)	0.034*
NGO employee	0.870 (0.698-1.042)	
Other	0.816 (0.615-1.147)	

Note: - * significant at <0.05, uIRR= Unadjusted Incidence Rate Ratios, 1= reference variables

Table 4: Bi-Variable Poisson Regression Analysis of Continuous variables, Bishoftu Town, 2023

Variables	Mean	Standard error	Standard deviation	uIRR	P-Value
Maternal age	38.09	0.353	7.152	0.718 (0.524-0.913)	0.001*
Age at first marriage	20.67	0.260	5.257	0.562 (0.314-0.898)	0.004*
Mother's age at first birth	22.00	0.302	6.112	0.619 (0.497-0.882)	0.032*
Number of children women wish to have?	4.92	0.069	1.404	0.692 (0.411–0.804)	0.192

Note: - * significant at <0.05, uIRR= Unadjusted Incidence Rate Ratios

The results presented in Table 5 of the study indicate that certain factors were identified as significant determinants of the fertility of married women in Bishoftu town, Oromiya, Ethiopia. These determinants were selected based on their statistical significance in bivariate analyses, where covariates with a p-value less than 0.2 were included in the subsequent multivariable Poisson regression analysis. Among the independent variables included in the multivariable analysis, several key determinants of fertility were identified. These determinants were educational status, income, maternal age, maternal age at first marriage, occupation, maternal age at first birth, and infant mortality. The study found that women with educational attainment beyond secondary school were 58.4% less likely to have a high fertility status compared to those who had no education. This means that higher levels of education were associated with lower fertility rates among married women in Bishoftu town. The adjusted incidence rate ratio (aIRR) for this relationship was 0.416(Table 5), with a 95% confidence interval (CI) ranging from 0.230 to 0.753.

On the other hand, the study observed that women who had experienced infant mortality were 18.8% more likely to have more children than those who had not experienced infant mortality. The aIRR for this association was 0.812, with a 95% CI of 0.725 to 1.002. This finding suggests that the occurrence of infant mortality may be linked to higher fertility rates among married women in the study population. Furthermore, the study revealed that women with a monthly income of 6000 ETB and above were 19.8% less likely to have more children compared to women with a monthly income of less than 1000 ETB. The aIRR for this relationship was 0.802, with a 95% CI ranging from 0.456 to 1.411. This implies that higher income levels may be associated with lower fertility rates among married women in Bishoftu town.

Table 5: Multivariable Poisson Regression Analysis for the Determinants of Fertility of Married Women in Bishoftu Town, 2023

Variables	aIRR (95% CI)	P. Value
What is the highest level of schooling you completed		
No education	1	
Primary	0.846 (0.608-1.178)	
Secondary	0.659 (0.369-1.178)	0.002*
More than secondary	0.416 (0.230-0.753)	
Have you ever given birth to a boy or girl who was born alive but later died?		
Yes	1	0.041*
No	0.812 (0.725-1.002)	
What is your occupation?		
Housewife	1	
Merchants	1.183(0.945-1.481)	
Governmental employee	1.065(0.845-1.343)	0.037*
NGO employee	1.087(0.875-1.351)	
Other	0.992(0.707-1.390)	

Note: - * significant at <0.05, aIRR= Adjusted Incidence Rate Ratios, 1= reference variables.

Table 5 (Continued)

Variables	aIRR (95%CI)	P. Value
What is your total monthly income in Ethiopian birr?		
Less than 1000	1	
1000 to 2999	0.996 (0.611-1.621)	
3000 to 5999	0.899 (0.581-1.392)	0.038*
6000 and above	0.802 (0.456-1.411)	
Maternal age	0.824 (0.524-1.417)	0.043*
Maternal age at first marriage	0.761 (0.614-1.298)	0.025*
Maternal age at first birth	0.738 (0.682-1.182)	0.019*
Number of children women wish to have?	0.582 (0.419 – 0.719	0.092

Note: - * significant at <0.05, CI = Confidence Interval, aIRR= Adjusted Incidence Rate Ratios, 1= reference variables

4.2. Discussion

This study aimed to investigate the demographic and socio-economic determinants of fertility among married women in Bishoftu town, Oromiya, Ethiopia, 2023. To address the issue of rapid population growth and its related challenges in Ethiopia, it is necessary to examine various factors that contribute to high fertility rates. One of the key findings of the study conducted was the identification of a negative relationship between the age at which women get married for the first time and the number of children they have. Age at first marriage has a significant effect on the number of children ever born alive. This significant finding suggests that as the age of marriage increases, there is a tendency for the number of children to decrease. Several factors can contribute to this negative relationship. Firstly, as women marry at a later age, they often spend more years pursuing education or establishing their careers. This extended period of personal development and professional growth may lead to a delay in starting a family or a decision to have fewer children. Additionally, societal changes and evolving cultural norms have influenced the age at which women choose to marry. The implication of this finding is that by promoting delayed marriage and ensuring that women have the opportunity to pursue education, career opportunities, and personal development before starting a family; it may be possible to reduce the overall fertility rates in Ethiopia.

The findings of the study indicate that among the total married women who participated, a significant majority of 98.8% reported having easy access to contraception whenever they needed it. This high percentage suggests that the availability and accessibility of contraception for married women in the study population was quite favorable. However, it is worth noting that these results differ from those of a previous study conducted by Desale and Wubshet in 2022 (Desale and Wubshet, 2022). According to their study, the percentage of married women with easy access to contraception was reported to be 70.22%. This suggests a substantial disparity between the two studies, indicating that the accessibility of contraception for married women may vary significantly depending on the specific context and period of the research.

The reasons for the difference in findings between the two studies could be multifaceted. Factors such as geographical location, cultural norms, healthcare infrastructure, and policy changes may all contribute to variations in contraceptive accessibility. It is also important to consider the potential limitations of each study, such as sample size, methodology, and population characteristics, which might influence the results. Further research and comparative analysis between these studies and others conducted in similar contexts would be beneficial to gain a deeper understanding of the factors influencing contraceptive accessibility for married women. The study's findings suggest that the age at which a woman gives birth for the first time has a substantial impact on the total number of children she will have during her lifetime. This observation is particularly relevant in countries such as Ethiopia, where it has been identified as an important factor influencing fertility patterns. This study revealed that mothers who experienced an early age at first birth were more likely to have a higher number of children overall. This finding is also in line with previous studies that emphasized the significance of age at first marriage concerning fertility rates (Boupha, 2005).

The findings revealed that education, occupation, and income exert a substantial influence on fertility decisions. It highlighted that women with higher levels of education tend to have fewer children on average compared to those with lower levels of education. This finding aligns with previous research indicating that education plays a crucial role in shaping family planning choices. Higher education levels often provide women with better access to information about contraception, reproductive health, and family planning methods, enabling them to make more informed decisions about their reproductive lives. Additionally, higher education is often associated with increased career opportunities, which can lead women to prioritize their professional aspirations over starting or expanding their families.

Furthermore, the study indicated that occupation also plays a significant role in fertility behavior. Women in certain occupations, such as those requiring long working hours or high levels of commitment, tend to have fewer children. The demands of these

occupations can make it challenging for women to balance their professional responsibilities with their desire to have children. On the other hand, women in occupations that offer more flexibility and work-life balance may be more inclined to have children. The study also highlighted the impact of income on fertility decisions. It revealed that women with higher incomes tend to have fewer children compared to those with lower incomes. This finding can be attributed to various factors. Higher-income women may prioritize their careers and financial stability, perceiving that having fewer children allows them to focus more on their professional growth. Additionally, the cost of raising children, including expenses such as education, healthcare, and childcare, can pose a significant financial burden. Therefore, women with higher incomes may choose to have fewer children to ensure they can provide a higher quality of life for their existing children.

The majority of the FGD participants mentioned that if there is high infant mortality, many women are very interested in having more children because they want to replace the infant they lost by death. This result is also in line with another study conducted in Ethiopia on Determinants of High Fertility Rate among Married Women (Setegn Muche and Shewayiref Geremew, 2020). The educational status of women has shown a significantly negative effect on the number of children ever born alive. The educational level of women has an inverse relationship with the number of children they want to have. Less educated women are more interested in having more children, whereas more educated women are less interested in having more children. The more educated women have great concern for the quality of their children rather than having many children. The result of this study is in line with the study from Sub-Saharan Africa that found education level to be a factor influencing fertility (Bongaarts, 2020). It is to be noted that education is helpful not only to reduce uncontrolled fertility but also to enhance many other developmental activities. Educated women are more likely to postpone marriage and break down barriers to communication about family planning between spouses (Boupha, et al., 2005). Furthermore, significant disparities were noted in Ethiopia based on educational status (CSA, 2014).

MSc degree holder respondent with identification number 166 said “First of all, I would like to thank you for this opportunity to discuss these important issues. Moving on to my next thought; God willing I just want to have three children only. I mean; now I have only 1 boy child and want to add two children only. Instead of causing my children the same suffering I went through for myself; I want to take good care of them and educate them in a good school so that they can reach a good level“. Another participant with ID. No 012 said that “I want to have three children and provide them all necessities because if I give birth to more than three children I can’t teach them.” The results of other studies done in Ethiopia also coincide with this result; groups with high educational attainments (either husband or wife) have lower fertility than low educational groups (Dejene, 2000). People consider their neighbors as being alone if they have no children or even if they have few children and they have great respect for those who have many children. A respondent with Id. Number 237 said that “the neighbor influence is very difficult. If you are married and have not had children for a year, they say how is this? They tell you that you have no intention of having children. And if you have one child, they ask you if you won't have a second and so on...their questions never end.”

The women who married early had a high tendency to deliver more children. On the other hand, women who married lately, especially after 35 years have a low tendency to deliver more children. Participants with Id. Number 312 stated that “Even if I am not that much educated, I just know that women who married early can deliver more children. For example, a woman who first married at age 16 and one who married at age 35 do not have the same probability of having equal children because age doesn't stand still. The most important factors for a woman's fertility are age, medical/health condition, educational status, infant mortality, age at first marriage, age at first birth, community influence, marriage stability, monthly income and occupation

CHAPTER 5: CONCLUSION AND RECOMMENDATIONS

This is the last chapter of the thesis which deals with the conclusion of the study and the recommendation drawn based on the findings of the study.

5.1. Conclusion

By providing support and education to women regarding the advantages and potential consequences of delaying their first birth, stakeholders can empower individuals to make informed decisions about their reproductive health. Additionally, the findings emphasize the significance of comprehensive sexual education and access to contraception, as they can enable women to exercise greater control over their reproductive choices and contribute to sustainable population management efforts. The study identified educational status, income, maternal age, maternal age at first marriage, maternal age at first birth, and infant mortality as important determinants of fertility status among married women in Bishoftu town, Oromiya, Ethiopia. These findings suggest that higher levels of education and income, as well as lower maternal age and absence of infant mortality, are associated with lower fertility rates in this population.

In addition to quantitative studies, the qualitative study is also valuable in providing insights into the factors that influence the fertility of married women in Bishoftu. Through qualitative approaches particularly Focus Group Discussions, in the case of this study, the study has touched on a lot of factors that contribute to changes in fertility rates among married women in the study area. One important factor identified in qualitative studies is the influence of monthly income on fertility decisions. Interviews with married women in Bishoftu have revealed that economic considerations play a significant role in their reproductive choices. Furthermore, the educational status of women is a key factor in fertility outcomes. Qualitative studies have shown that women with higher levels of education tend to have lower fertility rates.

5. 2. Recommendation

To decrease high fertility, the government and concerned bodies are expected to avail appropriate mechanisms and control systems that influence women's age at first marriage. Women empowerment and girl's education have also a great role in minimizing the high fertility rate because educated women are more focused on the quality of their children rather than giving birth frequently. Therefore, appropriate girls' enrollment from kindergarten to higher education policy with strong monitoring and evaluation for its execution is also expected to be in place to delay early marriage and empower them. Infant mortality also needs due attention because women those had experienced infant mortality mostly wish to replace their children. This can also cause another maternal complication as the frequency of pregnancy increases. Psychosocial support is also highly recommended for women who do not have a child or very few children. By concentrating on expanding educational opportunities, enhancing revenue streams, and addressing the negative effects of high fertility, the government can contribute to the overall well-being and development of the country.

In addition to focusing on education and revenue generation, the public must be well-informed about the negative effects of high fertility on mother and child health, as well as household finances. High fertility rates can strain healthcare systems, increase the risk of maternal and child mortality, and put a burden on household finances. By raising awareness about these issues, the government can encourage individuals and families to make informed decisions regarding family planning and reproductive health. Addressing the issue of high fertility requires collaboration among various stakeholders. Population studies experts, Ethiopian Statistics Services, the Ministry of Health, the Ministry of Education, the Ministry of Planning and Development, the World Health Organization, and other relevant bodies should work together to develop and implement effective strategies to control high fertility rates. This collaboration can involve conducting research, collecting data, and designing policies and programs that promote reproductive health education, access to contraception, and family planning services.

.

REFERENCES

Ayele, D. G. (2015). Determinants of fertility in Ethiopia. *African Health Sciences*.

Aynalem Adugna. (2014). *Ethiopian Demography and Health: A Brief Introduction.* Addis Ababa.

Belayihun, B. (2016). Determinants of High Fertility Status Among Married Women: A Case Control Study. 34-40.

Bongaarts, J. (2020). Trends in fertility and fertility preferences in sub-Saharan Africa: the roles of education and family planning programs. *Bongaarts Genus*, 1-15.

Boupha, S. a. (2005). Reproductive Health Survey.

Central Statistical Agency, Ethiopia, Ministry of Finance and Economic Development, Ethiopia, ICF International, USA. (2013). Components of Fertility Change in Ethiopia: Further Analysis of the 2000, 2005, and 2011 Demographic and Health Surveys. *CSA*, 20-24.

Cochran. (1977). *Sampling techniques (3rd Ed.).* New: John Wiley & Sons.

CSA. (2014). *Ethiopian Mini Demographic and Health Survey 2014.* Addis Ababa, Ethiopia: Central Statistical Agency of Ethiopia.

David E. Bloom, D. C. (2010). Implications of population ageing for economic growth. *JSTOR*, 583-612.

Dejene. (2000). Impact of socio-demographics on fertility in urban Addis Ababa: OLS and Tobit Analysis. *JESA*, 49-77.

Desale and Wubshet. (2022). Magnitude of unmet need for family planning and its predictors among reproductive age women in high fertility regions of Ethiopia: Evidence from Ethiopian Demographic and Health Survey. *BMC Women's Health*, 1-11.

Dust. (2005). The effect of Education, income, and Child Mortality on Fertility in South Africa. *Master of art thesis presented to the school of graduate studies of Simon*, 22-28.

Feleke Worku and Samuel Gebresilassie. (2008). *Reproductive Health For Health Science Students.* Gondar: The Carter Center.

Gebremedhin and Betre. (2009). Level and Differentials of Fertility in Awassa Town, Southern Ethiopia. *African Journal of Reproductive Health*, 93-94.

Getu and Alemayehu. (2008). *Differentials of fertility in North and South Gondar zones,northwest Ethiopia: A Comparative cross-sectional study.* Gondar: BioMed Central.

Gezae, Desta, Hailemariam, Azeb, Dejen and Wondwossen. (2016). Determinants of High Fertility among Ever Married Women in Enderta District, Tigray Region, Northern Ethiopia. *Journal of Health & Medical Informatics*, 1-5.

Hinde and Mturi . (2000). Fertility Levels and Differetials in Tanzania. *JSTOR*, 177.

John Bongaarts, Odile Frank and Ron Lesthaeghe. (1984). The Proximate Determinants of Fertility in Sub-Saharan Africa. 511-537.

Krame Karen L. (2021). Effects of family planning on fertility behaviour across the demographic transition. *PMC*, 19-20.

Lal S, Singh R, Makun K, Chand N, Khan. (2021). Socio-economic and demographic determinants of fertility in six selected Pacific Island Countries: An empirical study. *PLOS ONE*, 21-37.

Martin, T. C. (1995). Women's Education and Fertility: Results from 26 Countries Demographic and Health Surveys. *JSTOR*, 187-202.

Mwatengar, S. H. (2017). An Analysis of the Determinants of Fertility in Matuga Division, Matuga Sub-County, KwaleCounty, Kenya. 38-40.

Nzabona, P. A. (2014). Determinants of Change in Fertility among Women in Rural Areas of Uganda. *Hindawi Journal of Pregnancy*, 6-9.

Population Reference Bureau. (2015). World population Data sheet with a special focus on women's empowerment. *Population Reference Bureau*, 1-23.

Prashanth Kumar and Gemechis File. (2010). Infant and Child Mortality in Ethiopia: A Statistical Analysis Approach. *Ethiop. J. Educ. & Sc.*, 51-57.

Ramesh Adhikari. (2010). Demographic, socio-economic, and cultural factors affecting fertility differentials in Nepal. *BMC Pregnancy and Childbirth*, 1-11.

Ronald Lee, Andrew Mason and members of the NTA Network. (2014). Is Low Fertility Really a Problem? Population Aging, Dependency, and Consumtion. *JSTOR*, 229-234.

Samson Gebremedhin and Mulugeta Betre. (2009). Level and differentials of fertility in Awassa town, Southern Ethiopia. *African Journal of Reproductive Health*, 93-112.

Serbessa, D. D. (2002). Differential Impact of Women's Educational Level on Fertility in Africa: The Case of Ethiopia. *Cice*, 1-17.

Setegn Muche and Shewayiref Geremew. (2020). Determinants of High Fertility Rate among Married Women in Ethiopia. *Europe PMC*, https://doi.org/10.21203/rs.2.21834/v1.

Tariku Laelago, Yitagesu Habtu, Samuel Yohannes. (2019). Proximate determinants of fertility in Ethiopia; an application of revised Bongaarts model. *PMC*, 1-10.

Teklu, Sebhatu and Gebreselassie. (2013). *Components of Fertility Change in Ethiopia. Further analysis of the 2000, 2005 and 2011 Demographic and Health Surveys. DHS Further Analysis Reports No.80.* Calverton, Maryland, USA: ICF International.

United Nations. (2005). *Population Challenges and Development Goals.* New York: United Nations.

United Nations. (2009). The Least Developed Countries Report: The State and Development Governance. *UNITED NATIONS CONFERENCE ON TRADE AND DEVELOPMENT* (pp. 31-209). New York and Geneva: UNCTAD.

United Nations. (2017). *The World Population Prospects: The 2017 Revision.* New York: UN Department of Economic and Social Affairs.

United Nations. (2019). *World Population Prospects: The 2019 Revision.* New York: The United Nations.

United Nations. (2021). *World Population Policies: Policies related to Fertility.* New York: United Nations, Department of Economic and Social Affairs.

United Nations. (2022). *World Population Prospects: The 2021 Revision.* New York: The United Nations.

World Bank. (2010). *Determinants and Consequences of High Fertility : A Synopsis of the Evidence.* Washington, DC 20433: The World Bank.

World Health Organization. (2010). The Demography of Fertility and Infertility. *Geneva Foundation for Medical Education and Research*, 34-35.

ADDIS ABABA UNIVERSITY

COLLEGE OF DEVELOPMENT STUDIES

CENTER FOR POPULATION STUDIES

ANNEXES

ENGLISH VERSION QUESTIONNAIRES

Dear respondents,

I am here on behalf of **Milkessa Birhanu** from Addis Ababa University. We are conducting a survey on Demographic and Socio-Economic Determinants of Fertility and Implications among Married Women in Bishoftu Town, Oromiya, Ethiopia**.** The study is being conducted as a partial fulfillment of the requirements for a degree of Master of Science in Population Studies at Addis Ababa University. The information obtained through this questionnaire will only be used for research purposes. The quality of this study highly depends on the information provided by you. Whatever information you provide me will be kept strictly confidential. You will not be asked to write your name or any other identifiers. You can skip questions that you don't want to answer or withdraw from the study at any time of the interview. Thus, I kindly request your participation and thank you in advance for your kind cooperation!

Are you willing to participate?

☐ Yes ☐ No (If no please thank and skip to the next respondent)

Section 1: Demographic background

1. What day, month, and year were you born?	Day---------- Month---------- Year----------
2. Age	-------, Please put in a number
3. Age at first marriage	--------, Please put in a number
4. Mother's age at first birth	--------, Please put in a number
5. What is the highest level of schooling you completed?	No education Primary Secondary More than secondary

Section 2: Socio-economic background

1. What is your religion?	Protestant Orthodox Muslim Catholic Waaqeffataa Other,----------, (Specify)
2. Have you had an abortion history?	Yes No
3. Have you ever used a contraceptive method?	Yes No
4. If yes to question number 3,	Condom Pill

what method did you use?	Injection Withdrawal Safe period Other, ----------, (Specify)
5. Have you ever been pregnant?	Yes No
6. If yes to Question 5 how many times have you become pregnant?	----------Please, put it a number
7. Have you ever given birth?	Yes No
8. Do you have any sons to whom you have given birth and who are now living with you?	Yes No
9. How many sons live with you?	----------, Please put in a number If no son is living with you, please skip this question
10. Do you have any daughters to whom you have given birth and who are now living with you?	Yes No
11. How many daughters live with you?	----------, Please put in a number If there are no sons living with you, please skip this question, please
12. Do you have any sons to whom you have given birth who are alive but do not live with you?	Yes No
13. If yes to Question 12, how	----------, Please put in a number

many are they?	If no sons live with you, please skip this question, please
14. Do you have any daughters to whom you have given birth who are alive but do not live with you?	Yes No
15. If yes to Question 14, how many are they?	----------, Please put in a number If no daughters live with you, please skip this question, please
16. Have you ever given birth to a boy or girl who was born alive but later died? Probe: Any baby who cried, who made any movement, sound, or effort to breathe, or who showed any other signs of life even if for a very short time?	Yes No
17. How many boys have died?	--------- If there are no dead boys, please skip this question, please
18. How many girls have died?	--------- If there are no dead boys, please skip this question, please
19. Total live births	----------
20. Have you ever had a pregnancy that miscarried, was aborted, or ended in a stillbirth?	Yes No
21. When did the last such pregnancy end?	Month---------- Year----------

22. If you need access to contraception, can you easily access it?	Yes No
23. How many children do you wish to have?	-------Please put in a number.
24. What is your occupation?	Housewife Merchants Governmental employee NGO employee Other, ----------, please mention.
25. What is your total monthly income in Ethiopian birr?	Less than 1000 1000 to 2999 3000 to 5999 6000 and above

Source: Adopted from Ethiopian Demographic & Health Survey and World Fertility Survey

YUUNIVARSIITII FINFINNEE

KOLLEEJJII QO'ANNOO MISOOMAA

GIDDUGALA QORANNOO UUMMATAA

DABALATA

WARAQAA ODEEFFANNOO VERSION AFAAN OROMOO

Kabajamtoota deebii kennitootaa,

Yuunivarsiitii Finfinnee irraa Milkeessaa Birhaanuu bakka bu'een as jira. Qorannoo Dimoogiraafii fi Hawaas-Dinagdee Murteessitoota Dhala godhachuu Dubartoota Gaa'ela qabanii fi Dhiibbaa isaa Magaalaa Bishooftuu keessatti, Oromiyaa, Itoophiyaatti gaggeessaa jirra. Qorannoon kun kan gaggeeffamaa jiru Yuunivarsiitii Finfinneetti digrii Master of Science in Population Studies argachuuf ulaagaalee gartokkoon guutuudha. Odeeffannoon karaa gaaffilee kanaan argamu kaayyoo qorannoo qofaaf kan oolu ta'a. Qulqullinni qorannoo kanaa odeeffannoo isin kennitan irratti baay'ee hundaa'a. Odeeffannoon isin naaf kennitan kamiyyuu iccitii cimaadhaan ni eegama. Maqaa kee ykn adda baastoota biroo kamiyyuu akka barreessitu si hin gaafatamu. Gaaffiiwwan deebii kennuu hin barbaanne darbuu ykn yeroo gaaffii fi deebii kamiyyuu qo'annoo irraa of baasuu dandeessa. Haala kanaan hirmaannaa keessan kabajaan gaafadha, tumsa gaarii nuuf gootaniif dursee isin galateeffadha!

Hirmaachuuf fedhii qabduu?

☐ Eeyyee ☐ Lakki (Yoo lakki ta'e galatoomaa gara deebii itti aanutti darbaa)

Kutaa 1: Seenaa Dimogiraafii

1. Guyyaa, ji'aa fi waggaa akkamii dhalatte?	Guyyaa---------- Ji'a---------- Waggaa----------
2. Umurii	-------,lakkoofsaan galchaa maaloo.
3. Umurii heeruma jalqabaa	-------,lakkoofsaan galchaa maaloo.
4. Umurii haadhaa yeroo da'umsa jalqabaa?	-------, lakkoofsaan galchaa maaloo.
5. Barnoota sadarkaa olaanaan ati xumurte maali?	1. Barnoota hin qabu 2. Sadarkaa tokkoffaa 3. Sadarkaa lammaffaa 4. Sadarkaa lammaffaa caalaa

Kutaa 2: Seenaa Hawaas-Dinagdee

1. Amantiin keessan maali?	1. Pirootestaantii 2. Ortodoksii 3. Musliima 4. Kaatolikii 5. Waaqeffataa 6.Kan biroo,----------, (Ibsaa)
2. Seenaa ulfa baasuu qabduu?	Eeyyee Lakki
3. Mala ittisa ulfaa fayyadamtanii beektuu?	Eeyyee

	Lakki
4. Gaaffii lakkoofsa 3ffaaf eeyyee yoo ta'e, mala akkamii fayyadamtan?	1. Kondomii 2. Kiniinii 3. Lilmoodhaan naqamuu 4. Baasuu 5. Marsaa laguu fayyadamuun 6.Kan biroo,----------, (Ibsaa).
5. Ulfooftanii beektuu?	Eeyyee Lakki
6. Gaaffii 5ffaaf eeyyee yoo ta'e yeroo meeqa ulfooftan?	-------, lakkoofsaan galchaa maaloo.
7. Deessanii beektuu?	Eeyyee Lakki
8. Ijoollee dhiiraa isin deessan kan amma isin wajjiin jiraatan qabduu?	Eeyyee Lakki
9. Ijoollee dhiiraa meeqatu isin waliin jiraata?	----------, Lakkoofsaan galchaa maaloo Yoo ilmaan isin waliin jiraatan hin jirre gaaffii kana bira darbaa.
10. Ijoollee durbaa isin deessan kan amma isin waliin jiraachaa jiran qabduu?	Eeyyee Lakki
11. Ijoollee durbaa meeqatu isin waliin jiraata?	----------, Lakkoofsaan galchaa maaloo Yoo shamarran isin waliin jiraatan hin jirre gaaffii kana darbaa.

12. Ijoollee dhiiraa isin deessan keessaa kan lubbuun jiran garuu isin waliin hin jiraanne qabduu?	Eeyyee Lakki
13. Gaaffii 12ffaaf eeyyee yoo ta'e meeqa?	----------, Lakkoofsaan galchaa maaloo Ijoollee dhiiraa si waliin hin jiraanne yoo hin jirre gaaffii kana bira darbaa.
14. Ijoollee durbaa isin deessan kan lubbuun jiran garuu isin waliin hin jiraanne qabduu?	Eeyyee Lakki
15. Gaaffii 14ffaaf eeyyee yoo ta'e meeqa?	----------, Lakkoofsaan galchaa maaloo Ijoollee shamarranii isin waliin hin jiraanne yoo hin jirre gaaffii kana bira darbaa.
16. Mucaa dhiiraa ykn mucaa durbaa lubbuun dhalatee/dhalattee boodarra du'e/duute deessee beektaa? Hubachiisa: Daa'ima boo'e/boosse, sochii, sagalee ykn hafuura baafachuudhaaf carraaqqii kamiyyuu godhe/goote, ykn yeroo baay'ee gabaabaaf yoo ta'ellee mallattoo jireenyaa kan biraa agarsiise/agarsiiste kamiyyuu?	Eeyyee Lakki
17. Ijoollee dhiiraa meeqatu du'e?	----------Ijoolleen dhiiraa du'an yoo hin jirre gaaffii kana bira darbaa maaloo.
18. Ijoollee durbaa meeqatu du'e?	----------Ijoolleen durbaa du'an yoo hin jirre gaaffii kana bira darbaa maaloo.
19. Walii gala ijoollee lubbuun dhalatan	----------
20. Ulfi sirraa ba'ee ykn du'aa da'uudhaan xumuramee jiraa?	Eeyyee

	Lakki
21. Ulfi akkasii inni dhumaa yoom xumurame?	Ji'a---------- Waggaa----------
22. Mala ittisa ulfa argachuu yoo barbaaddan salphaatti argachuu ni dandeessuu?	Eeyyee Lakki
23. Ijoollee meeqa godhachuu hawwita?	------- Lakkoofsaan galchaa maaloo.
24. Hojiin kee maali?	1. Haadha manaa 2. Daldaltoota 3. Hojjetaa mootummaa 4. Hojjetaa dhaabbata miti mootummaa 5. Kan biroo, ----------, mee kaasaa.
25. Walumaa galatti galiin ji'aa keessan birrii Itoophiyaan meeqa?	1. 1000 gadi 2. 1000 hanga 2999tti 3. 3000 hanga 5999tti 4. 6000 fi isaa ol ta'a

Maddi: Qorannoo Dimogiraafii fi Fayyaa Itiyoophiyaa fi Qorannoo Dhala godhachuu Addunyaairraa fudhatame