ADDIS ABABA UNIVERSITY

SCHOOL OF GRADUATE STUDIES

WOMEN EMPOWERMENT AND THEIR REPRODUCTIVE BEHAVIOUR AMONG CURRENTLY MARRIED WOMEN IN ETHIOPIA

BY

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This is to certify that the thesis prepared by Getinet Tadesse Darima Entitled; ***'Women empowerment and their reproductive behavior among currently married women in Ethiopia'*** and submitted in partial fulfillment of the requirements for the degree of master of science in population studies (Reproductive Health) complies with the regulations of the university and meets the accepted standards with respect to the originality and quality.

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Table of Contents

Page

List of Tables

Page

ACRONYMS AND ABBREVIATIONS

AIC	Akaike's Information Criterion
AOR	Adjusted Odds Ratio
BIC	Bayesian Information Criterion
CI	Confidence Interval
COR	Crude Odds Ratio
CSA	Central Statistical Agency
DHS	Demographic and Health Survey
EAs	Enumeration Areas
EDHS	Ethiopian Demographic and Health Survey
FGD	Focus Group Discussion
ICF	Inner City Fund
MCH	Maternal and Child Health
MDG	Millennium Development Goals
PRB	Population Reference Bureau
SDG	Sustainable Development Goals
SPSS	Statistical Package for Social Sciences
TFR	Total Fertility Rate
UN	United Nations
UNPD	United Nation Population Division
WB	World Bank
WHO	World Health Organization
LCA	Latent Class Analysis

Abstract

The study aimed at investigating women empowerment status and their reproductive behavior among currently married women of reproductive age in Ethiopia. ***The objective*** *was to explore the relation of empowerment of women with their contraceptive use and to investigate how empowerment of women affects their reproductive intention* ***Methods:*** *The study made use of the 2016 Ethiopian Demographic and Health survey with a sample size of 9127. The dependent variables were modern contraceptive use and desire for more children while the main predictor variable was women empowerment (measured by freedom of mobility and household decision making). Bivariate logistic regression, multivariate binary logistic and multinomial logistic regression were used generating odds ratios and relative risk ratios to explore the association at 95% confidence interval.* ***Results:*** *The results indicated that women who had freedom of mobility had no significant effect on the use of modern contraceptive both at bivariate and multivariate binary logistic regression model (COR=1.13, CI=.98-1.29) and (AOR=1.08, .92-1.25) respectively. However, fully empowered women had a significant and positive impact on the use of modern contraceptive both at the bivariate and multivariate binary logistic regression model (COR=1.72, CI=1.54-1.92) and (AOR=1.15, CI=1.01-1.31). In addition, at multinomial logistic regression model only freedom of mobility had a significant and positive effect on the women's desire for more children in both categories (RRR=1.31, CI=1.08 – 1.59) wants within two years and (RRR=1.36, CI=.15 -1.61) wants after two years.* ***Conclusion:*** *women empowerment interventions should be done at levels through better education, economic opportunities and health care including family planning for its far reaching benefits to the community, society and to the nation at large.*

Keywords*: women empowerment, modern contraceptive, married women, mobility and Ethiopia.*

CHAPTER ONE

INTRODUCTION

1.1 Background

The national population policy of Ethiopia was produced during the transitional government in 1993 to achieve its major goal of reducing the rate of population growth and to enhance the capacity of the country for the development and rational utilization of natural resources thereby improving the welfare of the population (Transitional government of Ethiopia, 1993). It was the first policy that is specifically related to the affairs of women

The objectives of the policy include facilitating conducive environment to the speeding up of equality between men and women so that women can participate in the political, economic and social life of their country on equal terms with men; ensuring that their right to own property as well as their other human rights are respected and that they are not excluded from both the enjoyment of the fruits of their labor or performing public functions and participating in decision making (Transitional government of Ethiopia, 1993).

Reproductive health is intricately linked to issues of women and child health, the spread of sexually transmitted diseases, poverty, education, gender equality and human rights (UNPD, 1995). Improving access to reproductive health is thus central to the process of development, as reflected in Sustainable Development Goal 3.7, which calls for universal access to family planning by 2030 (UN,2015). The United Nations General Assembly reaffirmed these commitments when it adopted the 2030 Agenda for Sustainable Development (United Nations, 2015b). The new development agenda encompasses two targets under the broader goals on health and on gender equality and the empowerment of women and girls relevant for family planning. These targets not only aim to achieve universal access to sexual and reproductive health-care services, including for family planning, information and education, and the integration of reproductive health into national strategies and programs (target 3.7) but also universal access to sexual and reproductive health and reproductive rights as agreed in accordance with the Program of Action of the International Conference on Population and Development and the Beijing Platform for Action and the outcome documents of their review conferences(target 5.6) by the end of 2030.

The Total Fertility Rate (TFR) in Ethiopia has begun to decline since the early 2000s slowly, from 5.5 to 4.6 per woman in Ethiopia in 2016 and the population grew by 2.6% annually. Moreover, estimates from EDHS surveys indicate a substantial decline in the pregnancy-related mortality ratio in Ethiopia since 2000, from 871 deaths per 100,000 live births to 673 deaths per 100,000 live births in 2005 EDHS survey, 676 deaths per 100,000 live births in the 2011 EDHS survey, and 412 deaths per 100,000 live births in the 7 years before the 2016 EDHS survey.

The use of any method of family planning by married women has increased more than fourfold from 8% in 2000 to 36% in 2016.However, more than 1 in 5 married women in Ethiopia have an unmet need for family planning: 13% want to delay childbearing, while 9% want to stop childbearing. The use of contraceptive methods is still very limited. As a result of high fertility, there would be pressure on the already existing small number of social services, education, health and high demand for food. Intervention to provide family planning services including information, education and health care both in quantity and quality is important to tackle the above mentioned problems(CSA,2016).

Contraceptive use helps couples and individuals realize their basic right to decide freely and responsibly, when and how many children to have. The growing use of contraceptive methods has resulted in not only improvements in health-related outcomes such as reduced maternal mortality and infant mortality (Ahmed *et al.*, 2012; Bhutta*et al.*, 2014; Rutstein*et al.*, 2015), but also improvements in schooling and economic outcomes, especially for girls and women (Canning; David and T. Paul Schultz, 2012).

With declining population growth rates in many developing countries, the attention of the population and development community has shifted away from fertility reduction and towards maternal and child health goals. However, what has not shifted is the belief that women's empowerment is key for attaining both health and population goals. Thus understanding the relationship between women's empowerment and maternal and child health (MCH) outcomes is an increasing focus of demographic and public health research (Basu*et al.*, 2005; Bloom *et al.*, 2001; Gupta, K., and P.P. Yesudian (2006); Mullany*et al.*, 2005; Portela*et al.*, 2003). The London Summit on Family Planning brought renewed attention to the importance of family planning as a means of reducing fertility and expanding the options available to women beyond reproduction (Carr *et al.*, 2012).

1.2 Statement of the problem

Women in developing countries are either under collective decision making with their partners or completely rely on the male partner's decision on issues that affect their reproductive live. Identifying the major barriers of married women's decision making power on contraceptive use and reproductive intention has significant relevance for planning and designing programs for appropriate family planning interventions.

A sizable body of literature exists on the relationships between women's empowerment and contraceptive use. Blanc (2001) suggested that the balance of power in sexual relationships had an influence on the use of health services, which in turn could be linked to reproductive health outcomes.

A few studies have examined other dimensions of women's empowerment, including decision making regarding household economy and family size, whether women need permission to go out, coercion or control of women by their spouse or family, women's political and legal awareness, and their participation in public protests and political campaigning (Mason KO *et al*,.2000).

A study conducted in Ethiopia to investigate women's empowerment as determinant of contraceptive use, dimensions representing women's attitude towards domestic violence, women's involvement in household decision making, and exposure to sources of knowledge were positively associated with contraceptive use (mekonnen *et al*., 2013). And another study conducted in southern Ethiopia on Married women's decision making power on modern contraceptive use in urban and rural area has showed that Urban women had better power to make decisions on modern contraceptive than rural women (Bogale B *et a*l.,2011)

Only a limited number of variables have been used to construct women empowerment dimensions namely household decision making and women's autonomy as determinants of contraceptive use in Ethiopia as shown in the above studies. And moreover how empowerment dimensions especially freedom of movement and decision on contraception usage transform into reproductive behavior among currently married women in Ethiopia is not known. This gap has justified the need for this current study to explore women's empowerment status and reproductive behavior with the 2016 Demographic and Health Survey (DHS) of Ethiopia.

1.3. Objectives of the study

1.3.1 General Objective

The general objective of this study is to explore the relationship between women's empowerment and their reproductive behavior.

1.3.2 Specific Objectives

1. To explore the relation of empowerment of women with their contraceptive use.
2. To investigate how empowerment of women affects their reproductive intention.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

This section reviews the literatures on the impact of women's empowerment on contraceptive use and reproductive intention First, it discusses theoretical review; second, it focuses on the empirical review; thirdly, it discusses an identified and conceptual framework or literatures studying the relationship between contraceptive use, reproductive intention and women's empowerment and finally it tells us significance of the study and limitation of the study.

Fertility remains higher and contraceptive levels are substantially lower in Sub-Saharan Africa than elsewhere in the developing world.

Women's empowerment is a complex concept for which several definitions exist. The World Bank defines empowerment as "the process of enhancing an individual's or group's capacity to make purposive choices and to transform those choices into desired actions and outcomes" (WB, 2006).

Empowerment for women only happens when they can envisage a different life and consider themselves able and entitled to make decisions (World Dev, 2013).

It involves the development of a critical consciousness of women's rights and of gendered power relations, and how these can be changed, so that gender inequity can be overcome. Empowering women and girls is a goal in itself, as well as a promoter of development (WB, 2006).

Kabeer defines women's empowerment as "an expansion in the range of potential choices available to women so that actual outcomes reflect the particular set of choices which the women value." (Kabeer, 2001:81). While empowerment is relevant to both sexes, women's empowerment necessarily is more complicated by the fact that they face additional disadvantages because of their sex, and the fact that household and intra-familial relationships are a major source of women's disempowerment (Malhotra et al., 2005).

2.1. Theories on women's empowerment

In the new global economy, women's empowerment has become a central issue for countries to be able to achieve development goals such as economic growth, poverty reduction, health, education and welfare (Golla et al., 2011).

In all developing countries, women are not equal to men in legal, social, and economic rights. Gender inequalities are pervasive in access to and control of resources including inequalities in economic opportunities, political power and decision making (World Bank, 2003).

Several explanations including the socio-biology theory (Wilson, 1975) have been put forward to explain the subordinate position of women in many societies. These theories believed that sex and gender differences shape human behavior including reproductive behavior of men and women.

A Theory of Change on Gender Equality & Women's and Girls' Empowerment(DFID,2015) this theory of change articulates a vision for gender equality and explains the relationship between gender equality, achieving empowerment and securing women's and girls' rights. It comprises a framework and a narrative which map the pathways to bringing about change.

A theory of planned behavior (Ajzen, 1991) states that attitude toward behavior, subjective norms, and perceived behavioral control, together shape an individual's behavioral intentions and behaviors. And I am also using this theory of planned behavior to construct conceptual framework for my study which shows the interrelationships that exists between socio-demographic, women empowerment and reproductive behavior.

2.2. Empirical review (evidence)

A study from Nepal suggests that women's empowerment and spousal violence appear to have important implications for the health of women and their children (Tuladhar et al., 2013).

Another finding from research in Nigeria showed that women who were empowered in the economic, social, and political dimensions had improved reproductive health outcomes; empowered women had fewer children and used different methods of reproductive health (Kritz et al., 2000).

In Ethiopia, research examining the net effect of women's autonomy on their health seeking behavior showed that women's autonomy was significantly positively associated with their use of maternal health services, even after adjusting for other individual and household variables (Woldemicael et al., 2010).

According to a study conducted in Togo, women who participated in income generating activities were more likely to communicate about family planning and to use contraception with their husband than women who did not (Gage, 1995).

On the other hand, a study conducted in Zimbabwe showed women's increased household decision-making was not associated with contraceptive use but was associated with lower fertility (Hindin, 2000). A qualitative study from Indonesia found that women's empowerment from the perspective of awareness and access to information was found to be important determinant of contraceptive use. According to the findings, although men were regarded as the head of the family, women in the study areas were the major decision makers with regard to reproductive matters. Their decisions covered not only the use of a particular family planning method but also the number of children they would have (Rina, 2004).

A study undertaken in Kenya has shown that unmet need among couples showed a declining trend as educational levels of the couples were increasing (Omwago et al., 2006). Women pay a high price for high fertility in terms of maternal mortality, which is a major cause of death for young women in high fertility settings (WHO, 2011).

Moreover, women's mortality risk remains elevated for long after childbirth: a study in Bangladesh found that it is nearly twice as high as normal for up to two years after childbirth (Menken et al., 2003). This is further complicated for the poor by the fact that they have less access to quality care during pregnancy and childbirth (Magadi et al., 2000; Bloom et al., 2001).

Do et.al. (2012) used a six-dimensional measure of empowerment (economic, socio-cultural activities, health-seeking behavior, and agreement on fertility preference, sexual activity negotiation and domestic violence attitudes) in their study in four African countries: Namibia, Zambia, Ghana and Uganda. They found out that women who were more empowered used more contraceptives than those who were less empowered (Do et al., 2012).

It is interesting to note that in this particular study, women's empowerment in health-seeking behavior was not linked to their contraceptive use (Do et al., 2012). This is quite surprising as one would expect that health-seeking behavior should somehow empower women to use contraceptives since they will draw from knowledge they have acquired. This necessitated for further studies on this subject.

Although Phan (2016) found that household decision-making in health, spending, and visits appeared to be a strong predictor of women's empowerment, questions about women's decision-making in their health care, sex negotiation, and domestic violence often only focus on the

individual woman without taking into consideration her and her husband's family, and the community (Bhatti & Jeffery, 2012; Mason et al., 2003).

Osemwenkha (2004) studied empowerment in direct relations to freedom of movement and decision-making power of Nigerian women. She discovered that women who were in the highest level of empowerment used more contraceptives than those in the lowest level of empowerment (Osemwenkha, 2004). However, knowledge about the contraceptive pills was the same for all the different empowerment level groups in this study (Osemwenkha, 2004).
This is an interesting discovery but it can be said that Osemwenkha's limit of empowerment measured just two dimensions (freedom of movement and decision-making power) which may have been a limitation to the findings of the study.

Household decision-making: In relation to decision-making in the home and control from the husband or other family members, studies have shown that women have relatively limited decision-making power (Jan et al., 2008). Married women had more power to decide and use contraceptives than the unmarried, even though their decisions were influenced by their husbands (Jan et al., 2008).
Women who had more children were more empowered to make decisions on the home and the older women could make decisions on their own about their personal health care and daily household purchases, including their use of contraceptives (Kishor et al., 2008). However, women who lived with the extended family, for instance mother, father or siblings of the husband in their matrimonial home, were less empowered (Kishor et al., 2008).
In the literature on women's autonomy and reproductive health behavior, women's autonomy has been measured by women's participation in decision making, financial decision making, freedom of movement, and attitudes toward violence, among others. Although women's autonomy has been measured in various ways, studies have documented higher levels of contraceptive use and lower fertility rates among women with more autonomy (Dharmalingam et al., 1996, Hogan et al. 1999, Mason 1987, Woldemicael 2009).
Men in highly gender-stratified societies tend to control their wives' use of contraceptives, even though this is to a minimal level, given other factors (Mason et al., 2000).

In Honduras a significant number of women agreed that decisions about fertility and contraceptive use should be taken solely by the men (Speizer et al., 2005).

The expectations and control of mothers-in-law can also limit contraceptive use (Feldman et al., 2009). This raises the question of the extent to which other significant family members like husbands and mothers-in-law, for instance in the African setting, can also control women's decisions on contraceptive use.

Most of the literature reviewed indicated that women's empowerment was associated with improved health outcomes.

2.2.1. Demographic and Socio-Economic Determinants of contraceptive use and reproductive intention

2.2.1.1. Age

Contraceptive use across age revealed that women in all age categories had higher tendency to utilize contraceptives especially those aged 15-19 (E. K. Ameyaw et al. 2017).

In a study at Nigeria, age at first marriage remain associated with children ever born (Bola Lukman Solanke, 2015). Age at first marriage and spousal age difference, is inversely associated with fertility (Abadian, 1996).

2.2.1.2. Rural/Urban

In Ethiopia and other countries across the world, women in the urban setting had more knowledge and power to make decisions and used contraceptives more than those in the rural settings (Bogale et al., 2011; Kishor et al., 2008; Mekonnen et al., 2011). These results could to be linked to the fact that those in the urban settings are more exposed to knowledge about modern contraceptives, gender equitable attitude and better chance of involvement in decision making among other favourable conditions (Bogale et al., 2011).

Education and age on the other hand, did not have any much impact in this study (Bogale et al., 2011). Place of residence was also found to be one of the determining factors for the trend of contraceptive use. Women livings in urban areas have better access to family planning services than rural areas (Medhanit , 2014).

A study in Nigeria there was differentials in fertility behavior among southern and northern women. On the one hand, women in north-eastern and north-western zones of the country had higher fertility compared with their southern counterparts (Bola Lukman Solanke, 2015).

2.2.1.3. Education

Crissman et al. (2012) observed that women who had any form of formal education were more "sexually empowered" to use contraceptives than those who did not have any (Crissman et al., 2012). However, Crissman et al. (2012) did not show whether the difference in levels of education was relevant to the extent to which women are empowered (Crissman et al., 2012).

Kishor et al. (2008) found education to be an important indicator of empowerment and suggested that a higher level of education empowered women more than does primary level education (Kishor et al., 2008).

In the study, it was found that women's level of education was the determining factor for the use of contraceptives, the result indicated that contraceptive use increased as women's educational level increased (Medhanit, 2014).

Women with higher educational level tend to have fewer children, those who completed primary, secondary school or higher education gave birth to significantly lower number of children, compared to no education (Chengxin Cao, 2006).

In Oman, an Arab state, empowerment (decision-making and free movement) was associated with more contraceptive use (Al Riyami et al., 2004). Education and employment were not measured as indicators of empowerment but as separate variables: education by itself is significantly associated with high contraceptive use than empowerment (Ahmed et al. 2010; Al Riyami et al., 2004). This means that empowerment without formal education is not enough to increase contraceptive use but education in general is very necessary (Hogan et al., 1999)

A study conducted in Ethiopia showed that Women's level of education shows a particularly strong association with both ever-use of modern contraception and antenatal care (Yohannes, 2013).

A study conducted in Nigeria reveal that as educational attainment progresses from none to primary and secondary levels, contraceptive use correspondingly increases (B. L. Solankeet.al., 2014).

Female education is one of the ways of increasing the age of marriage and thereby, reduces fertility. When females are well-educated, they will not only serve the purpose of bearing and bringing up children alone, but also know their rights and have definite plans for their lives (Stephen S. Ojo, 2014).

Darkwah (2010) advocates that education and job security are strong indicator of empowerment (Darkwah, 2010). There is, therefore, the need to provide jobs to make the empowerment process more fulfilling (Darkwah, 2010). Thus, this study will explore the associations between education and other significant factors that can influence women's empowerment and influence the present and/or planned use of contraception in Ghana, Africa.

2.2.1.4. Wealth/financial status

Studies indicate a positive relationship between financial status and the use of contraceptives (Elfstrom et al., 2012; Kishor et al., 2008). This confirms observations in earlier studies by Schuler and Hashemi (1994) in Bangladesh where they found that women who belonged to groups that received microfinance support were more empowered and more prone to contraceptive use than their counterparts who did not receive that support (Schuler et al., 1994).

Wealth is likely to increase not only access to healthcare and in reducing child mortality rates but also in increasing access to education and reducing child labor through increased chances for children to attend school (Abadian, 1996).

2.2.1.5. Occupation

Respondents' occupation was the significant variable that affects the use of contraceptive (Sophia, 2008). A study conducted in Ethiopia showed respondent's current employment status were all found to have a significant positive association on contraceptive use (Women's empowerment as a determinant of contraceptive us, 2013). Clements et al., (2004) discovered that a partner's occupation was significant in predicting a wife's use of contraceptives in Tanzania (Clements et al., 2004).

The other finding of this study showed that a factor like employment status of women is significantly associated with contraceptive use. Employed women were more likely to use contraceptives than unemployed (Medhanit , 2014).

2.2.1.6. Media exposure

Regular media exposure was positively associated with both the cumulative empowerment index and the decision-making index. This can be attributed to the fact that the media exposes women

to the world outside their homes including to new ideas and non-traditional roles for women (Abdou,2016). These results are consistent with Mahmud et al., (2012) findings.

A study in India, those who do not have mass media exposure have more mean number of children ever born it shows the media plays crucial role in regulating fertility, those women have more media exposure they have low fertility((NFHS-3,2005-06).

2.2.2. **Women empowerment indicators**

A study from Nepal suggests that women's empowerment and spousal violence appear to have important implications for the health of women and their children (Tuladhar et al., 2013).

Finding from research in Nigeria showed that women who were empowered in the economic, social, and political dimensions had improved reproductive health outcomes; empowered women had fewer children and used different methods of reproductive health (Kritz et al., 2000).

In Ethiopia, research examining the net effect of women's autonomy on their health seeking behavior showed that women's autonomy was significantly positively associated with their use of maternal health services, even after adjusting for other individual and household variables (Woldemicael et al., 2010).

Women's access to fundamental freedoms and increased access to and control over resources improve not only their welfare but also contribute to reduction in fertility (Abadian, 1996). Women's autonomy, as measured by the level of education, age at first marriage and spousal age difference, is inversely associated with fertility (Abadian, 1996).

Attitudes towards wife beating have a negative relationship with a small ideal number of children while household decision-making and positive attitudes towards violence are strongly associated with a larger ideal number of children (Upadhyay et al., 2012).

A study conducted in Eritrea found that women 's final say in decisions regarding day-to-day household purchases was significantly associated with wanting no more children, having a small ideal family size, and even using modern contraception (Woldemicael, 2009).

2.3. **Conceptual framework**

It shows the interrelationship that exists between socio-demographic characteristic, dimensions of women empowerment and reproductive behavior of currently married women in Ethiopia.

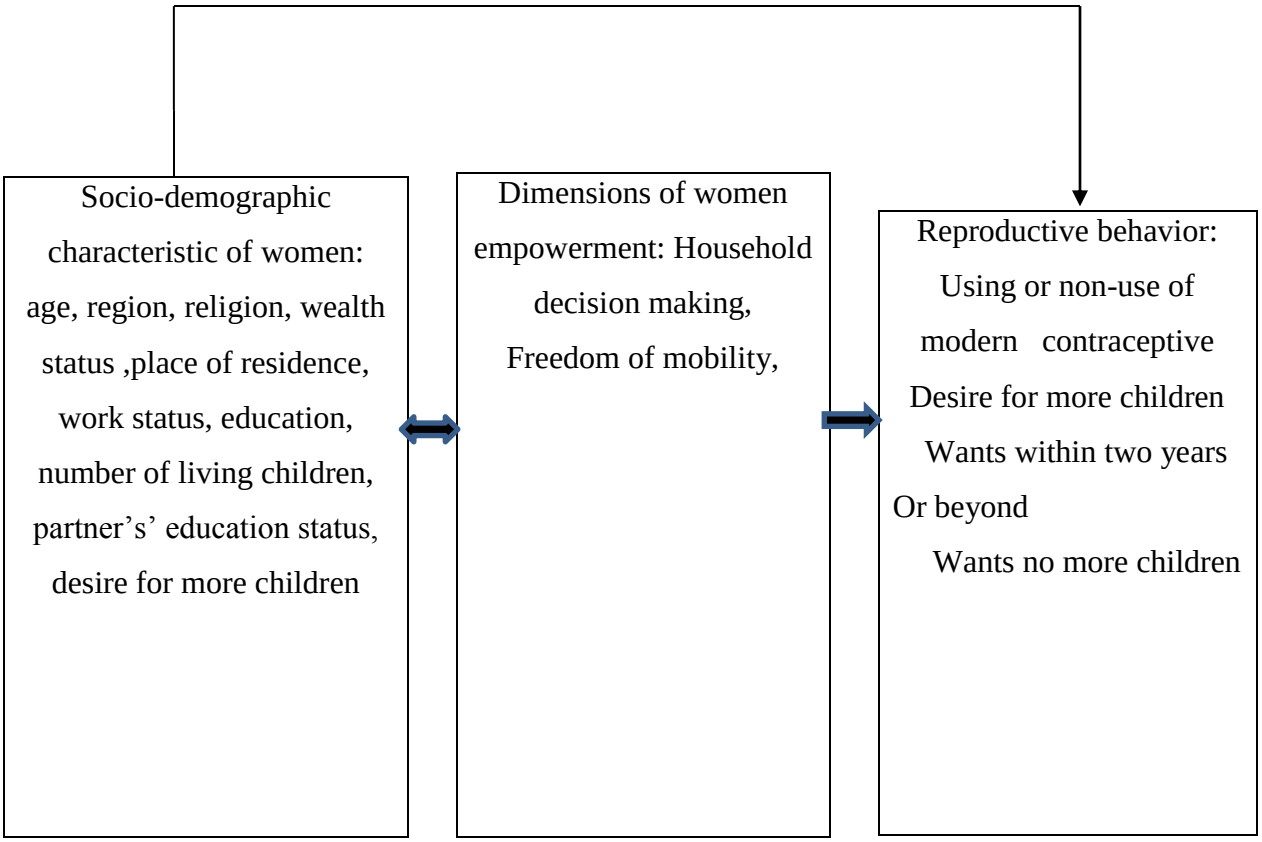

Figure1. Adapted planned behavior theory (Ajzen, 1991).

In this study, women's reproductive behavior is expected to be dependent on their empowerment status. Thus, women who can take any of the decisions of empowerment alone or jointly are expected to utilize contraceptives compared to their counterparts who are not able to decide independently or jointly with their husband and women's socio-demographic characteristics will affect their reproductive behavior either directly or indirectly by operating through the two indicators of empowerment as seen in the figure1. Moreover, the women empowerment dimensions could in turn affect their socio-economic and demographic characteristic as shown in the conceptual framework but the interest of this study is to investigate the forward direction as mentioned above.

2.4. Significance of the study

Empowering women through better education, economic opportunity and health care, including family planning is pivotal to world progress, with far-reaching benefits for families, communities and the planet. Women rarely have access to the resources that would make their work more

productive and ease their heavy workload. Ultimately, it is not just women who are held back, but also their families, their communities and local economies.

The study will create awareness for the importance of empowering women in order to control their reproductive intention and use of contraceptives it also increases knowledge in addressing the multidimensional problems being faced by women.

2.5. Limitations of the study

The Ethiopian Demographic and Health survey is a cross sectional study and therefore it does not show the case and effect. However, the results of this study clearly show the relationship between women empowerment and use of modern contraceptive and thereby adding a little knowledge to the existing once. Moreover, it could have been better to conduct a qualitative survey to supplement the results of this study.

CHAPTER THREE
METHODS AND MATERIALS

3.1 Source of data

This study used data from the 2016 Ethiopian Demographic and Health Survey (EDHS). The DHS uses a two-stage stratified cluster sampling design in which enumeration areas are selected at the first stage followed by households. The 2016 EDHS covered a sample of 16,650 households and 15,683 women of age 15-49 in Ethiopia. For this study, married women aged 15-49 who are fecund and not pregnant were included in the analysis.

The statistical analysis focuses only on married women age 15-49 years who are not pregnant and, comprising a weighted sample size of 9,127.

The survey collected detailed information on women's background characteristics, fertility, family planning, and maternal healthcare behaviors including use of antenatal, delivery, and postnatal care. The survey also collected information from all married women on their decision making autonomy.

3.2 Description of variables and Reproductive behavior

The main variable of interest was modern contraceptive use, which is binary in nature (non-use or use). These responses were coded to 0 for women who responded to no method, traditional and folk method and coded to 1 for modern method and the reproductive intention it will be measured by desire to have (a/another) child and categorized into as want a/another child, within 2 years coded to1, want a/another child, after 2 years coded to2 and Want no more, it is assigned a value of 0.

The main explanatory variable in the study is women empowerment. In addition, women's current age, education, wealth index, region of residence, religion, place of residence (urban or rural), exposure to media, number of living children, desire for more children and work status.

Empowerment was thought to be an important variable in the analysis. Women's empowerment measures were derived from a latent class analysis conducted with six survey questions representative of different dimensions of empowerment. The 2016 EDHS collected information on direct measures of women's empowerment. Questions were asked on women's participation in specific household decisions and freedom of mobility.

The variables used to construct women's empowerment indicator are the participation of women in making decision about major household purchases, her health care, visits her family or

relatives and how her husband's earnings spent. The possible answers to these questions were: women alone, women with husband, women with other person, husband alone, someone else or other person.

If the woman indicated that she had a say in a decision, whether by herself or jointly with her husband or other person, she received a score of 1, which shows a higher level of empowerment. Otherwise, a score of 0

In addition, there are some other variables which represent, the freedom of mobility dimension of women empowerment, two questions were offered to respondents whether it is a big problem for the women or not a big problem to go to the doctor alone or even to get a permission to go to the doctor. The possible answers to these questions were: 1) no problem, 2) big problem and 3) not a big problem. Categories 1 and 3 were merged to 1, indicating a higher level of empowerment, and category 2 recoded to 0 indicating a low or no level of empowerment.

Table 3.1A. **Description of the dependent and main predictor variables used in the study**

Variables	**Question & Responses**		**Categories**	**Type**
	Items	**Responses**		
Modern Contraceptive Use	Current use by method type	No method=0	0= Non-users	Dependent
		Traditional=1		
		folk method=2		
		Modern method=3	1= modern method	
Desire for more children	desire to have (a/another) child	1= Wants within 2 years	1=Wants within two years	Dependent
		2= Wants after 2+ years	2=Wants after two years	
		3= Wants, unsure timing	0= Wants no more	
		4= Undecided		
		5= Wants no more		
		6= Sterilized		
		7= Declared in fecund		
		8= Never had sex		
Empowerment	Getting permission to go to health unit	1= No problem	Categories 1 and 3 were merged to 1	
		2= Big problem		
		3=Not a big prob	category2 rec to0 Categories 1 and 3 were merged to 1	
		1= No problem		

Empowerment	Going to health unit alone	2= Big problem	category2 rec to0	Main Predictor
		3=Not a big problem		
	Who has final say (own health care)	1=women alone	Categories1,2 &3 were merged to 1	
		2=women with husband		
		3=women with other person		
		4= husband alone	Categories 4,5 & 6 were merged to 0	
		5=someone else or		
		6= other person		
	Who has final say (large purchases)	1=women alone	Categories1,2 &3 were merged to 1	
		2=women with husband		
		3=women with other person		
		4= husband alone	Categories 4,5 & 6 were merged to 0	
		5=someone else or		
		6= other person		
	Who has final say (visits to family)	1=women alone	Categories1,2 &3 were merged to 1	
		2=women with husband		
		3=women with other person		
		4= husband alone	Categories 4,5 & 6 were merged to 0	
		5=someone else or		
		6= other person		
	Who decide how husband's earnings spent	1=women alone	Categories1,2 &3 were merged to 1	
		2=women with husband		
		3=women with other person		
		4= husband alone	Categories 4,5 & 6 were merged to 0	
		5=someone else or		
		6= other person		

Table 3.1B. **Description of the control variables used in the study**

Variables	**Question & Responses**		**Categories**	**Type**
	Items	**Responses**		
Place of residence	Type of Place where respondent resides	1= urban	1= urban	Control variable
		2=rural	2=rural	
Region	Region where respondent live	1=Tigray	1=Tigray	Control variable
		2=Afar	2=Afar	
		3=Amhara	3=Amhara	
		4=Oromia	4=Oromia	
		5=Somali	5=Somali	
		6=Benishangul	6=Benishangul	
		7=SNNPR	7=SNNPR	
		8=Gambela	8=Gambela	
		9=Harari	9=Harari	
		10= Addis Ababa	10= Addis Ababa	
		11=Dire dawa	11=Dire dawa	
Current age	Respondent's completed number of years since birth	Number of completed years since date of birth	Five year age group,15-19,20-24,……..45-49	Control variable
Education attainment	Respondent's educational attainment level	0= No education	0= No education	Control variable
		1=Incomplete primary	1=primary	
		2=complete primary		
		3=Incomplete secondary	2=secondary	
		4=complete secondary		
		5=higher	3=higher	
Wealth index	Respondent's economic status	1=poorest	1=poorest	Control variable
		2=poorer	2=poorer	
		3=middle	3=middle	
		4=richer	4=richer	
		5=richest	5=richest	
Partner's education attainment	Partner's education attainment	0= No education	0= No education	Control variable

		1=Incomplete primary	1=primary	
		2=complete primary		
		3=Incomplete secondary	2=secondary	
		4=complete secondary		
		5=higher	3=higher	
Work status	Respondent currently working	0= No 1=Yes	0= No 1=Yes	Control variable
Media exposure	Frequency of reading newspaper/listening to radio/watching television	0= not at all	0= Not at all	Control variable
		1=Less than once a week	1=infrequent	
		2=At least once a week	2= regular	
		3= Almost every day		
Religion	Respondent's religion	1= Orthodox	1= Orthodox	Control variable
		2= Catholic	2= Catholic	
		3= Protestant	3= Protestant	
		4= Muslim	4= Muslim	
		5= Traditional	5=Traditional	
		96=Other	96=Others	
Number of living children	Respondent's number of living children	Number of living children they have	0=At most four	Control variable
			1= More than four	
Desire for more children	Respondent's desire for more children	1= Wants within 2 years	1=wants for more children	Control variable
		2= Wants after 2+ years		
		3= Wants, unsure timing		
		4= Undecided	2=wants no more children	
		5= Wants no more		
		6= Sterilized (respondent or partner)		
		7= Declared in fecund &8= Never had sex		

3.3 Analysis

Descriptive analysis is used in order to summarize characteristics of women and show the level and differentials of modern contraceptive use in Ethiopia.

Some researchers used sums of binary input variables to classify women in to different categories of empowerment. This method does not show the different dimensions or indicator of women empowerment. Women will be scored 1 for answers to each variable that contributed to a higher degree of empowerment; otherwise they will be scored 0 (Bloom, et al., 2001; Kamal, 2006; Shafei, 2005).

Other researchers used factor analysis technique to create women's empowerment indicators (Hussein, 2009; Kishor, 2000). The primary objective of factor analysis is to find the smallest number of factors or dimensions that can explain the relationships among a set of observed variables using continuous latent variables. The present study, however, used the **latent class analysis method.** In latent class models, we use a latent variable that is categorical to represent the groups, and we refer to the groups as classes.

In this method, the focus is on relationships among individuals. The goal is to group individuals into categories, each one of which contains individuals who are similar to each other and different from individuals in other categories we believe that there are groups in our population and individuals in these groups behave differently. But we don't have a variable that identifies the groups. The groups may be women with different decision making power with different patterns of behavior. LCA refers to the unobserved groups of individuals as latent classes. The object of LCA is to find the smallest number of latent classes that can describe the associations among a set of observed categorical variables. The analysis adds classes stepwise until the model fits the data well. The parameters of the model are the probabilities of being in each class and the probabilities of fulfilling each criterion given class membership. In addition, the latent class model provides estimates of class probabilities for each individual. These values are called posterior probabilities.

A latent class model for the response vector of p variables (i=1,2,…..,p) with k classes (j=1,….,k), for the latent variable $\boldsymbol{nj}$ is given by

$$\boldsymbol{f(xi) = \sum_{j=1}^{k} nj \prod_{i=1}^{p} \prod_{ij}^{xi} (1 - \prod ij)^{1-xi} \ldots\ldots\ldots\ldots\ldots\ldots\ldots (1)}$$

The choice of the number of latent classes that best describe the data pattern is decided using Bayesian information criterion (BIC). It is a measure of the goodness of fit of a model that considers the number of parameters (q) and the number of observation (N):

BIC=qlog (N) −2logL ……………………………………… (2)

When considering which model fits the data best, the model with the lowest Akaike's information criteria (AIC) or BIC should be considered.

3.3.1 The logistic regression model

At multivariate level, the relationship between selected variables of interest and the outcome variables was estimated using a binary and multinomial logistic regression models.

The logistic regression model for k independent **(x1, x2, x3...xk),** variables is therefore given by:

Logit (p) = b0+b1x1+b2x2+b3x3…bkxk

Odds = P /1-p = exp b0 +b1x1+b2x2+b3x3…bkxk………………… (3)

b0 is intercept and b1, b2 ... bk: are coefficients of the independent variables.

An odds ratio gives an estimate of the magnitude of association between the outcome variable and explanatory variables. An odds ratio of 1.0 indicates no influence, a ratio below 1 indicates a negative association and a ratio above 1.0 indicates a positive association between the independent variable and the dependent variable. The above explanation holds true for the relative risk ratio of the multinomial regression analysis as well.

A P-value less than 0.05 were considered to declare association between variables statistically significant. The full regression model was also tested for goodness of fit using Hosmer and Lemeshow test and it has been found a value of 0.158 which signifies that the model is a good fit. All the analysis of these research was done using STATA version 15.

CHAPTER FOUR
RESULTS AND DISCUSSIONS

4.1 Descriptive results

As indicated, women empowerment status was determined by their freedom of mobility in getting permission to go to the health unit and going to the health unit alone. Analysis of their freedom of mobility in getting permission to go to the health unit in Ethiopia revealed that most women do not have a big problem in getting permission to go to the health unit (65%) as shown in Table2. In addition, women empowerment status is also determined by their decision-making ability on their own healthcare, large household purchases, decision on visiting family members and on how to spend husband's earnings. Analysis of decision on a woman's own healthcare in Ethiopia revealed that most Ethiopian women do participate in decision on their own healthcare alone or jointly (81.8%) as indicated in Table 3.1. This same observation was made when considering decision on large household purchases, decision on visiting family members and decision on how to spend husband's earnings as 78.6 percent, 84.1 percent and 75.9 respectively were participating in such decisions alone or jointly.

It was realized that women residing in rural areas (83.5%) exceeded their urban counterparts.

Christian orthodox was the leading religion (41.6%) followed by Islam (33. 6%).Women with no education (62.1%) were more than women in the higher/tertiary education (4.2%) and only 21.3% women were in the richest quantile as indicated in the table3.1. Most women had maximum of four children (65.1%) whilst 34.9 percent had more than four. And women who were working (31.5%) and the majority of women were not working (68.5%) as indicated in the table 4.1.

Table 4.1. Background characteristics of currently married women, 2016.

Variables and categories		No.(weighted)	Percent
Getting permission to go to health unit	Big Problem	3158	34.6
	Not big Problem	5969	65.4
Going to health unit alone	Big Problem	3963	43.4
	Not big Problem	5164	56.6
Who has final say	Not Participate	1664	18.2

(own health care)	Participate	7463	81.8
Who has final say (large purchases)	Not Participate	1952	21.4
	Participate	7174	78.6
Who has final say (visits to family)	Not Participate	1450	15.9
	Participate	7677	84.1
Who decide how husband's earnings	Not Participate	2146	23.5
	Participate	6927	75.9
Age	15-19	501	5.5
	20-24	1425	15.6
	25-29	2075	22.7
	30-34	1828	20.0
	35-39	1487	16.3
	40-44	1021	11.2
	45-49	790	8.7
Residence	Urban	1505	16.5
	Rural	7622	83.5
Region	Tigray	604	6.6
	Afar	83	.9
	Amhara	2207	24.2
	Oromia	3531	38.7
	Somali	266	2.9
	Benishangul	102	1.1
	SNNPR	1909	20.9
	Gambela	27	.3
	Harari	21	.2
	Addis Ababa	331	3.6
	Dire dawa	45	.5
Religion	Orthodox	3793	41.6
	Catholic	67	.7
	Protestant	2050	22.5
	Muslim	3066	33.6

	Traditional	89	1.0
	Other	63	.7
Education	No education	5666	62.1
	Primary	2517	27.6
	Secondary	563	6.2
	Higher	381	4.2
Media Exposure	Not at all	5613	61.5
	Infrequent	3433	37.6
	Regular	80	0.88
Wealth	Poorest	1708	18.7
	Poorer	1814	19.9
	Middle	1854	20.3
	Richer	1806	19.8
	Richest	1946	21.3
Desire for more children	wants for more	5544	60.7
	wants no more	3583	39.3
Partner's Education attain	No education	4277	46.9
	Primary	3361	36.8
	Secondary	846	9.3
	Higher	643	7.0
Number of living children	At most four	5943	65.1
	More than four	3184	34.9
Work status	No	6250	68.5
	Yes	2877	31.5
Total		9,127	100

4.2 Results of latent class analysis

The following procedures or commands have been executed step by step to model the latent classes of the latent variable, women empowerment, and STATA version 15 is used to perform this task. By default, begin with two classes in fitting the model and check for the fitness of

model using information criterion, BIC. And repeat the same procedure with class three and run again the information criterion. Compare the two models with their BIC values, if the value of BIC in class three is lower than that of two, continue the process with class four, otherwise, the lower values of BIC fits the model best. After having the model fit, run the remaining commands and below is the summarized results of the latent class analysis.

. estatic …… (2)

Akaike's information criterion and Bayesian information criterion

Table 4.2. Determining the number of latent classes using information criteria

Number of classes	**2**	**3**
BIC	50,967	49,172.5
AIC	50,875.11	49,031.16

The following results are the probabilities of v467b, v467f, v743a, v743b, v743d, v743f, for each class.

The items are categorical or binary events.

These are sets of observed variables that indicate whether currently married women in Ethiopia, excluding those pregnant have participated in household decision making and their freedom of mobility.

Moreover, these items have been used (variables mentioned above) to fit a latent class model with three unobserved women empowerment behavior and categorical classes.

Moreover, the Akaike's information criterion and Bayesian information criteria have been used i.e AIC and BIC, values to evaluate fit of the model. The one with lower value of BIC fits the model best.

Table 4.3. Summarized results from estat lcprob and estat lcmean

Characteristics	**Freedom of mobility**	**Household decision makers**	**Fully empowered**
Pr(class)	**19%**	**26 %**	**55%**
Probability Of			
Getting permission(v467b)	0.56	0.25	0.88
Going to the health unit alone(v467f)	0.53	0.00	0.84
Decision on own health care(v743a)	0.21	0.95	0.97
Decision on large HH purchase(v743b)	0.09	0.97	0.94
Decision on visiting family/relative(v743d)	0.34	0.96	0.96
Decision on how to spend husbands earning(v743f)	0.16	0.92	0.90

The above summarized table reveals that

1) **19, 26 and 55** percent of currently married women in Ethiopia are predicted to be in Freedom of mobility group, Household decision making and fully empowered women group respectively. And the labeling and interpretation of the classes are up to the researcher,

2) **Class** 1 is the group of women who have responded no problem on freedom of mobility question. This class is regarded as group of women who have freedom of mobility.

3) **Class 2** is the group of women who have participated in household decision making and this is regarded as group of women of household decision makers.

4) **Class 3** is the groups of women who have responded no problem on freedom of mobility questions and those who participated in household decision making. This class is also regarded as group of women who have full empowerment.

4.3. Differential. Along with variable selection (COR, p-value) for multivariable analysis

In the following subsections, the relation between modern contraceptive use and socio-demographic and different women empowerment constructing variables is displayed.

4.3.1. Modern contraceptive use according to Background Characteristics

Table 3.4. Presents the percentage of modern contraceptive use according to women's background characteristics. The results indicate that there is relationship between place of residence and modern contraceptive use. Mothers living in urban areas used modern contraceptive for 54.8 percent as compared to only 36.5 percent among women living in rural areas. A wide variability in the prevalence of modern contraceptive use is seen among regions, where 53.8 percent of mothers live in Addis Ababa and 51.3 percent in Amhara region used modern contraceptive, while only 1.5 percent of women live in Somali region and 13.3percent live in Afar region used modern contraceptive.

Exposure to media has also a relationship with the use of modern contraceptive. For example, 35 percent of women who do not read newspaper/listen to the radio/ watch Television used modern contraceptive, while this percentage increased to 63.7 percent among women who read newspaper, listen to the radio and watch Television regularly.

Women's current age is an important factor for the utilization of modern contraceptive. The result indicated that women's current age has relationship with the use of modern contraceptive. For example, women who are in the age group 25-29 have used modern contraceptive for 46.5% while this percentage decreased to only 19.0% for those women in the age group45-49.

Table 4.4: **Distribution of modern contraceptive use according to women's background characteristics, 2016 and the data are all weighted.**

Characteristic & variable		**Modern contraceptive**				**Total**	**P-value**
		Non-user		User			
		No.	%	No.	%	No.(weighted)	COR
Place of residence	Rural	680	45.2%	826	54.8%	1506	1506
	Urban	4843	63.5%	2778	36.5%	7621	7621
Region	Tigray	373	61.8%	231	38.2%	604	1.0

	Afar	72	86.7%	11	13.3%	83	0.00
	Amhara	1075	48.7%	1132	51.3%	2207	0.00
	Oromia	2409	68.2%	1122	31.8%	3531	0.002
	Somali	262	98.5%	4	1.5%	266	0.00
	Benishangul	70	68.6%	32	31.4%	102	0.199
	SNNPR	1048	54.9%	861	45.1%	1909	0.003
	Gambela	17	63.0%	10	37%	27	0.981
	Harari	14	66.7%	7	33.3%	21	0.691
	Addis Ababa	153	46.2%	178	53.8%	331	0.000
	Dire Dawa	31	67.4%	15	32.6%	46	0.426
Current Age	15-19	314	62.7%	187	37.3%	501	1.0
	20-24	767	53.8%	658	46.2%	1425	0.001
	25-29	1110	53.5%	966	46.5%	2076	0.000
	30-34	1073	58.7%	755	41.3%	1828	0.114
	35-39	946	63.6%	541	36.4%	1487	0.684
	40-44	673	65.9%	348	34.1%	1021	0.211
	45-49	640	81.0%	150	19.0%	790	0.000
Educational attainment	No education	3736	65.9%	1930	34.1%	5666	1.0
	primary	1387	55.1%	1130	44.9%	2517	0.000
	secondary	232	41.2%	331	58.8%	563	0.000
	Higher	300	46.7%	343	53.3%	643	0.000
Wealth index	Poorest	1328	77.8%	380	22.2%	1708	1.00
	Poorer	1171	64.6%	643	35.4%	1814	0.000
	Middle	1098	9.3%	755	40.7%	1853	0.000
	Richer	995	47.8%	811	52.2%	1806	0.000
	Richest	931	55.1%	1015	44.9%	1946	0.000
Partner's educational attainment	No education	2863	66.9%	1414	33.1%	4277	1.00
	primary	1933	57.5%	1427	42.5%	3360	0.000
	secondary	426	50.4%	420	49.6%	846	0.000
	Higher	300	46.7%	343	53.3%	643	0.000
Media exposure	Not at all	3640	64.8%	1973	35%	5613	1.0
	Infrequent	1853	53.9%	1580	46.0%	3433	0.000
	Regular	29	36.3%	51	63.7%	80	0.000
Work status	Not working	3968	63.5%	2282	36.5 %	6250	1.00
	currently Working	1555	54.0%	1322	46.0%	2877	0.000
Religion	Orthodox	1955	51.5%	1839	48.5%	3794	1.0
	Catholic	33	49.3%	34	50.7%	67	0.686
	Protestant	1094	53.4%	956	46.6%	2050	0.182
	Muslim	2312	75.4%	754	24.6%	3066	0.000
	Traditional	83	94.3%	5	5.7%	88	0.000
	Other	47	74.6%	16	25.4%	63	0.000

Number of living children	At most four	3287	55.3%	2656	44.7%	5943	1.00
	More than four	2236	70.2%	948	29.8%	3184	0.000
Desire for children	Wants for more	3379	60.9%	2165	39.1%	5544	1.00
	Wants no more	2144	59.8%	1439	40.2%	3583	0.284

Source: using EDHS, 2016

There is also relationship between both woman's education and husband's education and use of modern contraceptives. Data of Table 3.4. shows that women with university education or higher have used 53.3 percent while this number decreased to 34 percent for women who have no education to have used modern contraceptive. Moreover, 53.3 percent of women whose husbands have university education or higher used modern contraceptive compared to only 33 percent of women whose husbands have never attended school.

There is variability between both women's work status and wealth index and use of modern contraceptive. Table 3.4. shows that 36.5 percent of women who do not work used modern contraceptive, while this percentage increased to 46 percent among those who work. Moreover, only 22 percent of women who are in the poorest quintile used modern contraceptive, while this percentage increased to 44.9 percent among women who are in the richest quintile.

There is also a wide variability between both Women's religious affiliation and number of living children and utilization of modern contraceptive. Table 3.4. shows that 50.7 percent of women who followed Catholic used modern contraceptive while this percentage decreased to 24.6 percent among those who followed Muslim. Additionally, only 29.8 percent of women with more than four children used modern contraceptive while this percentage increased to 44.7 among those with at least four children.

There is also relationship between desires for more children and use of modern contraceptive. Results of table 3.4. show that 39.1 percent of women who want for more children used modern contraceptive while this percentage reached 40.2 for those women who wants no more children

4.3.2. Modern contraceptive use according to latent classes

Table 3.5. shows that there is relationship between latent classes and modern contraceptive use. Women who had freedom of mobility and used modern contraceptive reached 34% while this percentage increased to 66% for women who had freedom of mobility but non users.

Likewise, women who participated in decisions in their households have used modern contraceptive for 32 percent while this percentage increased to 68 percent for women who have participated in household decision making but non users.

Additionally, women who were fully empowered that means those who participated in household decision making and those who had freedom of mobility received modern contraceptive 44percent and this percentage increased to 66 percent for nonusers.

Table 4.5: Distribution of use of modern contraceptive by latent classes, 2016 and the data are all weighted.

Latent classes	**Modern contraceptive use**				**Total**
	Non-User		**User**		
	No.	**%**	**No.**	**%**	
Freedom of Mobility	1203	66%	625	34%	1829
House hold decision maker	1299	68%	599	32%	1898
Fully empowered	2984	56%	2363	44%	5347
Total	5486	60%	3587	40%	9073

Source: Using EDHS, 2016

4.4. Multivariate Results for use of Modern contraceptive

Before directly going to the modeling procedure, a check on multicollinearity between the explanatory variables is recommended (Pallant, 2011). Accordingly, a check made between the variables that are assumed to predict women use of modern contraceptive showed that tolerance values are very small (less than 0.10) and the values of variance inflation factor (VIF) are below five for all models (See in the appendix, Table9).

Preliminary logistic regression analysis was initially computed with all the potential predictor variables considered for the study. Then the multivariate analysis was conducted with only the potential predictor variables that significantly predicted the outcome variable (use of modern contraceptive) to arrive at a good fit regression model for the study.

Both the bivariate and multivariate logistic regression analysis was conducted to identify the effect of women empowerment and socio-demographic characteristics on the use of modern contraceptive. At the bivariate level the effect of each one of the explanatory variables on the use

of modern contraceptive is considered while the multivariate analysis is further controlled for the effect of other variables.

Table 4.6. Crude and adjusted odds ratios from binary logistic regression analysis.

Variables and categories		Crude odds ratio	Adjusted odds ratio
Women empowerment	Freedom of mobility	1.13(.98-1.29)	1.08 (.92-1.25)
	House hold decision makers	1.0	1.0
	Fully empowered	1.72(1.54-1.92)*	1.15 (1.01-1.31)**
Age	15-19	1.0	1.0
	20-24	1.44(1.17-1.77)*	1.22(.97- 1.53)
	25-29	1.46(1.19-1.78)*	1.16 (.93- 1.45)
	30-34	1.18(.96-1.44)	.92(.73- 1.17)
	35-39	.96(.78-1.18)	.71(.55- .91)**
	40-44	.87(.69-1.08)	.60(.46- .79)**
	45-49	.39(.30-.51)*	.23(.17 -.31)**
Residence	Rural	1.0	1.0
	Urban	2.12(1.89-2.37)*	1.53(1.23 1.86)**
Region	Tigray	1.0	1.0
	Afar	.25(.13-.48)*	.46 (.23-.95)**
	Amhara	1.69(1.41-2.04)*	1.83(1.50 -2.25)**
	Oromia	.75(.63-.90)*	.92 (.75-1.14)
	Somali	.03(.01-.07)*	.06(.02 -.17)**
	Benishangul	.75(.48-1.17)	.87(.54 -1.43)
	SNNPR	1.33(1.09-1.60)*	1.26(1.00 -1.59)**
	Gambela	.99(.45-2.19)	.73(.31-1.71)
	Harari	.83(.33-2.07)	.82(.31- 2.16)
	Addis Ababa	1.87(1.43-2.45)*	.95(.70- 1.30)
	Dire dawa	.77(.41-1.46)	.79(.39-1.58)
Religion	Orthodox	1.0	1.0
	Catholic	1.10(.68-1.79)	1.18 (.72 -1.97)
	Protestant	.93(.83-1.03)	1.11(.95-1.29)
	Muslim	.35(.31-.38)*	.55(.49-.63)**
	Traditional	.07(.03-.16)*	.16(.07-.39)**
	Other	.36(.20-.64)*	.54 (.30- .1.00)

Education	No education	1.0	1.0
	Primary	1.58(1.43-1.74)*	1.09 (.97-1.23)
	Secondary	2.77(2.32-3.30)*	1.34(1.07- 1.73)**
	Higher	2.46(1.99-3.03)*	.92(.70- 1.52)
Media Exposure	Not at all	1.0	1.0
	Infrequent	1.57(1.44-1.72)*	1.04(.93-1.16)
	Regular	3.21(2.03-5.07)*	1.66(.99 -2.75)
Wealth	Poorest	1.0	1.0
	Poorer	1.92(1.65-2.23)*	1.60(1.36-1.88)**
	Middle	2.40(2.08-2.78)*	1.99(1.70- 2.34)**
	Richer	2.85(2.46-3.30)*	2.25 (1.91- 2.66)**
	Richest	3.81(3.30-4.40)*	2.02(1.64- 2.50)**
Desire for more children	wants for more	1.0	1.0
	wants no more children	1.05(.96-1.14)	1.62(1.45- 1.81)**
Partner's Education attain	No education	1.0	1.0
	Primary	1.50(1.36-1.64)*	1.15(1.03-1.28)**
	Secondary	1.99(1.72-2.31)*	1.05(.87-1.27)
	Higher	2.31(1.96-2.73)*	1.03(.80-1.32)
Number of living children	At most four	1.0	1.0
	More than four	.52(.48-.57)*	.81(.72-.93)**
Work status	No	1.0	1.0
	Yes	1.48(1.35-1.62)*	1.22(1.10- 1.35)**

Note: Significance at 95% confidence interval

At this multivariate level, the relationship between selected variables of interest (explanatory) and the dependent variable was estimated using a binary logistic regression model. This is so, because the dependent variable is dichotomous, with the two outcomes, 1 for use of modern contraceptives and 0 for not using a modern method. This main analysis is conducted to assess the extent to which the predictor variables predict the outcome variable that is use of modern contraceptive.

Table 4.6. provides the binary logistic regression estimates. The results demonstrate that women's full empowerment as compared to household decision making increases the probability

that the woman use modern contraceptives at less than 5% significance level (AOR=1.15, CI=1.01-1.31).

Table 4.6. also reports the effects of other socioeconomic and demographic variables on the use of modern contraceptive. The results indicate that wealth index significantly increases the likelihood of using modern contraceptive. Table 4.6. shows that woman from the richest quintile is 2.02 times more likely to use modern contraceptive compared with woman from the poorest quintile (AOR= 2.02, CI=1.64-2.50). Additionally, it can be noticed that women's work status has a significant impact on using modern contraceptive. Women who currently working are 1.22 times more likely to use modern contraceptive compared with women who do not work (AOR= 1.22, CI=1.10-1.35).

There is a significant relationship between both women's education and husband's education and modern contraceptive use. Data of Table 4.6. shows that the women who have achieved secondary education are 1.34 times more likely to use modern contraceptives compared with the women who have never attended school (AOR= 1.34, CI=1.07-1.73).

Moreover, women whose husbands have achieved primary education are 1.15 times more likely to use modern contraceptive compared with those have husbands have never attended school (AOR= 1.15, CI=1.03-1.28).

The findings of this study also show that the desire for more children has a significant impact on the use of modern contraceptive. Additionally, age of the Women, place of residence, region and religion have impact on the use of modern contraceptives. As can be seen from the table women who want no more children are 1.62 times more likely to use modern contraceptive compared with women who want more children (AOR= 1.62, CI=1.45-1.81). Likewise, women residing in urban areas are 1.53 times more likely to use modern contraceptive as compared with those living in rural areas (AOR= 1.53, CI=1.23-1.86).

Across various age groups, all women particularly those aged 35-49 were noticed to have .71,.59 and .23 times less possibility of modern contraceptive use as compared to those aged 15 - 19 (AOR =.71, CI = .55 - .91, AOR=.59, CI=.46-.78, AOR=.23, CI=.17-.31) respectively while as compared to Orthodox, women with Muslim and Traditional religious affiliation were .55 and .16 times less likely toward modern contraceptive use in Ethiopia (AOR = .55, CI = .49 - .63, AOR=.16, CI=.07-.39) respectively.

4.5. Multivariate Results for Reproductive intention (desire for more children)

The outcome variable was categorized in to three groups and the explanatory variables were entered into the multinomial logistic regression to identify the effect of Women empowerment and socio-demographic characteristics on women's desire for more children. The results of multinomial logistic regression are depicted in Table 4.7.

Wants within two years' vs wants no more

Holding other explanatory variables constant, freedom of mobility relative to house hold decision making, the relative risk for preferring the comparison group that is wants within two years relative to wants no more children would be expected to increase by a factor of 1.31. This means that women in the freedom of mobility as compared to those in household decision making are more likely to bear child within two years (over wants no more children).

Region is a determinant factor for desire for more children. Afar relative to Tigray region, the relative risk for wanting a child within two years relative to wants no more children would be expected to increase by a factor of 3.73. Likewise, Somali relative to Tigray region, the relative risk for wanting within two years relative to wants no more children would be expected to increase by a factor of 11.45.

Religion was also another determinant that affects the desire for more children. Muslim relative to Orthodox, the relative risk for wanting a child within two years' relative to the referent group that is wants no more children would be expected to increase by a factor of 1.26. In other words, women with Muslim religion as compared to those from Orthodox are more likely to bear a child within two years over the referent group wants no more children.

Wealth status was found to be predictor of desire for more children. Poor as compared to the reference category(poorest), the relative risk for wants within two years' relative to wants no more child would be expected to decrease by .66.

Educational attainment of women was a determinant factor for their desire more children. Women in the higher education relative to no education, the relative risk for bearing a child within two years relative to wants no more would be expected to increase of 3.84 given the other variables are held constant.

Age of women was found to be another predictor variable for women's desire for more children. Women in the age group 45-49 relative to their counter parts from 15-19, the relative risk for

preferring wants within two years relative to wants no more would be expected to decrease by .08 after controlling for the effect of other covariates.

Wants after two years' vs wants no more

Controlling for other explanatory variables, freedom of mobility relative to household decision making, the relative risk for wants after two years relative to wants no more would be expected to increase by a factor of 1.36.

Respondents current age was also another predictor variable for desire for more children. Women in the age group 20-24 relative to 15-19, the relative risk for women to bear a child after two years as compared to those who wants no more would be expected to decrease by .67 given the other variables are held constant.

Region was another determinant factor for women's desire for more children, Women from Amhara relative to Tigray region, the relative risk for preferring wants after two years relative to wants no more would be expected to decrease by .44

Place of residence affects women's desire for more children as shown in the literature review. Women from urban relative to rural, the relative risk for preferring wants after two years as compared to wants no more would be expected to decrease by .75. In other words, women residing in urban areas relative to their counter parts in rural areas were less likely to bear a child after two years over the referent group wants no more.

The educational attainment level of women was another predictor variable for women's desire for more children. The results indicated that, women with secondary and higher education level relative to no education, the relative risk for preferring wants after two years as compared to wants no more would be expected to increase by 2.03 and 2.65 respectively given other variables held constant.

The number of children women have is a determinant factor as shown in the literature review part. Women having more than four children relative to less than four, the relative risk for preferring wants after two years relative to wants no more would be expected to decrease by .42. In other words, women having more than four children as compared to their counter parts having less than four were less likely to bear a child after two years over the reference category wants no more. Moreover, women's work status affects their desire for more children. Currently working women relative to not working, the relative risk for preferring wants after two years relative to

wants no more would be expected to decrease by .87 after controlling for the effect of other covariates.

Table 4.7. Relative Risk Ratios (RRR) at 95% confidence interval for multinomial logistic regression analysis.

Variables and categories		**Relative Risk Ratio(RRR)**	**Relative Risk Ratio(RRR)**
wants_no_more (Base outcome)		**wants_within_2_years**	**wants_after_2_years**
Women empowerment	Freedom of mobility	1.31 (1.08 – 1.59)*	1.36 (1.15 -1.61)**
	House hold decision making	1.0	1.0
	Fully empowered	1.15 (.98 -1.35)	1.14 (.99 -1.31)
Age	15-19	1.0	1.0
	20-24	.38 (.25-.58)*	.67 (.46 -.97)**
	25-29	.27 (.18-.39)*	.35 (.24 -.51)**
	30-34	.17 (.12-.26)*	.16 (.11 -.23)**
	35-39	.17 (.11-.25)*	.07 (.05 -.11)**
	40-44	.12 (.08 -.18)*	.02(.02 - .04)**
	45-49	.08 (.05-.14)*	.01 (.003 -.010)**
Residence	Rural	1.0	1.0
	Urban	.75 (.56 -.99)*	.75(.57 - .98)**
Region	Tigray	1.0	1.0
	Afar	3.73 (1.67 -8.34)*	.65 (.27 – 1.59)
	Amhara	.63 (.46 -.85)*	.44 (.33 - .58)**
	Oromia	.45 (.32 -.61)*	.32 (.24 -.42)**
	Somali	11.45 (6.49 -20.19)*	1.33 (.72 -2.44)
	Benishangul	.61 (.31 -1.21)	.42 (.23 -.78)**
	SNNPR	.77 (.55 -1.09)	.53 (.39 -.72)**
	Gambela	.55 (.16 -1.86)	.36 (.12 – 1.07)
	Harari	.59 (.16 -2.25)	.39 (.11 -1.42)
	Addis Ababa	.74 (.48 -1.15)	.48 (.31 -.75)**

	Dire dawa	.99 (.42 -2.37)	,38 (.15 -.97)**
Religion	Orthodox	1.0	1.0
	Catholic	.46 (.20 -1.02)	.29 (.14 .61)**
	Protestant	.70 (.56 -.88)*	.94 (.77 -1.15)
	Muslim	1.26 (1.05 -1.52)*	1.24 (1.05 -1.47)**
	Traditional	2.28 (.96 -5.39)	5.92 (3.01 -11.65)**
	Other	.61 (.23 -1.56)	1.88 (.93 -3.81)
Education	No education	1.0	1.0
	Primary	.83 (.69 -.99)*	1.10 (.94 -1.29)
	Secondary	1.35 (.95 -1.92)	2.03 (1.46 -2.81)**
	Higher	3.84 (2.44 -6.05)*	2.65 (1.68 -4.18)**
Media Exposure	Not at all	1.0	1.0
	Infrequent	1.11 (.88 -1.40)	.81 (.65 -1.02)
	Regular	.71 (.35 -1.45)	.95 (.47 -1.91)
Wealth	Poorest	1.0	1.0
	Poorer	.66 (.53 -.83)*	.84 (.69 -1.02)
	Middle	.83 (.66 – 1.04)	1.10 (.91 -1.35)
	Richer	.96 (.76 -1.21)	1.11 (.90 -1.36)
	Richest	1.19 (.89 -1.60)	.85 (.65 -1.12)
Partner's Education attain	No education	1.0	1.0
	Primary	.89 (.76 -1.06)	.95(.82 -1.09)
	Secondary	.98 (.74 -1.31)	1.03 (.79 -1.32)
	Higher	.95 (.67 -1.36)	1.22 (.87 -1.70)
Number of living children	At most four	1.0	1.0
	More than four	.23 (.19 -.27)*	.42 (.36 - .49)**
Work status	No	1.0	1.0
	Yes	1.07 (.92 -1.24)	.87 (.76 -.99)**

Significance at 95% confidence interval

4.6. Discussion on the use of modern contraceptive

This study investigated how empowerment status (measured by woman's ability to decide on her own healthcare, ability to decide on large household purchases, ability to decide on visitation to family members, ability to decide how to spend husbands earnings and it is also measured by whether or not a big problem for the women to get permission to go to the health unit and going to the health unit alone) affects modern contraceptive use in Ethiopia using the 2016, Ethiopian demographic and health survey.

The study found that women who were fully empowered were more likely (probable) to use modern contraceptives as compared to those who were participating in house hold decisions alone. The reason could possibly be that, a woman who is fully empowered is much particular about the consequences of unplanned and mistimed pregnancies. However, those who are participating in house hold decision making alone might be facing problems which can stop them from deciding on timing and type of contraceptive to use. In line with the theoretical framework, it has been evident that women empowerment contributes to high possibility of modern contraceptive use in Ethiopia. This result is in line with a study conducted in Nigeria (Osemwenkha, 2004) she discovered that women who were in the highest level of empowerment used more contraceptives than those in the lowest level of empowerment. Similarly, a study conducted in Oman, an Arab state, empowerment (decision-making and free movement) was associated with more contraceptive use (Al Riyami, Afifi, & Mabry, 2004).

It was also realized that women who had a freedom of movement alone had no significant impact on the use of modern contraceptive as compared to those who had participated in house hold decision making alone.

The results of the study further indicated that, age of the women was a determinant to modern contraceptive use and that, women who are in the age group 35-39,40-44 and 45-49 have less likely to use modern contraceptive as compared to women in the youthful ages. This is due to the youth may be highly motivated to use modern contraceptive to protect unwanted pregnancy and as one advances in age, individual's desire to have children increases.

This result is inconsistent with the results by (E. K. Ameyaw *et a*l. 2017) in which case Contraceptive use across age revealed that women in all age categories had higher tendency to utilize contraceptives especially those aged 15-19.

The region where women live has impact on their use of modern contraceptive. This study also noticed that a wide variability was seen in the use of modern contraceptive among regions in Ethiopia. Women who were from Afar and Somali regions were less likely to use modern contraceptive as compared to their counter parts from Tigray region. This observation is possibly due to the effect of religious affiliations and cultural influence in the two regions. Moreover, women who are from Amhara and SNNP regions had a higher probability to use modern contraceptive as compared to women who were from Tigray region. This result might be due to higher access and information, education and communication works for family planning services and the health extension workers showed commitment to their work in these regions.

Modern contraceptive use among women was also showed variation in religion. The study also noticed that women with Muslim and traditional religious affiliations were less likely to use modern contraceptive as compared to women with orthodox religion. This result might be due to doctrine teaching about modern contraceptive use and this in turn could have influenced the society.

The household wealth status was one of the determinants of modern contraceptive use. The study also indicated that women with the richest wealth status were more likely to use modern contraceptive as compared to women in the poorest group. This result might be poor women are less likely to afford modern contraceptive than women in the richest wealth status. In addition to this poor woman are seen to have high fertility in our society. In line to this result, studies indicate a positive relationship between financial status and the use of contraceptives (Elfstrom *et al*., 2012; Kishor *et al*., 2008). The results of this study is inconsistent with a study conducted in Eretria(Gebremariam,2007).

Additionally, the study showed that women with secondary education were generally more likely to use modern contraceptive as compared with women with no education. This implies that women with secondary education may have a better knowledge base in modern contraceptive and transforming this positive attitude into usage as compared to their counter parts. As from literature in Oman, it is proved that Women who have achieved secondary or higher education are more likely to use modern contraceptive compared with Women who have never attended School (Ahmed *et al*. 2010; Al Riyami*et al*., 2004). Similarly, it has been observed that women's education influenced their contraceptive usage in Pakistan and Indonesia and that educated

women were more likely to use contraceptives than women without education (Khan, R.E. *et a*l.,2007).

Partner's education status is an important factor for the use of modern contraceptive. Women whose husbands have primary education has association with the use of modern contraceptive as compared with those women whose husbands have no education. This result may be due to women whose husbands have primary education have the chance to discuss freely with their husbands and use modern contraceptive just to limit or space their number of children. This result is in line with the results in Uganda (John, *et a*l., 2012).

Women's working status is also another determinant of modern contraceptive use. Moreover, women who were currently engaged in work were more likely to use modern contraceptive than their counter parts who were not engaged in work. This is because of the fact that women who are currently working do not have ample time to raise their children. This result is in line with the study from Ethiopia (Medhanit , 2014).

Place of residence is also another important factor for the use of modern contraceptive. The result of this study indicated that women residing in urban areas were more likely to use modern contraceptive than their counter parts living in rural areas. The possible explanation to this might be women living in urban areas have access and a wide range of information to the services available for family planning and have more power to make decision and use modern contraceptive. Moreover, women residing in rural areas could possibly assume children as their asset (value of children) and women living in urban areas might have a problem in covering the cost of raising children. As from literature in Ethiopia, this result is consistent with (Bogale B *et a*l.,2011).

Furthermore, the results of this study indicated that women who do not want for more children are highly probable to use modern contraceptive than women who desire for more children. This is quite a fact that women who are in the reproductive age group and who do not want for more children use modern contraceptive to prevent the unwanted and mistimed pregnancy. However, women who have desire for children do not use any mechanisms that can possibly prevent the occurrence of pregnancy. As from literature in Uganda, it is proved that Women who do not want more children (no desire for more children) use modern contraceptive compared with Women who want more children (John, *et al*., 2012).

4.7. Discussion on the desire for more children

Women who had freedom of mobility were found in both categories (wants within two years, wants after two years) to desire for more children as compared to women who had house hold decision making**.** This study result was inconsistent with a study on women's access to fundamental freedoms and increased access to and control over resources improve not only their welfare but also contribute to reduction in fertility (Abadian, 1996). Similarly, finding from research in Nigeria showed that women who were empowered in the economic, social, and political dimensions had improved reproductive health outcomes; empowered women had fewer children and used different methods of reproductive health (Kritz et al., 2000).

Women with secondary and higher education were found to wanting more children within and after two years as compared to women with no education. This study result is inconsistent with a study conducted on Female education is one of the ways of increasing the age of marriage and thereby, reduces fertility. When females are well-educated, they will not only serve the purpose of bearing and bringing up children alone, but also know their rights and have definite plans for their lives (Stephen S. Ojo, 2014).

In addition, Women with higher educational level tend to have fewer children, those who completed primary, secondary school or higher education gave birth to significantly lower number of children, compared to no education (Chengxin Cao, 2006).

The results of this study was found that women who were from Afar and Somali regions desire for more children for both categories namely wants within two years and wants after two years relative to Tigray region of the country. This result was in line with a study conducted in Nigeria there was differentials in fertility behavior among southern and northern women. On the one hand, women in north-eastern and north-western zones of the country had higher fertility compared with their southern counterparts (Bola Lukman Solanke, 2015).

Women who were from Muslim religion were found to desire for more children in both categories, wants within two years and wants after two years. This result is in line with a study conducted in rural Ethiopia (susuman et al., 2014).

Women having more than four children were found to less likely desire for more children as compared to women with four or less children.

Moreover, women living in urban areas were also found to desire for no more children as compared to women living in rural areas. The results of this study is inconsistent with a study conducted in Eretria (Gebremariam,2007).

CHAPTER FIVE

CONCLUSION AND RECOMMENDATION

5.1. Conclusion

This paper tries to examine whether or not women's empowerment has association with the utilization of modern contraceptive and desire for more children. The binary and multinomial logistic regression is used to achieve this objective. According to EDHS 2016 data, an indicator of women's empowerment is created using the latent class analysis using STATA version15.

The main conclusion is that the bivariate and binary logistic regression estimates show that women's full empowerment and utilization of modern contraceptive have association. Additionally, women's full empowerment has a significant and positive impact on use of modern contraceptive. However, the multinomial logistic regression estimates indicated that women with freedom of mobility and desire for more children had association. This result confirms that women's empowerment is crucial to improve maternal health care in the country.

The results show that some socio-demographic factors such as place of residence, desire for more children, women's education, husband's education, women's work status and wealth index have significant and positive impact on the use of modern contraceptive and only women's education and their religions have a significant and positive impact on the desire for more children.

5.2. Recommendation

Based on the findings of both descriptive and multivariate analysis of modern contraceptive use and desire for more children, the following recommendations can be forwarded:

- More governmental efforts should be made to target poor and less educated women to increase their awareness of the risks they might be exposed in order to encourage them to utilize modern contraceptives.
- Collecting information about how women who had modern contraceptive were satisfied with the services offered to them and the problems they face during utilization of modern contraceptive to have the ability to solve these problems.
- More researches should be done using more accurate measures and all dimension of women's empowerment, on the association between women's empowerment and their reproductive behavior are required to draw more appropriate findings.

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Appendix

Table9. Result of multiollinearity test (Correlation among explanatory variables).

	Coefficients						
Model	Unstandardized Coefficients		Standardized Coefficients	t	sig	Collinearity Statistics	
	B	Std.Error	Beta			Tolerance	VIF
Age in 5-year groups	.328	.045		7.252	.000		
Region	-.041	.004	-.138	-10.481	.000	.581	1.720
Type of place of residence	7.426E-05	.002	.000	.030	.976	.921	1.085
Religion	-.020	.017	-.015	-1.174	.241	.582	1.719
Wealth index combined	-.003	.001	-.043	-4.267	.000	.982	1.018
Respondent currently working	.056	.004	.162	12.771	.000	.632	1.583
recode number of children	.051	.011	.048	4.608	.000	.925	1.082
recode husband edu.att	-.085	.013	-.083	-6.508	.000	.620	1.613
recode respondent education attain	.002	.008	.004	.318	.751	.533	1.877
Desire for more children	.015	.009	.025	1.716	.086	.488	2.049