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A RESEARCH PAPER ON: DETERMINANTS OF FAMILY PLANNING PRACTICE IN WOLKITE TOWN

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ABSTRACT

In Ethiopia the problem of population growth and productive health challenges include high maternal mortality; high population growth rate and total fertility rate are most problems in Ethiopian family planning.

The aim of the study was to identify the variables that mainly determine family planning practice and to describe the impacts of the**:** Age of respondents, Women's education level, Number of children, Religion of respondents, Source of information about a FP method, Type of contraceptive method used for FP method, Knowledge of couples on a FP methods, Economic status of household, Residence of respondents, Husband approves FP (HusApprov), Occupation of a woman and Occupation of a man (husband).

The data collection method used to collect data was primary data collection method. And the two methods of analyzing data; descriptive and inferences about data were comprised in this study. Some tests inference were made to determined whether the independent variable have relation or not. Furthermore the chi-square tests were important to test the association of those variables.

Finding of this study have shown that, age grouped (15-19), couples who get information from family guidance, type of contraceptive (condom), Husbands who approve on Fp method, couples who has knowledge about FP and type of contraceptive in the binary logistic regression significantly affect the family planning practice. The analysis showed that there is a difference in the status of couples on FP practice that depend on place of residence that who live in the urban and rural parts of the town.

Key words: Family planning, couples practice, binary logistic regression model.

Acronyms

CSA…… Central statistical agency

DF ……..… Degree of freedom

DHS…….……. Demography and health survey

ETR……..Ethiopian trend report

FP……. Family planning

IUCD…… Intrauterine contraceptive device

PPFA……The work of Planned Parenthood Federation of America

SRS ……Simple random sampling

TFR.....Total fertility rate

WHO…….World health organization

UN ……. United nation

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CHAPTER ONE

INTRODUCTION

1.1. BACKGROUND OF THE STUDY

The continuing growth of the world population has become an urgent global problem. Most of this growth is occurring in developing countries where the fertility rate is very high (Bandura 2002; Merrick 2002; Potts 2000; Ross & Winfrey 2002; WHO 2005). Ethiopia, like most Countries in sub-Saharan Africa, is characterized by high fertility and rapid population growth. It stands second rank of high population after Nigeria in this respect (Fitaw et al. 2003). Total fertility rate (TFR) declined by one birth per woman (or about 15 percent) from 6.4 births in 1990 to 5.4 births in 2005, but that rate remains critically high in a country already burdened by severe poverty and Resource depletion. Under-five childhood mortality declined by about 25 percent, from 166 per1000 in2000 to123 in 2005. Maternal mortality declined by about 23 percent from 871 per 100,000 in 2000 to 673 in 2005(Mizanuret al., 2007). In most developing countries in general, and in sub-Saharan Africa in particular, the problem of population growth and reproductive health challenges include - high maternal mortality, high population growth rate, total fertility rate and much unmet need for family planning in the world.

The situation in Ethiopia is still much worse than most African countries (Ethiopia Trend Report (ETR; 2007)). The high population growth creates a hindrance to economic development of the country. Urbanization in the country is at a very low stage with 15 percent of the population residing in urban areas and the rest living in rural areas.

A substantial segment of the population is under poverty line. Family planning is the practice of a couple to prevent or avoid unwanted birth and control the spacing between child birth to help create a small and planned family. It is the best way to control the rapidly and massively growing population. So, family planning contributes to promote the health and welfare of the family and thus contribute effectively to the social development of a country. The health of mothers is not only affected by nutrition status but also by early marriage, frequent pregnancies, early motherhood, abortion etc. Moreover, the health of a child is also affected by the mother's health status.

Family planning is essential to the well-being of women, men, adolescents, and the community at large. It offers women opportunities to plan and space pregnancies in order to achieve personal goals and self-sufficiency. The controversy over abortion has influenced family planning programs and also had implications for women's health. To appreciate how the controversy has affected family programs, some background on the relationship between family planning programs and abortion is useful. From the earliest days of family planning programs, prevention of abortion to reduce related maternal mortality and morbidity has been an important part of the health rationale for promoting contraception (Seltzer J., 1998).

Abortion is illegal in Ethiopia; studies indicate that abortion is widespread and generally performed by untrained persons. The work of Planned Parenthood Federation of America (PPFA) in Ethiopia focuses on reducing maternal death and disability by preventing unintended pregnancies and increasing the availability of affordable, safe abortion services (MOH, 1996).

According to Planned Parenthood, Ethiopia has among the highest fertility and maternal death rates in the world. Approximately 1out of every10 women die from pregnancy or abortion related complications. Ministry of Health (MOH, 1996) of Ethiopia provides family planning services to 8.5 million women across the country during the next years. If the program fully implemented, the plan will definitely have a positive ripple effect across the Ethiopian society.

Although family planning tools are available in Ethiopia, access to them has been a major hindrance for the majority of the women. Planned Parenthood states that only 13% of Ethiopian women and only 4% in rural areas use modern contraception. This is despite the fact that, as studies show, approximately 60% of the women in the country approves family planning (CSA, 2016).

Undoubtedly, improved access to family planning and other reproductive health services in the country could significantly combat the incidence of maternal mortality and improve the state of women. Comprehensive, high-quality sexual reproductive services can help to prevent the unnecessary deaths of women in the country. "Traditionally, women in Ethiopia have been consigned to strict societal roles, based on cooking, raising children, and a muted voice in decisions affecting them," says World Bank (2001). Family planning costs are often treated as a minor issue in parents' decision making.

In the developing world, 137 million women who do not want to get pregnant are not practicing contraception. The key cause of this unmet need for contraception is that contraception is often quite costly to individuals in terms of commodities (pills, condoms, IUDs, etc.), transportation, and provider fees for contraceptives and health care services, even when subsidies are provided by the government. While unmet need in turn responsible for most of the 76 million unplanned pregnancies that occur each year. About half of these pregnancies end in abortion and the other half end in births; both contribute unnecessarily to health risks for mothers and children, to the cost of raising families and to the adverse impact of population growth (Bongaart et al., 2009).

United nation (UN) trend report of contraceptive use showed that worldwide in 2015, 12% of married women are estimated to have had an unmet need for family planning. This shows at least one in ten married women in most region of the world has an unmet need for family planning. The aim of this study is to identify factors that affect the couples in using the modern family planning methods in wolkite town.

1.2. Statement of problem

Many demographers and scholars believe and recommend the need to conduct in-depth studies on the various aspects of family planning (FP) practice of couple s in different demographic, economic and socio-cultural settings in developing countries. This study attempts to explore the major socio-economic, demographic, cultural and environmental factors that affect awareness and practice of women and men about family planning in Ethiopia.

A major debate in the recent literature is that a major justification for the less than ideal family planning performance in sub-Saharan Africa is the neglect of men in that endeavor. Almaz Terefe and Larsen (1993) have shown that modern contraceptive use improved significantly when husbands were involved in family planning interventions in Ethiopia. In fact, in many cultures men often have more power than women in decision making with regard to use of contraceptive and the number of children that the couple will have (McCauley et al., 1994).

Husband's approval of family planning is an influential factor to women's contraceptive use behavior. Many women do not use contraceptive since their husbands disapprove of using contraception. In seven sub-Saharan countries, contraceptive use among women whose husbands disapprove of family planning averaged only one third as much as among women whose husbands approve of it (Robey et al., 1996).

Recently family planning programs and providers are seeing that involving men in addition to women in family planning results in an improved program effectiveness. The 1994 International Conference on Population and Development also encouraged family planning programs and providers to consider both men and women jointly. This new interest in men is in consideration that although most reproductive health burden is born by the women, the majority of the decisions that affect both women and men reproductive health are made by men or by men and women jointly. And also if men are involved they may be a potential partner in and advocates for good reproductive health rather than bystanders, barriers, or adversaries. According to the guidelines for family planning services in Ethiopia, family planning is a means of promoting the health of women and families. Accordingly, all individuals male or female who can conceive or cause conception regardless of age or marital status are eligible for family planning services in the country. Also this study shares the idea and the main reason behind the need to study the socio-economic, demographic and cultural determinants of couples to practice family planning methods. So far, there are very few studies conducted on the practice of men and women jointly about family planning methods in Ethiopia particularly on the effects of economic, demographic and socio-cultural factors. Similarly, there is no any research have been done before a time in a wolkite town on the title of family planning.

Generally, there is still a need to educate and motivate couple and improve family planning services to achieve more effective and appropriate use of contraceptives and to arrest the trend towards increase in population. Also being a lack of family planning practice in a household leads the society to many factors in society. These are**:** maternal death, population growth,

economical factors and others. Therefore, the aim of this study was to identify these above potential determinants of FP practice within wolkite town.

Therefore with filling this gap, the study answered the following research questions;-

- What are the factors that affect using family planning practice?
- Which factors have more impact on FP?

1.3. Objective

1.3.1 General objective

The general objective of this study is to examine factors that influence practice of various available family planning methods by married household (women) in wolkite town.

1.3.2. Specific objective

1. To identify the major significant factors that affects practice of FP?
2. To compare the differences among factor levels and practice of FP?
3. To check the association between factors and practice of FP?

1.4. Significance of the study

The result of this study might serve as input for community, Health managers, FP program coordinators and managers at all levels, FP researchers, monitors and evaluators, policy makers, NGOs, private sectors, healthy extension and other relevant stakeholders about factors affecting family planning practice.

1.5. Scope of the study

This study is concerned with the determinants of family planning practice in Wolkite town. We have analyzed the family planning practice to identify the factors affecting to use family planning and prevalence rate of family planning. The study would have tried to cover society use of family planning between ages 15 to 49 years would be taken as study population.

1.6. Limitation of the study

The data used here may have a number of limitations on the outcome of this study.

- ✓ Lack of internet service.
- ✓ Shortage of time.
- ✓ Limited literature on wolkite related to the subject.

CHAPTER TWO

LITERATURE REVIEW

2.1 OVER VIEW OF FAMILY PLANNING

This section of the research proposal will discuss the relevant works by scholars and health professionals on the subject matter. The widespread adoption of family planning represents one of the most dramatic changes of the 20th century. The growing use of contraception around the world has given couples the ability to choose the number and spacing of their children and has had tremendous life saving benefits. Yet despite these impressive gains, contraceptive use is still low and the need for contraception is high in some of the world's poorest and most populous places (Rhonda et al., 2009).

Family planning is defined as birth spacing, preventing unwanted pregnancies or secure wanted pregnancy (WHO, 1995). Family planning is adopted voluntarily through the practice of contraception or other methods of birth control on the basis of knowledge, attitude and responsible decision by individuals and couples, in order to promote the health welfare of the family and contribute to the social and economic development of the country.

Comparative studies conducted in DHS-surveyed countries during 1986-1989 have shown that despite the relatively high fertility rate in Africa, women's feeling about desired future fertility indicate that in several countries a decline in fertility could possibly happen.

Indeed, in some African countries (e.g. Kenya, Mali, Togo and Uganda) the projected declines equal or exceed those in lower fertility areas in which family planning services and information are already much better established, such as in North Africa and Latin America (Sinding,1994). Shane (1997) and Bandarage (1997) have pointed out that the majority of people in developing countries are reluctant to use modern contraceptives even when they have a widespread knowledge to the benefits obtainable from family planning due to many social, economic, and cultural reasons. This indicates that couples in developing countries are unable to regulate fertility because of various social, economic, cultural, psychological and demographic reasons. Thus, at present development programs that focus on women empowerment as a poverty reduction strategy are accepted as a quick fix solution of population growth and economic development United Nations Fund for Population Activities(UNFPA, 1999).

In most countries surveyed by the Demographic and Health Surveys (DHS), between 20% and 30% of all married women of reproductive age have an unmet need for family planning. Outside sub-Saharan Africa, most women with an unmet need do not want to have any more children. In sub-Saharan countries surveyed, most unmet need is for spacing births. Most couples want to plan their families, when they have the opportunity to do so. Women everywhere want to avoid unintended pregnancies. Young and unmarried people want to avoid the consequences of unprotected sexual relations, both pregnancy and sexually transmitted diseases (Rhonda et al,)

2.2. Situation of family planning in the world and Ethiopia.

The era of modern contraception began in the 1960s, when both the birth control pill and intrauterine contraceptive device (IUCD) became available. These effective and convenient contraceptive methods resulted in widespread changes in birth, fertility and demography in the United States. Since 1972, the average family size of United States had leveled off at approximately two children, with increasing safety, efficacy, diversity, accessibility and use of contraceptive methods (Forrest, 1994).

China established a one child policy in 1979 in ordinate keep the total population at fewer plan 1.2 billion by 2002. But the Chinese population in mid-2007 is estimated at 1.44 billion (population reference bureau, 2007). Despite an official national policy stating that family planning program is voluntary, not compulsory and that people are persuaded but not forced to practice birth control, was instituted in china. Couples and little choice about whether they practiced birth control, how many children they would have, and the time of births. Family planning contact's that include a one child pledge were required of couples. Births were either approved as part the local government's birth plan or they were for bidden and outside the official birth plan. A practice of requiring use of specific contraceptive methods was also instituted in which women with one child had to use an IUCD couples with two children had to have one partner sterilized, and those with unauthorized pregnancies had to undergo abortion.

Family planning was rarely considered a personal matter. China in the prime example of a program driven to achieve collective welfare by reducing population growth, but which sacrificed individual rights and welfare through an essentially involuntary program. While the one child policy was not uniformly implemented in all areas of china particulars exceptions pertain to rural areas and ethnic minorities it was never the less the driving force of the family planning program (Gamy, A. (27-9-2000)). Between 1990 and 1994, the global average contraceptive use by married women of reproductive age, that is ages from 15 to 49, rose from 57% to 60% (Hamilton, 1997).The introduction of combined oral contraceptive pill also brought about the sexual revolution in the West, where it was possible for sex without any fear of pregnancy.

Unwanted side effects, in convenience of the chosen method and media scores about safely of

modern contraceptive are some of the issues that limit their acceptability. Poor contraceptive use if farther compounded by ignorance among users and likely to be so in the future.

Giving women reproductive autonomy through comprehensive and up-to date information about all methods is vital for successful and long term use of contraception. (Kubbaketal, 2000).

In Ethiopia, family planning was initiated in 1960's. And Ethiopia has 115 million total populations and is second rounded from African counties next to Nigeria. So Ethiopia is at a high-fertility rate. Over **78.8** percent of Ethiopian women reside in rural areas and where households are engaged primarily in subsistence agriculture. (CSA, 2016). According to the 2000-2016 DHS, Ethiopian woman will give birth on average to 4.3 children. Fertility in rural areas is even greater which is 5.9 and it is nearly twice as high as in urban areas with 3.3. However even after such a long period of time the level of family planning in Ethiopia is among the lower in Africa with contraceptive prevalence rate (CPR) 29% and unmet need for family planning in very high 22%, for spacing 13% and 9% for limiting(CSA,2016).

According to the data taken from Gurage zone economic plan bureau, the total population of Wolkite town of 2020 is 83954. From this the 25.6 percent of the given population is couples. And Ethiopia has increasing family planning service coverage by providing various contraceptive methods at household.

However, several factors had been incremented for the lower coverage of family planning services. The reasons include desire to have more children, lack of knowledge about contraceptive use and where to find contraceptive, health concerns, religious prohibition, husband opposition and low involvement of men.

Generally the objective of this research will be to improve and brought a modern way of using FP practice to society. The importance of this research will be to build the culture of households FP practice in wolkite town and to start to live a better life.

CHAPTER THREE

METHODOLOGY

3.1. Study Area

This study is conducted in wolkite town which is located in SNNPRS of Ethiopia and which is capital of Gurage zone and is located 158KM far from Addis Ababa the capital of Ethiopia.

3.2 Method of data collection

There are two types of data collection methods these are primary and secondary data collection. In this research we have used primary data collection method. Hence the data will collected by distributing questionnaires and interviewing the respondents.

3.3. Study population

The target population for this study was those households aged 15-49 years old and who live in Wolkite town. The total number of household who live in wolkite town are 21496, among these we have selected sample of households by simple random sampling (SRS).

3.4. Study design

In this study design we have used cross sectional study

3.5. Description of sampling techniques

There are two types of sampling techniques which are simple random sampling with and without replacement sampling techniques. Simple random sampling (SRS) is the most basic probability sampling techniques in which every individual's unit (member) of the population has an equal probability of being included in the sample (Cochran, 1977). In this study we have used simple random sampling without replacement sampling techniques.

3.6. Sample size determination

To determine the sample size, most researchers use the 95% CI, level of precision for sampling errors 5% and if the population have not previous estimates (we take *p=0.5&q=0.5*) for population of size N. But in this study we used 6% of sampling errors in order to minimize the cost; by maximizing error terms and minimizing sample size (Willimm. G, 1909).

The formula to get the sample size is given by: $\mathbf{n} = \frac{\mathbf{n_0}}{\mathbf{1+\frac{n_0}{N}}}$ and $\mathbf{n_0} = \frac{\mathbf{Z^2}_{\alpha_2}\mathbf{pq}}{\mathbf{d^2}}$… (Cochran, 1997).

Where: $n_{o=}$ sample size

d = margin of error which would be occurred when we estimate.

We have used the maximum probability of success (has experience of FP method) (p =0.5) and probability of failure (no experience of FP method) (q = 0.5)

(In here we have used p=q=0.5 in case of no previous research in related title can done in wolkite town.)

Zα/2=1.96, α =0.05 or 5%

p =0.5 or 50%, q =0.5 or 50% and d =6% or 0.06

Total number of populations (N) = 21496

$$\boldsymbol{n_0} = (\boldsymbol{Z}_{\frac{\alpha}{2}})^2 \frac{\boldsymbol{pq}}{\boldsymbol{d^2}} = \frac{(\mathbf{1.96})\mathbf{2}(\mathbf{0.5})(\mathbf{0.5})}{(\mathbf{0.06})\mathbf{2}} = \mathbf{267}$$

$$\frac{\boldsymbol{n_o}}{\boldsymbol{N}} = \frac{\mathbf{267}}{\mathbf{214\ 96}} < 5\%$$

Since our population are very large we get the sample size by taking initial sample size; i .e **n=n$_o$.**

Then **n = 267**(our sample size)

3.7. Description of variables

The variables in this study are dependent and independent variable.

3.7.1. Dependent variable

The response variable of this study is status of couples about family planning methods practice. The response variable for the ith couple is represented by a random variable Y_i with two possible values coded by 1 and 0. In view of this, the response variable of the ith couple Y_i was measured as a dichotomous variable.

Variable	Representation of variable	Factor categories
Status of a couples about FP method (Practice)	Y	0= Do not practice a FP method 1= Practice a FP method

3.7.2. Independent variable

The independent variables are described in the following table by their category.

TABLE 3.1. Categorical variable coding for independent variables

Variables	category
Age of respondents	0=15-19, 1=20-24, 2=25-34, 3=35-49
Women's education level	0= illiterate, 1= primary/high school, 2=collage
Number of children	0=no children, 1=1 or 2, 2=3 or more children
Religion of household	0=Orthodox, 1=protestant, 2=Muslim, 3=catholic, 4=others
Source of information about a FP method	0=health center, 1=family guidance, 2=school, 3=mass media
Type of contraceptive method used for FP method	0= injection, 1= condom, 2= calendar, 3= loop
Knowledge of couples on a FP methods	0= no, 1= yes
Economic status of household	0=Poor, 1=Medium, 3=higher
Residence of household	0=urban, 1=rural
Husband approves on FP (HusApprov)	0=no, 1=yes
Occupation of a woman	0=Not working, 1=Non-Agriculture, 2=Agric-employee
Occupation of a man(husband)	0=Non-agriculture, 1=Agric-employee

3.8. Methodology or Method of analysis

There are different basic methods of statistical data analysis, so a data is analyzed with reference to the purpose or objective of the study. The two statistical data analyses that we have used in this study was descriptive and inferential statistics.

3.8.1. Descriptive statistics:

Descriptive Statistics conducted for organization, summarization and presentation of data by describing the observations frequency and percent of variables in meaning full forms by using table, chart, etc. Frequency Distribution is a way of displaying of numbers in organized manner or tabular arrangement whereby the data is grouped in to different interval, and then the number of observation that belongs to each interval is determined. In this method of analyzing we will use the tabular description.

3.8.2. Inferential statistics

Inferential statistics is one used to making conclusion about population based on data obtained from a limit number of observation from population. It consists of estimation and hypothesis testing. To make decision we use p-value approach. The smallest p-value than level of significance is at which the null hypothesis is rejected. Inferential statistics, in order to meet the objective set up on this study chi-square test of independence and binary logistic regression model are employed in inferential statistics.

3.8.2.1. Chi-square test of independence

The chi-square test for independency is used when we have two descriptive variables are associated. It is a measure of the difference between the observed and expected counts. The objective of chi-square test of independency is to test whether there is association between two categorical variables.

H_0: There is no association between dependent and independent variables Vs

H_1: There is association between dependent and independent variables.

The appropriate test statistics is given by Chi-square distribution is with (C-1) (R-1) degree of freedom. Where, C=total number of column,

$$\chi^2 = \sum\sum \frac{(O_{ij} - E_{ij})^2}{E_{ij}} \sim \chi^2_{\alpha}((R-1)(C-1))$$

R=total number of row.

Where X^2_{cal} is the value of random variable whose sampling distribution approximately very close to the chi-square distribution with (R-1) (C-1) degree of freedom

O_{ij}- observed frequency of i^{th} row and j^{th} column.

E_{ij}- expected frequency of i^{th} row and j^{th} column.

Decisions: - if x2Cal>x^2tab then reject Ho. And If x^2Cal<x^2_{tab} then fail to reject Ho. That is when p-value greater than the significance level, Ho is not rejected.

Conclusion: based on the decision**.**

The Assumption of Chi-square Test of independency was:

- ✓ The observation must be independent of each other.
- ✓ The sample must be randomly selected from the population.
- ✓ The population must be normally distributed to the study.
- ✓ The expected frequency of each category must be at least 5.
- ✓ It is always positively skewed.
- ✓ This distribution can be use for tests concerning frequency distribution, to test independency of two categorical variables and to test the homogeneity proportions.

3.9. Logistic Regression

One of the statistical techniques for this study was regression is a variation of ordinary regression which is used when the dependent (response) variable is dichotomous variable (occurrence and non- occurrence, or success or failure, or satisfy or not satisfy of some outcome events usually coded as 0 or 1) and the independent (input) variables are continuous, categorical or both. The binary logistic regression model is defined for p-explanatory variables (i.e.X1, X2…..X_p) is given by

$$\mathbf{\Pi(x)} = \frac{e^{\beta o+\beta 1x1+\beta 2x2+\beta 3x3+\cdots\beta kxk}}{1+e^{\beta o+\beta 1x1+\beta 2x2+\beta 3x3\ldots\beta kxk}}$$

Where, β_0 = the constant of the equation

β_i = the coefficient of the $_i^{th}$ predictor

An alternative form of the logistic regression equation is;

Π is probability of satisfied and 1-Π probability of not satisfied

$$logit[\pi(x)] = log\left[\frac{\pi(x)}{1-\pi(x)}\right] = \beta o + \beta 1X1 + \beta 2X2 + \ldots + \beta kXk$$

Logistic regression also produces odds ratio (O.R) associated with each predictor values of a variable. The odds of an event are defined as the probability of an outcome event occur divide by

the probability of the event not occurring. In general the odds ratio is one set of odds divide by another.

3.9.1. Binary Logistic Regression

Binary logistic regression is the form of regression which is used when the dependent variable is dichotomous and the independent variables are of any type (continuous or categorical).It can be used to predict a dependent variable on the basis of continuous and (categorical independent variables) and to determine the percent of variance in the dependent variable explained by the independents to rank the relative importance of independent variables; to assess the interaction effect and to understand the impact of covariate control variables. But in logistic regression our objective is to find the probability of something happening (probability of success).

Model:-$logit[\pi(x)] = log\left[\frac{\pi(x)}{1-\pi(x)}\right] = \beta o + \beta 1X1 + \beta 2X2 \ldots\ldots + \beta kXk$

Where: π-the probability of satisfied 1-π-theprobabilityofnot satisfied

β_o –is constant term

Xi-independent (explanatory) variables

β_i- Coefficients of independent variables

Assumptions of binary Logistic Regression

- Normally distributed error terms are not assumed.
- Logistic regression does not assume a linear relationship between the dependent and the independent variables.
- The dependent variable must be categorical.
- Linearity in the logit regression equation should have a linear relationship with the logit form of be the dependent variable.
- The dependent variables need not be homoscedasticity for each level of independent variables; that is there is no homogeneity of variance assumption

3.10. Model Building Using Logistic Regression

Variable Selection

The are several computational techniques for generating subset regression models and illustrate criteria for evaluating the model are all possible regression which requires that the analyst if all

regression equations involving one candidate regressor, two candidate regressor and so on. And the second is step wise-type procedures which consists forward selection, back ward elimination and step-wise regressor. In this study we use back ward step –wise regression.

Step-wise Regression

Step-wise regression is a modification of forward selection in which at each step all regressor entered in to the model are reassessed. And also it is a combination of forward selection and backward elimination procedure. It has advantage in terms of the number of subset models check before each subset size is decided.

The criteria for a variable in the model may vary one problem to other and from one scientific discipline to another. The rational for minimizing the number of the variables in the model is that result model is more likely to be numerically stable and more easily generalized. The more variables included in the model, the greater estimated standard errors become and the dependent variable model becomes an observed data.

There are several steps one can follow to aid in the selection variables of logistic regression.

The selection procedure should begin with care full an available analysis of each variable. For nominal, ordinal and continuous variables with few integer values, we suggest this contiguous table. Upon completion of unavailable analysis, we assume selected variables for multivariate analysis. Once the variable has been identified, we begin with a model, containing the entire selected variables.

3.10.1. Odds Ratio

Logistic regressions work with odds so it is necessary to define both odds and odds ratio. The odds are simply the ratio of the probabilities for the two possible outcomes. If p is the probability that the event will occur, then 1 –p is the probability that the event will not occur: odds=$\frac{p}{1-p}$in 2× 2 tables, within row 1 the odds of success are odds1=$\frac{p_1}{1-p_1}$and within row 2 the odds of success equal odds2=$\frac{p_2}{1-p_2}$.The ratio of the odds from the two rows $pi = \frac{odds1}{odds2}$ is called odds ratio. Whereas the relative risk is a ratio of two probabilities, the odds ratio p_i is a ratio of two odds. Interpretation of odds ratio are this$e^{\beta j}$ is the factor by which the odds changes when the jth

independent variable increase by one unit, if β_j is positive then the odds increase and if β_j is negative, the odds decrease.

Note: When a logistic regression is calculated, the regression coefficient (b1) is the estimated increase in the log odds of the outcome per unit increase in the value of the exposure. In other words, the exponential function of the regression coefficient (e^{b1}) is the odds ratio associated with a one-unit increase in the exposure.

When is it used?

Odds ratios are used to compare the relative odds of the occurrence of the outcome of interest. The odds ratio can also be used to determine whether a particular exposure is a risk factor for a particular outcome, and to compare the magnitude of various risk factors for that outcome.

- OR=1 Exposure does not affect odds of outcome
- OR>1 Exposure associated with higher odds of outcome
- OR<1 Exposure associated with lower odds of outcome

3.10.2. Parameter Estimation

The maximum likelihood and non-iterative weighted least square the two meet computing. Estimation methods used in fitting logistic regression model (Hosmer Lemeshow, 2001) When the assumption of normality of the predictors does not hold, the non- iterative weighted least square method is less efficient. In contrast the maximum likelihood estimation method is appropriate for estimating the logistic model parameters due to this less restrictive nature of underlying assumption (Hosmer Lemeshow, 1989) hence in this study the maximum likelihood estimation technique will be applied to estimate parameters of the model consider the logistic model.

- For estimation of coefficient in logistic we will use (MLE) maximum Likelihood estimation.
- $L(\beta) = \prod_{i=1}^{n} p(x)^{y}(1 - p(x))^{1-y}$
- Where $p(x)^{y}$=probability of success for the different value of x.
- y-is the response variable.

- To estimate the parameter we differentiate the likelihood function with respect to each parameters and equation to zero as follows.
- For constant we find $\frac{\partial L(\beta)}{\partial(\beta o)}$ =0 and
- For the slopes we find the partial derivative of the likelihood function with respect to the parameters and equal to zero $\frac{\partial L(\beta)}{\partial(\beta j)}$=0.

3.10.3. The Wald test statistic

The Wald test is a way of testing the significance of particular explanatory variables in a statistical model. In logistic regression we have a binary outcome variable and one or more explanatory variables. For each explanatory variable in the model there were associated parameters. If for a particular explanatory variable, or group of explanatory variables, the Wald test is significant, then we were conclude that the parameters associated with these variables are not zero, so that the variables should be included in the model. If the Wald test is not significant then the explanatory variables can be omitted from the model.

To test statistically significance of each coefficient β in the model.

- $Z= \frac{\beta}{Se(\beta)}$ Where β= coefficient of regression.
- Se(β)= standard error of the coefficient, Z= normal distribution.
- This z value is squared yielding Wald statistics with a chi-square distribution of 95% CI

3.10.4. Goodness Test of the Model

A **goodness-of-fit test,** in general, refers to measuring how well do the observed data correspond to the fitted (assumed) model. We were using this concept throughout the course as a way of checking the model fit. Like in a linear regression, in essence, the goodness-of-fit test compares the observed values to the expected (fitted or predicted) values. A goodness-of-fit statistic tests the following hypothesis:

H_0: the model M_0 fits

H_A: the model M_0 does not fit (or, some other model M_A fits)

Most often the observed data represent the fit of the saturated model, the most complex model possible with the given data. Thus, most often the alternative hypothesis (H_A) was represent the saturated model M_A which fits perfectly because each observation has a separate parameter. The goodness of fit or calibration of a model measures how well the π model describes (explains) the dependent variable. Assessing the goodness of fit involves examining how close values predicted by the model with that of the observed value. After fitting the logistic regression model, there are several techniques used in examining the goodness, adequacy and usefulness of the model.

R^2Statistic

The Cox and Snell measure is based on log-likelihood and considers sample size. The maximum value that the Cox & Snell R^2 attains is less than 1. The Nagelkerke R^2 is an adjusted version of the Cox & Snell R^2 and covers the full range from 0 to 1. The Cox & Snell R^2 is given by:

$$R^2_{CS}=1-\left(\frac{L(\beta^{(0)})}{L(\hat{\beta})}\right)^{2/n} \quad \text{.....(3.12}$$

The Nagelkerke measure is as follows:

$R^2_N = \frac{R^2_{CS}}{1-(L(\beta^{(0)}))^{2/n}}$, Where, $L(\beta^{(0)})$ is the log likelihood function for model without explanatory variables and $L(\hat{\beta})$ is the log likelihood function for model with estimated parameters.

3.10.5. The Hosmer - Lemeshow Test

The final measure of model fit is the Hosmer-Lemeshow goodness of fit statics, which measure the correspondence between the actual and the predicted value of the dependent variables. The Homers -Lemeshow test is commonly used test for assessing the goodness of fit model and allows for any number of explanatory variables, which may be continuous or categorical. In this case better model fit is indicated by smaller difference in observed and predicted statistic. The logistic model of Hosmer-Lemeshow Statistic (G^2_{HL}) is given by:

$G^2_{HL}=\Sigma \{\frac{(Oj-Ej)2}{Ej(1-Ej/nj)}\} \sim X2(g-2)$

Where, n_j = Number of observations in the j^{th}

CHAPTER FOUR

4. DATA ANALYSIS AND DISCUSSION

4.1 Descriptive statistics

In this paper, we were going to analyze factor that may affect experience of FP practice in wolkite town. The data used in this study for the analysis were obtained by distributing a questionnaires and making an interview to the couples in wolkite town. The dependent variable is a dichotomous variable no experience of FP practice (coded as 0) and experience of FP practice (coded as 1).

Descriptive statistics and binary logistic regression methods were used to measure the effects of family planning practice in wolkite town. The descriptive part provides percentages of family planning practice in wolkite town. The binary logistic regression analysis was used to identify factors that have effect on FP practice and the data are analyzed by using SPSS.

Table 4.1. Summary of descriptive statistics of FP method

Variables	Categories	Experience of family planning					
		No		Yes		Total	
		count	percent	count	percent	count	percent
Age of women	15-19	15	5.6	16	6.0	31	11.6
	20-24	56	21.0	28	10.5	84	31.5
	25-34	29	10.9	48	18.0	77	28.8
	35-49	44	16.5	31	11.6	75	28.1
	total	144	53.9	123	46.1	267	100.0
	illiterate	71	26.6	38	14.2	109	40.8

Education level of mother	Primary and High school	44	16.5	42	15.7	86	32.2
	collage	29	10.9	23	8.0	72	27.0
	total	144	53.9	123	46.1	267	100.0
Number of children	no children	25	9.4	33	12.4	58	21.7
	1 or 2 children	71	26.6	41	15.4	112	41.9
	3 or more children	48	18.0	49	18.4	97	36.3
	total	144	53.9	123	46.1	267	100.0
Religious status of couples	Orthodox	73	27.3	36	13.5	109	40.8
	Protestant	36	13.5	37	13.9	73	27.3
	Muslim	27	10.1	28	10.5	55	20.6
	Catholic	7	2.6	19	7.1	26	9.7
	Other	1	0.4	3	1.1	4	1.5
	total	144	53.9	123	46.1	267	100.0
Source of information about FP method	Health center	40	15.0	51	19.1	91	34.1
	Family guidance	43	16.1	41	15.4	84	31.5
	School	36	13.5	18	6.7	54	20.2
	Mass media	25	9.4	13	4.9	38	14.2
	total	144	53.9	123	46.1	267	100.0

Contraceptive method used by mothers for FP method	Injection	42	15.7	21	7.9	63	23.6
	Condom	45	16.9	27	10.1	72	27.0
	Calendar	36	13.5	39	14.6	75	28.1
	Loop	21	7.9	36	13.5	57	21.3
	total	144	53.9	123	46.1	267	100.0
Knowledge of women on FP method	no	60	22.5	74	27.7	134	40.2
	yes	84	31.5	49	18.4	133	49.8
	Total	144	53.9	123	46.1	267	100.0
Economic status of couples	poor	73	27.3	43	16.1	116	43.4
	medium	27	10.1	40	15.0	67	25.1
	higher	44	16.5	40	15.0	84	31.5
	total	144	53.9	123	46.1	267	100.0
Residence of couples	rural	98	36.7	53	19.9	151	56.6
	urban	46	17.2	70	26.2	116	43.4
	total	144	53.9	123	46.1	267	100.0
Husbands approval on Fp method	No	63	23.6	79	29.6	142	53.2
	Yes	81	30.3	44	16.5	125	46.8
	Total	144	53.9	123	46.1	267	100.0
Current	Not working	45	16.9	63	23.6	108	40.4

occupation of women	Non agriculture	48	18.0	34	12.7	82	30.7
	Agriculture	51	19.1	26	9.7	77	28.8
	Total	144	53.9	123	46.1	267	100.0
Occupation of husband	Non agriculture	88	33.0	50	18.7	138	51.7
	agriculture	56	21.0	73	27.3	129	48.3
	total	144	53.9	123	46.1	267	100.0

The highest proportion of household who experienced in FP method was observed in the age group of 25-34 (18.0%). The individual household in the age group 35-49(11.6%) had the second highest proportion of experienced FP practice. Individual's household in the age group 20-24(10.5%) had the third proportion that experienced FP practice and the lowest percentage of household who experienced FP practice was observed in the age group15-19(6.0%).

And the next row shows that the proportion of FP practice also it is based on the standard of their past education level of mother who was attended in school. The proportion of household who had experience on FP practice was primary and secondary (high school) school is 15.7%. The percentage of household that experienced FP practice was observed in collage is (8.0%). And lastly 14.2% of the individuals household had that experienced FP practice were no education.

The proportion of household who experienced FP practice differed from one to another by their number of children. The greatest number of children's of household who experience FP practice is 3ormore children(18.4%).The proportion of household that experienced FP practice were 1 or 2 children(15.4%), and no children (12.4%) number of children succeeding level respectively.

The proportion of household who experienced FP practice differed from one to another by their religion the percentage of household that experience FP practice 13.9% are protestant and the rest orthodox, Muslim, catholic and other:13.5%, 10.5%, 7.1%, 1.1% respectively.

The highest proportion of household who experienced in FP method was observed in accordance of mothers (couples) gets information about FP method is from health centre (19.1%). Secondly mothers get information about FP method from Family guidance (15.4) %. In the rest**:** mother gets information about FP from school and mass media (6.7%, 4.9%) respectively.

The proportion of household who experienced FP practice differed from one to another in Contraceptive method used by mothers for FP practice. A mother who use calendar has a higher proportion (14.6%) and a proportion of mother who use loop (13.5) ranked secondly in accordance of contraceptive method using. The rest condom and injection (10.1%and 7.9%) are ranked third and fourth respectively.

The highest proportion of household who experienced in FP method was observed in accordance of mothers (couples) who don't have Knowledge about FP method is (27.7%). And who has knowledge is (18.4%).

The highest proportion of household who experienced in FP method was observed from economic status of FP method of mothers (couples) from poor level (16.1%) and the rest economic status of mothers in medium and higher has equal to 15.0%.

From Residence the highest proportion of household who experienced in FP method was a couple who live in urban parts wolkite town (26.2%). And proportion of couples who live in rural parts of wolkite town is (19.9%).

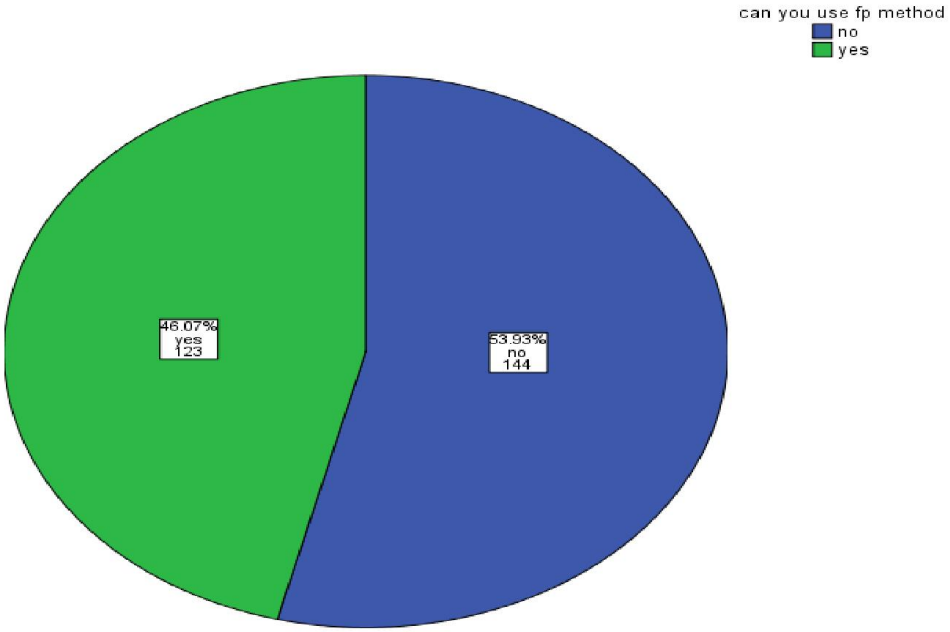
The highest proportion of household who experienced in FP method was observed in accordance of mother (couple) who's Husband can approves them to Fp method is (29.6%) and who can't approve them to FP method is (16.5%).

And the next row shows that the proportion of FP practice also it is based on the standard Current occupation of women and from this the highest proportion is (23.6%) and the lowest proportion is (9.7%).

And lastly the proportion of household who experienced FP practice is different in accordance of occupation of husband that the highest proportion is (27.3%) and the rest is (18.7%)

Figure4.1. graphical representation

Graphical representation for households who use family planning practice or not.



The above pie chart indicates about123 (46.07%) household (respondents) are active on family planning practice or they have knowledge in FP activity. While144 (53.93%) of the household (respondents) are not active on family planning practice or they have no knowledge in FP planning.

4.2.1. Inferential statistics

Inferential statistics is statistical method that deals with making inference or conclusion about the population based on data obtained from a limited number of observations that come from the population.

Table 4.2. Chi-square test of independence

Independent variable	X^2-Value	Degree freedom	P-Value(two-sided)
Age of couples	14.747	3	0.02

Education level of couples about FP	11.177	2	0.004
Number of children of couples	7.544	2	0.023
Religion of couples	17.587	4	0.001
Source of information about FP method	9.574	3	0.023
Contraceptive method used by couples	14.002	3	0.003
Knowledge of couples about FP	9.078	1	0.003
economic status of couples	8.875	2	0.012
Residence of couples	16.829	1	0.00
Husbands approval on FP method	11.172	1	0.001
Occupation of women	11.929	2	0.003
Occupation of men	11.121	1	0.001

Hypothesis test:

$H_{0:}$ there is no significant association between response and explanatory variables.

H_1: there is a significant association between response and explanatory variables.

From table 4.2.variables which had p-value of Pearson chi-square less than $\alpha=0.05$ was considered to have significant association with experience of FP methods, where as variables which had p-value of Pearson chi-square greater than a value of $\alpha=0.05$ had no significant association with experience of FP methods. Accordingly, Age of couples, Education level of couples about FP, Number of children of couples, Religion of couples, Source of information about FP method, Contraceptive method used by couples, Knowledge of couples about FP, economic status of couples, Residence of couples, Husbands approval on FP method, Occupation of women, Occupation of men had a significant association with experience of FP methods.

4.3. Analysis of Binary Logistic Regression

Logistic regression examines the relationship between one or more predictor variables and a binary response variable and hence the logistic regression equation can be used to examine how the probability of an event changes as the predictor variable changes.

Table 4.3. Dependent variable encoding

Original Value	Internal Value
no	0
yes	1

From the above table dependent variables show that experience of FP practice coded as: - 0=no and 1 = yes

Table 4.4. Omnibus test of model coefficients

Omnibus Tests of Model Coefficients				
		Chi-square	df	Sig.
Step 1	Step	130.393	25	.000
	Block	130.393	25	.000
	Model	130.393	25	.000

Ho: $\beta_j=0$ (the independent variables could not predict experience of FP method)

H1: at least one independent variable can predict experience of FP method.

From Table 4.4. We have added one new variable to the model, which has reduced the -2log likelihood by 130.393 with 25 degree of freedom. The p-value for the result of adding to the model is depicted in the table4.4. And we can see that this is 0.00 which is less than the α-level of significance (0.05).hence we would conclude that, the addition of some independent variable to the model is statistically significant. In other words, this variable does not explain variation in the experience of family planning.

Variables in the Equation							
		B	S.E.	Wald	df	Sig.	Exp(B)
Step 0	Constant	-.158	.123	1.648	1	.199	.854

From this table we can conclude when all the independent variables are zero, increases the odds of the family planning by 0.854.

Table 4.5.Result of Binary logistic regression

Estimates, Standard error, Wald, degree of freedom, P-value, estimated odds ratio.

Variables in the Equation									
		B	S.E.	Wald	df	Sig.	Exp(B)	95.0% C.I.for EXP(B)	
								Lower	Upper
Step 1[a]	age			19.925	3	.000			
	age(1)	1.150	.629	3.340	1	.068	3.159	.920	10.844
	age(2)	-.873	.487	3.216	1	.073	.418	.161	1.084
	age(3)	1.112	.461	5.812	1	.016	3.039	1.231	7.502
	w_edu_level			7.387	2	.025			
	w_edu_level(1)	-.743	.418	3.152	1	.076	.476	.210	1.080
	w_edu_level(2)	.401	.456	.775	1	.379	1.493	.611	3.646
	number_of_children			4.001	2	.135			
	number_of_children(1)	.307	.491	.390	1	.532	1.359	.519	3.556
	number_of_children(2)	-.574	.411	1.949	1	.163	.563	.252	1.261
	religion			17.388	4	.002			
	religion(1)	-2.350	1.307	3.233	1	.072	.095	.007	1.236
	religion(2)	-1.481	1.304	1.290	1	.256	.227	.018	2.929
	religion(3)	-1.098	1.325	.686	1	.407	.334	.025	4.477
	religion(4)	.057	1.418	.002	1	.968	1.059	.066	17.043
	source_of_information			10.131	3	.017			
	source_of_information(1)	1.412	.545	6.716	1	.010	4.104	1.411	11.937
	source_of_information(2)	1.194	.565	4.460	1	.035	3.299	1.090	9.986
	source_of_information(3)	.305	.605	.254	1	.614	1.357	.414	4.443
	tyeps_of_contraceptive_method			11.295	3	.010			

	tyeps_of_contraceptive_method(1)	-1.460	.522	7.809	1	.005	.232	.083	.647
	tyeps_of_contraceptive_method(2)	-1.563	.514	9.264	1	.002	.209	.077	.573
	tyeps_of_contraceptive_method(3)	-.900	.490	3.384	1	.066	.406	.156	1.061
	knouladge_about_fp(1)	.887	.343	6.692	1	.010	2.428	1.240	4.753
	economic_status			4.305	2	.116			
	economic_status(1)	-.207	.388	.286	1	.593	.813	.380	1.738
	economic_status(2)	.731	.468	2.441	1	.118	2.077	.830	5.196
	residence(1)	-.707	.361	3.845	1	.050	.493	.243	1.000
	hasbands_approval(1)	1.015	.354	8.225	1	.004	2.760	1.379	5.523
	occupation_of_women			11.464	2	.003			
	occupation_of_women(1)	1.301	.425	9.378	1	.002	3.672	1.597	8.444
	occupation_of_women(2)	.180	.433	.173	1	.678	1.197	.512	2.796
	occupation_of_hasband(1)	-.748	.342	4.795	1	.029	.473	.242	.924
	Constant	.706	1.611	.192	1	.661	2.025		

a. Variable(s) entered on step 1: age, w_edu_level, number_of_children, religion, source_of_information, tyeps_of_contraceptive_method, knouladge_about_fp, economic_status, residence, hasbands_approval, occupation_of_women, occupation_of_hasband.

Table4.5. contains the estimated coefficients (under the column heading β̂) and estimated values of the logistic regression model that predict experience of family planning. The standard error of the estimates (under the column heading S.E) will help in computing the Wald Statistics. The Wald statistic, which is the square of the ratio of the coefficient to its Standard error, has a chi-square distribution with one degree of freedom.

The significance of the Wald statistic (under the column labeled Sig) tells the importance of the predictor variable in the model. The column exp ($\beta\hat{}$), is the factor by which the odds of experience of family planning change when the i^{th} independent variable increases by one unit. If β_i is positive, exp (β_i) will be greater than one, which means the odds of experience of family planning method increases. If β_i is negative, exp ($\hat{\beta_i}$) will be less than one, which means the odds of experience of family planning method decreases.

The fitted model can be written as:-

Logit (π) = β_0+ β_1X_1+ β_2X_2 +.....+B_pX_p

Where: X_1, X_2…..X_P are the independent variable

β_1, β_2…β_P are coefficient of independent variable and

β_o is constant (intercept).

Logit (π) =.706+ 1.112X_1 + 1.412X_2- 1.563 X_3+0.887X_4+1.015X_5+1.301X_6-0.748X_7

Where βo=.706, X_1=the age of respondent X_2=the source_of_information about FP

X_3= tyeps_of_contraceptive_method X_4= knouladge_about_fp

X_5= hasbands_approval for FP $X_{6=}$ occupation_of_women

X_7= occupation_of_hasband

4.3.1 Interpretation for coefficients of significant variables

4.3.1.1Wald test

Since Wald test is used to test the statistical significance of individual coefficient (β) in the model and the test statistic is a chi-square statistic.

The hypothesis to be tested is:

To conclude that the given coefficient is significant to model based on the following:-

i. The chi-square (Wald) statistics must be greater than tabulated statistic($\chi^2_{0.05,1}$)

ii. P- Values of coefficients are less than the level of significance, α=0.05.

For β_1:- From the parameter estimation above; the chi-square statistics (Wald) =5.812 is greater than $\chi^2_{0.05,1} = 3.84$ the p-values for the β_1 is P=0.016is less than 0.05 level of significance. Thus based on this result we see that the coefficient of the age of respondent is significant to the model.

For β_2: From the parameter estimation above; the chi-square statistics (Wald) = 6.716 is greater than $\chi^2_{0.05,1} = 3.84$ the p-values for the β_2 is P=0.01 is less than 0.05 level of significance. Thus based on this result we see that the coefficient of the source_of_information about FP method is more significant to the model.

For β_3: From the parameter estimation above; the chi-square statistics (Wald) = 4.460 is greater than $\chi^2_{0.05,1} = 3.84$ the p-values for the β_3 is P=0.035 is less than 0.05 level of significance. Thus based on this result we see that the coefficient of source_of_information about FP method is less significant to the model.

For β_4: From the parameter estimation above; the chi-square statistics (Wald) = 9.264 is greater than $\chi^2_{0.05,1} = 3.84$ the p-values for the β_4 is p=0.002 is less than 0.05 level of significance. Thus based on this result we see that the coefficient of tyeps_of_contraceptive_method (2) used in FP is more significant to the model.

For β_5: From the parameter estimation above; the chi-square statistics (Wald) = 7.809 is greater than $\chi^2_{0.05,1} = 3.84$ the p-values for the β_5 is p=0.005 is less than 0.05 level of significance .Thus based on this result we see that the coefficient of tyeps_of_contraceptive_method (1) is less significant to the model

For β_6: From the parameter estimation above; the chi-square statistics (Wald) = 6.692 is greater than $\chi^2_{0.05,1} = 3.84$ the p-values for the β_6 is p=0.01 is less than 0.05 level of significance .Thus based on this result we see that the coefficient of knouladge_about_fp(1) is significant to the model

For β_7: From the parameter estimation above; the chi-square statistics (Wald) = 8.225 is greater than $\chi^2_{0.05,1} = 3.84$ the p-values for the β_5 is p=0.004 is less than 0.05 level of significance

.Thus based on this result we see that the coefficient of husbands approval on FP is significant to the model

For β_8: From the parameter estimation above; the chi-square statistics (Wald) = 9.378 is greater than $\chi^2_{0.05,1} = 3.84$ the p-values for the β_5 is p=0.002 is less than 0.05 level of significance .Thus based on this result we see that the coefficient of occupation_of_women (1) is less significant to the model.

For β_9: From the parameter estimation above; the chi-square statistics (Wald) = 4.795 is greater than $\chi^2_{0.05,1} = 3.84$ the p-values for the β_5 is p=0.029 is less than 0.05 level of significance .Thus based on this result we see that the coefficient of occupation_of_hasband (1) is significant to the model.

4.3.1.2. The Odds Ratio Interpretation:-

For variable age of respondent, we can interpret the odds ratio of Age obtained from the above table using the reference category is age grouped 15-19. Then household experiences of FP who is Age grouped 35-49) are 3.039 times more likely than that of followed age grouped 15-19 (the reference one) controlling for other variable in the model.

For variable source of information about FP, the reference category is health center. The estimated odds ratios of household experience of FP practice that who get information from family guidance are 4.104 times more likely than that of followed the reference one (health center).

The estimated odds ratio of household experience of FP practice that get information from school are 3.299 times more likely than that of followed the reference one (health center).

For variable types of contraceptive method, the reference category is injection. The estimated odds ratio of household experience of FP practice who condom are 0.232 times less likely than that of injection (the reference one) controlling for other variable in the model.

The estimated odds ratio of household experience of FP practice that use condom are 0.209 times less likely than that of who use the reference one (health center).

For variable knowledge on Fp method, the reference category is who don't have knowledge. The estimated odds ratio of household experience of FP practice who has knowledge about FP

method are 2.428 times more likely than that of a one who don't have knowledge (the reference one) controlling for other variable in the model.

For variable Husbands approval on Fp method, the reference category is a husband who don't approve to FP method. The estimated odds ratio of household experience of FP practice who has approved to FP method are 2.760 times more likely than that of a one who don't have approved (the reference one) controlling for other variable in the model.

For variable occupation of woman, the reference category is not working. The estimated odds ratio of household experience of FP practice who is a non agricultural employee are 3.672 times more likely than that of a one who don't have a work (the reference one).

For variable occupation of husband, the reference category is non agricultural employee. The estimated odds ratio of household experience of FP practice a one who is an agricultural employee is 0.473times less likely than that of a non agricultural employee (the reference one).

4.3. Model adequacy checking

After a logistic regression model has been fitted, a global test of goodness of fit of the resulting model should be performed. It is necessary to see the appropriateness, adequacy and usefulness of the fitted model. The most commonly used technique is the likely hood ratio test and the Hosmer-Lemeshow test.

4.3.1. Likelihood Ratio Test

Table4.6. Model Summary of Logistic Regression

Model Summary			
Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	238.095[a]	.386	.516
a. Estimation terminated at iteration number 5 because parameter estimates changed by less than .001.			

The Cox and Snell R^2 or Nagelkerke R^2 is analogous statistic in logistic regression to the coefficient of determination R^2 in linear regression. In this study Cox and Snell R^2 indicate that, about 38.6% of variable in the dependent experience family planning method is explained by the independent variable. Also Nagelkerke R^2 indicate that 51.6%.

4.3.2. Hosmer and Lemeshow Goodness of fit test

The Hosmer-Lemeshow test is performed by dividing the predicted probabilities into deciles groups based on percentile ranks and then computing a Pearson chi-square that compares the predicted to the observed frequencies.

Table 4.7. Hosmer and Lemeshow test of Logistic Regression

Hosmer and Lemeshow Test			
Step	Chi-square	df	Sig.
1	2.078	8	.979

Ho=the model is good fit

H1=the model is not a good fit

since the p-value (0.979) is greater than α=0.05 the statistical level of significance and it implies that fail to reject the null hypothesis (Ho). So we conclude that the model is a good fitted model.

4.4. Discussion:

This study is an attempt to identify some determinants of family planning practice in the wolkite town. Accordingly descriptive analysis, binary logistic regression techniques were used. And the results which are obtained are discussed as follows**:**

The total population (21496) of household (women) who live in wolkite town aged 15-49 was chosen for the study. From those we used the sample of 267 household's respondent for data collection. This study included twelve predictor variables that were categorized under socio economic, demographic, religious and proximate characteristics. The descriptive analysis of the study revealed that only 46.07 percent of the sample couples were practicing family planning methods and 53.93 percent did not practice family planning.

Among the factors that are affecting experience of FP was the predictor's**:** age grouped (15-19), couples who get information from family guidance, type of contraceptive (condom), Husbands approval on Fp method, couples knowledge about FP and type of contraceptive were found to have significance effect with experience of FP practice in wolkite town. The study carried out by (Nibret Alene in 2010 at AA university) on determinants of Family planning practice in Ethiopia. He studied in the same scope and he has found that the associated variables, that flowed in the same direction but he stated "occupation of women's" was firstly an important variable that significant associated with experience of Family planning.

Similarly Tiumay Tadesse (2014 in Axum University) also has examined the determinant of experience of Family planning practice in Axum town. Individual's women who resided housekeeping were more vulnerable than those whose occupation is non agricultural and agricultural employee. Since from their study they found that occupation of women combined are significantly determinant factor of experience of family planning practice. And also the finding of his study states that factors age was significantly associated with family planning practice of Axum town. Therefore there was a close consistence between our study and both Nibret Alene's and Tiumay Tadesse's study.

CHAPTER FIVE

5. CONCLUSIONS AND RECOMMENDATION

5.1 Conclusions

The study identified the following socio-economic, demographic and approximate variables as determinants of family planning practice of couples in wolkite town: husbands/partners approval of a method, exposure to mass media, educational level of women, husbands education level, number of living children, age of a woman, are the most important ones. The descriptive results show that more than 53.93% of the respondents (couples) in the study do not practice family planning practice. Educational level of women does have a strong positive and significant association with family planning practice status of couples. It is observed that couples with no education are less likely to practice a FP than those who have completed primary, secondary and higher levels. Educating individuals can significantly reduce the number of non users of family planning methods. Even though couples have information about FP methods practice but they do not practice it due to religion and socio culture influence of a woman and some other causes. Occupation of husband and husband/partner approved for FP practice do FP practice more consistent. So involvements of men have contributions for couples to practice modern family planning methods.

Couples who are exposed to information about FP from family guidance and schools have higher chance to practice FP methods than those who are exposed to family planning information from the media. A woman's whose occupation is Non-Agricultural employee has more chance to practice FP.

5.2. Recommendations

Based on the findings of the current study we forward the following recommendations:

- In order to ensure wider expansion of contraceptive usages, governmental and nongovernmental organization involved in family planning should organize discussion groups of couples on issues of family planning methods practice.
- Enhance information and communication activities regarding family planning services using mass media, family planning workers and health centers.
- Policy makers should consider the adoption of family planning services for couples who are living in rural parts of wolkite town.
- All concerned bodies should conduct similar research to solve problems related to family planning in all parts of the country so as to decrease the maternal mortality and infant mortality and contribute to lower population growth.

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APPENDEIX A

WOLKITE UNIVERSITY COLLAGE NATURAL AND COMPUTATIONAL SCIENCE

QUESTIONNAIRES

The aim of this questionnaire is to analyzing the of determinants of Family Planning practice in wolkite town. Dear respondents please you are the actors of the research paper of your clear & quality of the answer will help the final result of seiner research. So that fill the question without bias & we prove that your result is secured. Mark () your answer correctly in the given boxes.

1. Age 15-19 ☐ 20-24 ☐ 25-34 ☐ 35-49 ☐

2. Sex; male ☐ female ☐

3. Level of education? Primary school/high school ☐ college ☐ Illiterate ☐

4. Number of children? 1-4 ☐ 5-8 ☐ 9-12 ☐ Other ☐

5. Can you use FP methods? Yes ☐ No ☐

6. What types of source of information is use about FP method?

Health centre ☐ family guidance ☐ school ☐ mass media ☐

7. What types of contraceptive is use to control unwanted pregnancy?

Injection ☐ condom ☐ calendar ☐ loop ☐

8. Have you knowledge about FP? Low ☐ high ☐ medium ☐

9. Religious of respondent

Orthodox = ☐ Muslim= ☐

Protestant = ☐ Catholic = ☐ Other ☐

10. Monthly income

<$20= ☐ $20-50= ☐ >$50= ☐ other= ☐

11. Residence urban= ☐ rural= ☐

12. Can your husband approve you for family planning program? 0= no ☐ yes= ☐

13. What is your occupation?

0= housekeeping ☐ 1=Non governmental employed ☐

14. What is your husband's occupation?

0=non agricultural employee ☐ 1=agricultural employee ☐

Thank you in advance for your cooperation

APPENDEIX B

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)	95.0% C.I.for EXP(B)	
								Lower	Upper
Step 1[a]	age			19.925	3	.000			
	age(1)	1.150	.629	3.340	1	.068	3.159	.920	10.844
	age(2)	-.873	.487	3.216	1	.073	.418	.161	1.084
	age(3)	1.112	.461	5.812	1	.016	3.039	1.231	.502
	w_edu_level			7.387	2	.025			
	w_edu_level(1)	-.743	.418	3.152	1	.076	.476	.210	1.080
	w_edu_level(2)	.401	.456	.775	1	.379	1.493	.611	3.646
	number_of_children			4.001	2	.135			
	number_of_children(1)	.307	.491	.390	1	.532	1.359	.519	.556
	number_of_children(2)	-.574	.411	1.949	1	.163	.563	.252	.261
	religion			17.388	4	.002			
	religion(1)	-2.350	1.307	3.233	1	.072	.095	.007	.236
	religion(2)	-1.481	1.304	1.290	1	.256	.227	.018	.929
	religion(3)	-1.098	1.325	.686	1	.407	.334	.025	4.477
	religion(4)	.057	1.418	.002	1	.968	1.059	.066	17.043
	source_of_information			10.131	3	.017			

source_of_information(1)	1.412	.545	6.716	1	.010	4.104	1.411	11.937
source_of_information(2)	1.194	.565	4.460	1	.035	3.299	1.090	9.986
source_of_information(3)	.305	.605	.254	1	.614	1.357	.414	4.443
tyeps_of_contraceptive_method			11.295	3	.010			
tyeps_of_contraceptive_method(1)	-1.460	.522	7.809	1	.005	.232	.083	.647
tyeps_of_contraceptive_method(2)	-1.563	.514	9.264	1	.002	.209	.077	.573
tyeps_of_contraceptive_method(3)	-.900	.490	3.384	1	.066	.406	.156	1.061
knouladge_about_fp(1)	.887	.343	6.692	1	.010	2.428	1.240	4.753
economic_status			4.305	2	.116			
economic_status(1)	-.207	.388	.286	1	.593	.813	.380	.738
economic_status(2)	.731	.468	2.441	1	.118	2.077	.830	5.196
residence(1)	-.707	.361	3.845	1	.050	.493	.243	1.000
hasbands_approval(1)	1.015	.354	8.225	1	.004	2.760	1.379	5.523
occupation_of_women			11.464	2	.003			
occupation_of_women(1)	1.301	.425	9.378	1	.002	3.672	1.597	8.444
occupation_of_women(2)	.180	.433	.173	1	.678	1.197	.512	2.796
occupation_of_hasband(1)	-.748	.342	4.795	1	.029	.473	.242	.924
Constant	.706	1.611	.192	1	.661	2.025		

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 0	Constant	-.158	.123	1.648	1	.199	.854

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	130.393	25	.000
	Block	130.393	25	.000
	Model	130.393	25	.000

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	238.095[a]	.386	.516

a. Estimation terminated at iteration number 5 because parameter estimates changed by less than .001.

Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	2.078	8	.979

Classification Table

			Predicted		
			can you use fp method		Percentage Correct
	Observed		no	yes	
Step 1	can you use fp method	no	118	26	81.9
		yes	28	95	77.2
	Overall Percentage				79.8

a. The cut value is .500