

# Statistical Analysis of Factors That Affect Women's Use of Family Planning in Case of Logia Town, North East Ethiopia

Getnet Mamo Habtie\*, Abdu Hailu Shibeshi, Tigabu Hailu Kassa

Department of Statistics, College of Natural and Computational Science, Samara University, Afar, Ethiopia

## Email address:

getnetmamo21@gmail.com (Getnet Mamo Habtie)

\*Corresponding author

## To cite this article:

Getnet Mamo Habtie, Abdu Hailu Shibeshi, Tigabu Hailu Kassa. Statistical Analysis of Factors That Affect Women's Use of Family Planning in Case of Logia Town, North East Ethiopia. *American Journal of Theoretical and Applied Statistics*.

Vol. 11, No. 5, 2022, pp. 160-166. doi: 10.11648/j.ajtas.20221105.13

**Received:** July 27, 2022; **Accepted:** September 25, 2022; **Published:** October 30, 2022

---

**Abstract:** *Background:* Family planning is the processes of choosing the number of children in a family and the length between their births by using contraception method or the aptitude of individual couples to decide when to have children. *Objective:* The main objective of this study is to assess the awareness of family planning in Logia town, north east Ethiopia. *Methods:* The study population was family planning that is women who are older than 18 years, living in logia district and primary data, structured questionnaire collection method was used. In this study simple random sampling without replacement sampling techniques was applied. *Result:* This study used 119 women of reproductive age group, 15.1% (18) of the women did not have knowledge (awareness) about family planning methods and 84.9% (101) have knowledge (awareness) about family planning methods. Women's had used one of the family planning were 25 (43.57%) and on the counter side (67) 56.43 percent of women's did not used family planning methods. Odds ratio laterally with 95% level confidence in binary logistic regression was used to evaluate factors associated with awareness family planning. Under this study prevailed age, martial statues of women. Educational level, number of children and income of women have significant association between awareness of family planning its p-value is less than 0.05. The odds of the age of women's between 27 and 35 is 1.974 times more likely to had awareness on family planning than the women's whose age is in between 36 and 45 years, remaining constant for other variables in the model. The estimated odds ratio of educational level women were degree 10.80 times more likely to had awareness on family planning than level of education is diploma, other variables were constant. *Conclusion:* Awareness family planning and creation movements involving women to get education in the logia town. For the better social life of women's and community health since women's are one part of the community.

**Keywords:** Awareness Family Planning, Children, Logia, Afar, Ethiopia, Women

---

## 1. Introduction

Family planning is the processes of choosing the number of children in a family and the length between their births by using contraception method or the aptitude of individual couples to decide when to have children. Family planning refers to the planning of when to have children and the use of birth control. It allows individuals and couples to anticipate and have their desired number of children, and to achieve healthy spacing and timing of their births. Family planning is achieved through use of contraceptive methods and the treatment of involuntary infertility [20]. Other procedures

commonly used include sexuality education, prevention and running of sexually transmitted infections, pre-conception counselling and management, and infertility management [11]. Current dramatic moves in family-planning policy go outside simple biased partitions. As the politics of abortion and contraception had joined, rules that are progressively aggressive to reproductive health and that disproportionately affect low-income minority women have appeared [16]. In 2009, world population stood at 6.8 billion, up about 83 million from 2008. The world total is likely to reach 7 billion in the latter half of 2011, with the bulk of growth in the world's poorest nations. The less developed countries of Africa, Asia, and Latin America [18].

Continues growth of the world population has become a crucial global problem. Most of this growth is stirring in developing countries where the fertility rate is very high. The Family planning in China had its aids, and its drawbacks. For example, it helped reduce the population by about 300 million people in its first 20 years [9]. Drawback is that there are now millions of sibling-less peoples, and in China siblings are very important. Once the parent generation gets older, the children help take care of them, and the work is usually equally split among the siblings [19]. On the other side benefit of the implementation of the one-child law is that it condensed the fertility rate from about 2.75 broods born per woman, to about 1.8 children native per woman in the 1979 [15]. Entree to family planning facilities for low-income women in the United States will continue at least through the current fiscal year [5].

Most of the countries with lowest rates of contraceptive use, highest maternal, infant, and child mortality rates, and highest fertility rates are in Africa [11]. Only about 30% of all women use birth control, although over half of all African women would like to use birth control if it was available to them [7]. The most available type of birth control is safes rapidly growing population coupled with a growth in preventable diseases means countries in Sub-Saharan Africa face an increasingly younger population. Kane [14]. The areas of the Healthy People 2020 initiative include a 10% rise in the part of pregnancies that are intended and a 10% decrease in the number of beginnings that occur within 18 months after a woman's previous delivery [6].

Ethiopia is among countries with a high total fertility rate at 5.3 [8]. The country is the second most populous in Africa Population Reference Bureau 2009. Nonetheless, about 22% of women of the reproductive age group in the country who want to delay or limit pregnancy do not actually use contraceptive currently. Meanwhile, the proportion is around 17.5% in Afar region, Ethiopian Demographic and Health Survey 2016 [8]. This situation indicates that despite the Ethiopian government's commitment to improving modern contraceptive use in the country in the past two decades (Federal Democratic Republic of Ethiopia Ministry of Health Sector Development Programmed [12]. This makes violence against women in Ethiopia is a concern from a human right, economic and health perspectives posing challenges in achieving gender equality and women's empowerment [10]. The proportion of unmet need for modern contraceptive methods remains high in pastoralist communities of the country like Afar region [17].

Ethiopia is assessed at about 1.1 million square kilometer and population is approximately 79 million, of which more than 84 percent live in rural areas. Ethiopia is a federal democratic republic composed of nine national regional states. The national regional state further divided in to 116 districts and around 15,000 kebeles [2].

Based on the 2008 plans by the Central Statistical Agency of Ethiopia, the Afar Regional State has a population of 1,812,002, holding of 991,000 men and 821,002 women; urban inhabitants' number 346,000 of the population, a

further 1,466,000 were pastoralists. [1].

The study will be mainly focused on the factor that affects use of family planning in Logia Town, is the aimed to investigations the various problem by which use of family planning is hindered.

Some traditional practice hinders the use of family planning. The marriage patterns have a pulse effect on family planning. Education about birth-controlled method of family planning is low in many survey (which cover the awareness of family planning) respondents are asked if they have ever used a particular method of contraceptive result from the world fertility survey indicate that however, women who have heard of method do not necessarily have full understanding of the effective and proper use of a method.

This study, was try to fulfill the gaps in understanding the status of family planning by identifying the major risk factors for the affects the use of family planning in Logia town.

The main objective of this study is to assess the awareness of family planning in Logia town and the specifics objectives:

- 1) To assess of family planning practice among the residents of the Logia town.
- 2) To see the association between use of family planning and socio-economic factors.
- 3) To assess family problems related to the practice of family planning.

Family planning comprises a group of actions that document couples to decide freely the spacing and number of their children. To identify high risk pregnancies and delicacy infertility. Family planning expands the health of mothers, children, and entire families. Women thoughtful the benefits of family planning can space pregnancies at least 2 years apart to allow time to care for the new baby and to convalesce after the birth.

## 2. Methodology

### 2.1. Study Area

This study was conduct in Logia town, afar region northeast Ethiopia. It is located 581KM from Addis Ababa and the town founded 7KM from the capital city of Afar (Samara). It is the hottest area and positioned at an elevation of 400.21 meters (1313.02 feet) above sea level, Logia has a Subtropical steppe climate and the latitude and longitude are 11.7232419 and 40.9763542 respectively [3].

### 2.2. Method of Data Collection

In this research primary data collection method was used. Hence the data was collected data collectors (data collection experts) by distributing structured questionnaires. Over all the process of data is done by statisticians.

### 2.3. Study Population

The study population was family planning that is women who are older than 18 years, living in logia district particularly the appropriate sample population.

## 2.4. Description of Study Design

Before the study to be conducted; it is important to know the description of study design. In this study design tries to assess the attitudes, opinions, inclinations and awareness towards family planning and design to examine of family planning and in how they use and to test the variable whether they have an effect or not and to know the number of user or not family planning regarding on the family planning by the combinations of both quantitative and qualitative methods.

## 2.5. Description Sampling Techniques

There are two types of sampling techniques which are simple random sampling with and without replacement sampling techniques. In this study simple random sampling without replacement sampling techniques that allows each possible sample to have an equal chance of being included in the sample.

## 2.6. Sample Size Determination

Due to shortage of time and other resource the whole population is not feasible to study. As a result of the representative sample size is taken. Determining the sample size is key on the overall statistical process. An appropriate sample size is one of the means of gaining high precision, accuracy and confidence with minimum cost. To determine the sample size, we use the following method. The sample size for this study was determined based on stratified sampling for Proportions of 95% confidence level [4]. The sample size formula is

$$n = \frac{n_0}{1 + \frac{n_0}{N}} \quad (1)$$

Where,  $n_0 = \frac{Z^2 pq}{d^2}$  and  $Z$  be the upper  $\alpha/2$  point of standard normal distribution, where  $\alpha = 0.05$  significance level, which is  $Z_{\alpha/2} = Z_{0.025} = 1.96$ . Suppose  $d =$  relative error  $= 0.05$ .

$P =$  proportion of the target population estimated to have a particular characteristic. The value of  $p$  is calculated from a pilot survey. Then use 50% or there is a large population but that we do not know the variability in the population that will adopt the practice; therefore, assume  $p = 0.5$  (maximum variability).

$q = 1 - p$  and  $d =$  degree of accuracy desired, take  $d = 0.09$  because some of the respondent did not give a correct information therefore error on the data.

In this study  $N =$  population size, 2954 and  $n =$  sample size need for the study. The calculation shows below.

$$n_0 = \frac{1.96^2 * 0.5 * 0.5}{0.09^2} = 119 \text{ since } \frac{n_0}{N} < 5\% \text{ Therefore } n_0 = n \quad (2)$$

Finally, the sample size for this research was 119.

## 2.7. Description of Study Variables

The dependent variable was awareness of family planning (aware/not aware). Independent variables were age (18-26), gender (Male, Female), knowledge of respondents about

family planning method (health center, family guidance, school and mass media), educational level (illiterate, primary school, high school, diploma, and degree level), type of contraceptive and income of women's (<1500, 1501-3000, 3000-4500, 4501-6000).

## 2.8. Method of Data Analysis

### 2.8.1. Descriptive Statistics Analysis

The technique most often used for describing the characteristics of the sample and the major study variables are displayed in the form of frequency distribution, percentage, and diagrammatic representation such as bar-chart [21]. For this research descriptive statistics was applied.

### 2.8.2. Inferential Statistics

Inferential statistics is statistical method deals with assembly inference about population based the sample data. Inferential statistics involves of estimation and hypothesis testing [16]. In this study chi-square test and logistic regression was applied to assess the association between two categorical variables.

## 2.9. Statistical Methods of Data Analysis

### 2.9.1. Logistic Regression Model

When the dependent variable is qualitative in nature or categorical, logistic regression is used when the regressed. Logistic regression can be used to predict the dependent variable on the bases of continuous and (categorical independent variables) and to determine the presence of variance in the dependent variable explained by the independents. And also, logistic regression is used to rank the relative importance of independent variable, to assess the interaction effect, and to understand the impact of covariate control variable [13].

### 2.9.2. Binary Logistic Regression

In this research binary logistic regression was used. Typically, dependent variable is dichotomous and the independent variables are either continuous or categorical variables. The binary logistic regression equation is defined as:

$$\text{logit}[\pi(X)] = \log \left[ \frac{\pi(X)}{1-\pi(X)} \right] = \beta_0 + \beta_1 X_1 + \beta_2 X_2 \dots + \beta_k X_k \quad (3)$$

Where,  $\beta_0$  the constant of the equation  $\beta_i =$  parameters (regression coefficients)

### 2.9.3. 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  $\pi$  is the probability that have awareness of family planning, then  $1 - \pi$  is the probability that have not awareness of family planning: odds  $= \frac{\pi}{1-\pi}$

In  $2 \times 2$  tables, row 1 indicates the odds of success equal  $\text{Odds}_1 = \frac{\pi_1}{1-\pi_1}$ , and within row 2 the odds of success equal  $\text{Odds}_2 = \frac{\pi_2}{1-\pi_2}$ .

The ratio of the odds from the two rows is the odds ratio (OR)  $= \frac{Odds1}{Odds2} = \frac{\frac{\pi_1}{1-\pi_1}}{\frac{\pi_2}{1-\pi_2}}$  is odds ratio. Whereas the relative risk is a ratio of two probabilities, the odds ratio "OR" is a ratio of two odds. If  $\beta_j$  is positive then the odds increase and if  $\beta_j$  is negative, the odds decrease.

### 2.10. Parameter Estimation for Logistic Regression

Maximum likelihood estimation was used to estimate the parameters from the linear renovated model  $Xi'\beta$ .  $\beta$  be the estimate of the model parameters for this study.

$$E(\beta) = \beta \text{ And } \text{var}(\beta) = (X'vX)^{-1} \quad (4)$$

Where the matrix  $v$  is  $n \times n$  diagonal matrix holding the estimated variance of each observation on the main diagonal; that is the  $i^{\text{th}}$  diagonal element of  $v$  is  $v_{ii} = \pi_i(1 - \pi_i)$  the estimated value of the linear predictor is  $\eta_i = Xi'\beta$ , and the fitted value of the binary regression model.

$$\hat{y}_i = \hat{\pi}_i = \frac{e^{\eta_i}}{1 + e^{\eta_i}} = \frac{\exp(Xi'\beta)}{1 + \exp(Xi'\beta)} \quad (5)$$

The likelihood stipulates how likely the observed sample is a purpose of parameter values. The likelihood of a set of parameter values,  $\beta$  given outcomes  $x$  is equal to the probability of those observed outcomes given these parameter values that is. The likelihood functions the joint probability density function of random variable but, it's observed as the meaning the parameter given the realized random variable.

$$L\left(\frac{x}{x_1 \dots x_j}\right) = \prod_{i=1}^n e^{-\lambda \frac{x_i}{x_i!}} = \frac{1}{\prod_{i=1}^n x_i!} e^{-n\lambda} \lambda^{\sum x_i} \quad (6)$$

Where  $Xi' = (1, Xi_1, Xi_2 \dots Xi_k)$  are independent variables and,  $\beta' = (\beta_1, \beta_2, \dots \beta_k)$  are the logistic regression coefficients.  $\pi(Xi)$  Denotes the "success" probability at value  $Xi$  and given by:

$$\pi(Xi) = \frac{1}{1 + e^{-(Xi'\beta)}} \quad (7)$$

#### 2.10.1. Model Diagnostic Test

After the model is fitted the next important step is checking the model adequacy. There are several steps involved in assessing the appropriateness, adequacy and usefulness of the model. First, the overall goodness of fit of the model is tested. Second, the importance of each of the explanatory variables is assessed by carrying out statistical tests of the significance of the coefficients.

#### 2.10.2. Likelihood-Ratio Test

The likelihood ratio test statistic ( $G^2$ ) was the test statistic commonly used for assessing the overall fit of the logistic regression model. The likelihood-ratio test uses the ratio of the maximized value of the likelihood function for the full model ( $L_1$ ) over the maximized value of the likelihood function for the simpler model ( $L_0$ ). The likelihood-ratio test statistic is given:

$$G^2 = -2 \log \left( \frac{L_0}{L_1} \right) = -2 [\log(L_0) - \log(L_1)] = -2 [L_0 - L_1] \quad (8)$$

It was compared with a distribution with 1 degree of freedom. This log transformation of the likelihood functions yields a chi-squared statistic.

#### 2.10.3. The Hosmer and Lemeshow Test Statistic

The final measure of model fit is the Hosmer and Lemeshow goodness-of-fit statistic, which measures the correspondence between the actual and predicted values of the dependent variable. The Hosmer and Lemeshow test statistics, provides the number of responses among the covariate patterns, and is the average estimated probability.

#### 2.10.4. The Wald Statistic

The Wald statistic was an alternative test, which was commonly used to test the significance of individual logistic regression coefficients for each independent variable (that was to test the null hypothesis in logistic regression model that a particular logit coefficient was zero). If the Wald test is not significant, and then these explanatory variables can be omitted from the model. Wald  $\chi^2$  statistic was used to test the significance of individual coefficients in the model and was calculated as:

$$Z = \frac{\hat{\beta}_j}{SE(\hat{\beta}_j)} \quad (9)$$

Each Wald statistic was compared with a  $\chi^2$  distribution with 1 degree of freedom. Wald statistic was easy to calculate but their reliability was questionable, particularly for small samples.

## 3. Result and Discussions

In this part, the results of this study were presented in two key servings. In the first, the results of the descriptive statistics for this study were presented and secondly result of the binary logistic regression.

### 3.1. Descriptive Statistics

The data comprised a sample of 119 women of the age older than 18 years, who were living in logia district. The response variable considered in this study was awareness of family planning (aware/not aware).

Table 1. Awareness of family planning method.

Variable	Category	frequency	Percent (%)	Cumulative percent
Awareness of family planning method	Yes	101	84.9	84.9
	No	18	15.1	100.0
	Total	119	100.0	

Source: own computation, 2021.

From the frequency distribution table 1 above shown that, about 15.1% (18) of the women did not have knowledge (awareness) about family planning methods and 84.9% (101) have knowledge (awareness) about family planning methods.

**Table 2.** Use of family planning method.

Variable	Category	frequency	Percent (%)	Cumulative percent
Use family planning method	Yes	52	43.57	43.57
	No	67	56.43	100.0
	Total	119	100.0	

Source: own computation, 2021.

From the output Table 2 women's had used one of the family planning were 25 (43.57%) and on the counter side (67) 56.43 percent of women's did not used family planning methods.

**Table 3.** Summary of descriptive statistics.

Variables	Category	Frequency	Percent	Cumulative percent
Age group	18-26	24	20.2	20.2
	27-35	46	38.7	58.8
	36-45	39	32.8	91.6
	above 45	10	8.4	100.0
	Total	119	100.0	
Marital status of women's	Widowed	8	6.7	6.7
	Single	2	1.7	8.4
	Married	96	80.7	89.1
	Divorced	13	10.9	100.0
	Total	119	100.0	
Education level of women's	Illiterate	48	40.3	40.3
	primary school	31	26.1	66.4
	high school	19	16.0	82.4
	Diploma	16	13.4	95.8
	Degree	5	4.2	100.0
Number of children	Total	119	100.0	
	1-3	51	42.9	42.9
	4-6	43	36.1	79.0
	7-9	18	15.1	94.1
	Other	7	5.9	100.0
Income of women's	Total	119	100.0	
	<1500	33	27.7	27.7
	1501-3000	56	47.1	74.8
	3001-4500	29	24.4	99.2
	Above 6000	1	.8	100.0
Source of family planning method	Total	119	100.0	
	health centre	36	30.3	30.3
	family guidance	44	37.0	67.2
	School	21	17.6	84.9
	mass media	18	15.1	100.0
Job of women's	Total	119	100.0	
	gov.t worker	33	27.7	27.7
	small business and trading	52	43.7	71.4
	Handcraft	21	17.6	89.1
	Housewife	13	10.9	100.0
	Total	119	100.0	

Source: own computation, 2021.

Based on table 3 the age of women's indicates, (24) 20.2 percent of women's age fall in between 18–26-year, (46) 38.7% percent of women's age fall in between 27–35-year, (39) 32.8% percent of women's age fall in between 36-45 year and the last (10) 8.4% percent of women's age fall in between above 45 ages.

As indicated the table 3 the marital status of women was 6.7%, 1.7%, 80.7% and 10.9% were widowed, single,

married, and divorced respectively. Most of women was married under the study time. Education levels of women's (48) 40.3% of the respondents (women's) were illiterate, (31) 26.1% were primary school, (19) 16% were high school, (16) 13.4% were diploma and (5) 4.2% were degree and above.

The job type of women was working, 27.7% of the respondent's government institutions worker, 43.7% were small business and trading, 22.9% were daily (labor) worker, and 15.2% were housewives, handcrafting. Literarily 42.9% of the respondents have 1-3 children, 36.1% have 4-6 children, 15.1% have 7-9 children, and 5.9 % other.

The income of women's was 27.7% of respondents were lower than 1500 Ethiopian birr and 47.1% women's were in between 1500 and 3000 Ethiopian birr, 24.4% of women's income in between 3001 and 4501 Ethiopian birr, 8% women's were income above 6000 birr. As you know the economy of Ethiopia is very low, it is the indicator of lower payment for citizens of Ethiopia.

Lastly From table 3 the source of family planning method obtained from, 30.3% were health the center, 37% were family guidance, 17.6% were school, and 15.1% were mass media (social media).

### 3.2. Inferential Statistics

Using Chi-square Test of Independence.

**Table 4.** Chi-square table.

Variable	Chi-Square value	Df	Asymp. Sig. (2-sided)
Age group	3.826 <sup>a</sup>	3	.034
marital statues of women's	4.512 <sup>a</sup>	3	.003
Level of education	6.131 <sup>a</sup>	4	.009
Children	6.624 <sup>a</sup>	1	.010
Income of women's	4.390 <sup>a</sup>	3	.222
Source	8.079 <sup>a</sup>	3	.044

Output from SPSS software.

Chi-square is used for text of association that is, there is relationship between dependent and independent variables. The p-value is less than 0.05, variables are significant effect on outcome variable with level of confidence alpha 0.05. There for under this study age, marital statues of women. Educational level, number of children and income of women have significant association between awareness of family planning.

**Table 5.** Model Summary.

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	92.247 <sup>a</sup>	.424	.577

The -2log likelihood is 92.247 in the model table 5 can be used in judgments of nested model. The large value of likelihood ratio indicates that the model fits well. For this study model is adequately fitted.

In the above table 5, the Cox and Snell R square and Nagelkerke R- square shows that the 42.4% and 57.7% respectively indicate the explanatory variable were useful in

predicting the use of family planning.

**Table 6.** Goodness of fit test of model.

Hosmer and Lemeshow Test			
Step	Chi-square test value	Degrees of freedom	Significance
	6.2347	7	.836

The "Hosmer and Lemeshow Test" is estimating the goodness of fit between predicted and observed likelihoods in classifying the outcome variable. Since the p-value is 0.836 which is insignificant, that is  $0.836 > p\text{-value} (0.05)$ , binary logistic regression model is good fit to the data.

### 3.3. Binary Logistic Regression

For the model of binary logistic regression variables in the Equation for the relationship between Awareness of family planning method and covariates.

**Table 7.** Output of binary logistic regression model. Variables in the Equation.

	B	S.E.	Wald	Df	Sig.	Exp (B)
Age			2.131	3	.036	0.523
Age [18-26]	-2.934	1.488	3.889	1	.059	0.053
Age [27-35]	0.648	0.366	3.131	1	.031	1.974
Age [36-45]	-.989	.999	.981	1	.322	0.372
Edu			7.080	4	.002	
Edu (ILL)	1.547	1.554	.991	1	.352	4.698
Edu (PS)	2.041	1.583	1.663	1	.078	7.697
Edu (HS)	2.101	1.805	.278	1	.034	8.166
Edu (DEG)	2.380	1.595	2.227	1	.004	10.80
Income			8.227	3	.062	
Income (1)	1.159	1.006	1.326	1	.249	3.186
Income (2)	-1.388	.957	2.103	1	.147	.250
Step 1 <sup>a</sup> Income (3)	-.400	.977	.167	1	.682	.670
Marital			1.054	2	.590	
Marital (M)	1.033	.788	.946	1	.001	2.80
Marital (S)	-.080	.661	.014	1	.904	.924
KNWFP			9.894	3	.019	
KNWFP (HC)	-3.428	1.170	8.586	1	.003	0.032
KNWFP (FAG)	-2.041	.936	4.754	1	.029	0.130
KNWFP (MM)	0.494	.816	.367	1	.044	1.644
Job			.662	3	.045	
Job (GW)	.192	1.000	.037	1	.036	6.825
Job (SBT)	.366	.917	.159	1	.690	1.441
Job (HC)	-.025	1.067	.001	1	.982	0.976
Constant	.472	2.777	.029	1	.046	9.704

a. Variable(s) entered on step 1: age, educational level, Income of women's, source of knowledge about family planning, job of women's From SPSS Output.

Where Edu -educational level, illiterate ((ILL), PR-primary school, HS-high school, DEG-degree: Income, 1: <1500, 2: 1501-3000, 3: 3001-4500. 4: >4500, source of knowledge about family planning: HC-health center, FAG-family guidance, mass media and job of women's: GW-government worker, SBT- small business and trading, HC -handcraft, marital statues of women's, M- married, W-widowed, S-single and D-divorced.

### 3.4. Interpretations of the Parameters in the Model

The result depicts in the table 6, it is practical that the

estimated odds ratio is 1.974 implies that the odds of the age of women's between 27 and 35 is 1.974 times more likely to had awareness on family planning than the women's whose age is in between 36 and 45 years, remaining constant for other variables in the model. Under this study age was significant factor for family planning in the case of logia town.

The coefficient of education level (2.38) is positive implies that there is positive relationship between educational level and awareness of family planning. The estimated odds ratio of educational level women were degree 10.80 times more likely to had awareness on family planning than level of education is diploma, other variables were constant. When the women are more educated, they had more awareness about family planning.

The odds ratio of marital statues of women's that is married is 2.80, married women's had 2.80 times more likely to had awareness on family planning than single women.

From the output table 7 the estimated odds ratio of source of knowledge about family planning from mass media equals to 1.644, implies that source of knowledge about family planning from mass media had 1.664 times more likely to had source of knowledge about family planning from health center and school.

Lastly the estimated odds ratio of job of workers that is in government institutions is 6.825 implies that women's works in government institutions had 6.825 times more likely to had women's works in other areas other variables are constant.

### 3.5. Model Checking and Diagnostics

In our logistic regression analysis of the data by SPSS package, results of several goodness-of-fit tests accompany the SPSS output. In this research goodness of fit test was done by Hosmer and Lemeshow Test.

**Table 8.** Hosmer and Lemeshow Test.

Hosmer and Lemeshow Test			
Step	Chi-square	Df	Sig.
1	5.901	8	.658

Hosmer and Lemeshow test showed that, there was a goodness-of-fit of the null model. If the significance of the test is small (i.e., less than 0.05) then the model does adequately fit the data. For this study since the significance of the test was 0.658 which is greater than 0.05, then the model adequately fitted the data well.

## 4. Conclusions

The main objective of this study was statistical analysis of factors that affect women's use of family planning in case of logia town. The descriptive analysis of sample of 119 women of the age older than 18 years, who were living in logia district. From the sample of 119 women's 15.1% (18) of the women did not have knowledge (awareness) about family planning methods and 84.9% (101) have knowledge (awareness) about family planning methods. The study

revealed that the awareness of family planning is low in areas of logia town afar region of Ethiopia. From the binary logistic regression model when education level high (educated) awareness of family planning is good.

## 5. Recommendations

Recommended for the stakeholder's that is, awareness and creation movements involving women to get education in the logia town. For the better social life of women's and community health since women's are one part of the community. The researcher suggests that use family planning method for sake better life as economically well.

## References

- [1] Central Statistical Agency [Ethiopia] and ORC Macro. Ethiopia Demographic and Health Survey (EDHS) 2006. Addis Ababa, Ethiopia and Calverton, Maryland: Central Statistical Agency and ORC Macro; 2011.
- [2] Central Statistical Authority. Ethiopian Demographic and Health Survey 2016. Addis Ababa, Ethiopia; September 2016.
- [3] CSA. Summary and statistical report of the 2007 population and housing census: population by age and sex composition. Addis Ababa: FDRE population census commission. December 2008. CSA.
- [4] Cochran, W. G., (1977): Sampling Techniques. Third Edition, John Wiley and Sons (ASIA) Pte Ltd., Singapore. 428p.
- [5] Cohen S. The Numbers Tell the Story: The Reach and Impact of Tide X. Guttmacher Policy Rev. 2011; 14 (2).
- [6] Cleland, K.; Peipert, J. F.; Westhoff, C.; Spear, S.; Trussell, J. (May 2011). "Family Planning as a Cost-Saving Preventive Health Service". *New England Journal of Medicine*. 364 (18): e37.
- [7] DeRose, Laurie; F. Nii-Amoo Dodoo; Alex C. Ezech; Tom O. Owuor (June 2004). "Does Discussion of Family Planning Improve Knowledge of Partner's Attitude Toward Contraceptives?" Guttmacher Institute.
- [8] Ethiopian Demographic and Health Survey 2016.
- [9] FlorCruz, Jaime (27 September 2010). "China copes with promise and perils of one child policy". CNN. Archived from the original on 2 April 2012. Retrieved 20 March 2012.
- [10] Federal democratic republic of Ethiopia. National Guideline for Family Planning Services in Ethiopia. Addis Abeba: 2011.
- [11] Family planning". World Health Organization. 2012.
- [12] Federal Democratic Republic of Ethiopia Ministry of Health Sector Development Programmed IV 2010/11–2014/15 Gold R, Nash E. Troubling Trend: More States Hostile to Abortion Rights as Middle Ground Shrinks. *Guttmacher Policy Rev*. 2003; 15 (1).
- [13] Hodgson D, Watkins SC. Feminists and Neo-Malthusians: Past and Present Alliances. *Popul Dev Rev*. 1997; 23 (3): 469–523.
- [14] Kane, P; Choi, C. Y (1999). "China's one child family policy". *BMJ*. 319 (7215): 992–4. doi: 10.1136/bmj.319.7215.992. PMC 1116810. PMID 10514169.
- [15] Lin, Zhimin (2006). *China under Reform*. Philadelphia: Mason Crest Publishers.
- [16] McFarlane D, Meier K. *The Politics of Fertility Control: Family Planning and Abortion Policies in the American States*. Chatham House Publishers; New York: 2001.
- [17] Population Projection of Ethiopia for All Regions at Wereda Level from 2014 – 2017. Federal Democratic Republic of Ethiopia Central Statistical Agency. Retrieved 4 June 2018.
- [18] Population Reference Bureau 2009 World Population Data Sheet. Available at: [http://www.prb.org/pdf09/09wpds\\_eng.pdf](http://www.prb.org/pdf09/09wpds_eng.pdf). Accessed May 18, 2010.
- [19] Rosseberg, Matt. "China's One Child Policy". About.com. Retrieved Feb 4, 2014.
- [20] Save the Children, 2012, every woman's right: How family planning saves children's lives.
- [21] Steinbrook R. Science, politics, and over-the-counter emergency contraception. *JAMA-J Am Med Assoc*. 2012; 307 (4): 365–6.