



Socioeconomic Correlates of Use Long-Acting Contraceptive Methods Among Women of Reproductive Age in Guto Gida District, East Wollega Zone, Oromia, Ethiopia

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Abstract

The resulting high rate of population growth has led many countries to adopt population policies aimed at reducing the prevailing high birth rate. It is important to identify existing gaps and propose supplementary strategies to improve the availability, accessibility and utilization of LAC methods in Ethiopia. To examine the relationship between socioeconomic factors affecting the use of LAC methods among women of reproductive age in Guto Gida District, East Wollega Ethiopia. A cross sectional study was conducted from first February to March 14, 2016. Data was collected on 246 among reproductive age women through face to face interview using structured questionnaire. Individuals in the study were selected by systematic sampling method. Logistic regression was used to examine the effects that some demographic, socio-economic, and cultural characteristics had on the using long acting contraceptives methods. The AOR with respective 95% confidence intervals of using LAC methods for the age categories 15-24 and 25-34 years were, respectively, 0.28(0.04-2.01) and 0.05(0.09-0.31) (referent age category of 35-49 years). The use of LAC methods influenced by women's education for no education, primary education and secondary education 0.06(0.05, 08), 0.37(0.08-1.56) and 0.56(0.14-2.17) (referent category no formal education). The AOR for women who were housewife and self-employment 0.08(0.01-1.54) 0.48(0.17-1.38) compared to merchant /trade whereas employed to government women were 1.04(0.29-3.64) as merchant /trade women. The respective AORs for heard from health professionals higher than who heard from media 2.52(0.87-7.28) and women heard from neighbors and husband less compare to referent category 0.80(0.19-3.38) and 0.44(0.08-2.29) respectively.

With women having four or more children taken as the referent group, it was observed that AOR=0.34(0.09-1.14) for women who had no children; for women with 1-3 children AOR=0.58(0.20-1.34). In the case of women's attitudes who had good attitudes about LAC methods AOR=10.05(3.72-27.16) and 0.32(0.09-1.13) compared to fearing women. Educational status of the women, source of information (from health professionals), number of living children, good attitude and women's occupation were found to be predictors. Encourage women to pursue their education, community based

health care workers should strengthen information, education and communication to ensure that women have higher knowledge and positive attitude towards long acting contraception methods.

Keywords

Socioeconomic; Long-acting contraceptive; Reproductive age; Guto gida; East wollega; Ethiopia

Introduction

Population growth is a major concern in developing countries in view of its impact on broader socio-economic development. In Sub-Saharan Africa, including Ethiopia continued high fertility levels, along with declining mortality rates, have resulted in a wide gap between birth and death rates, and subsequently in high annual population growth rate.

The resulting high rate of population growth has led many countries to adopt population policies aimed at reducing the prevailing high birth rate.

Contraceptive methods used for Family Planning (FP) can be grouped into two categories programmatically. These are long-acting methods and short-term methods. Long-acting methods are usually used to limit childbearing, whereas short-term methods are better suited for women who want to delay but not forfeit having a child [1].

Long Acting Contraceptives (LAC) is best methods for providing protection against pregnancy. They require no follow up visit, and probably have no side effects. They need little attention after insertion and prevent pregnancy for a long period of time [2].

These long acting contraceptives methods include the Intra-Uterine Devices (IUD) and the progestogen implant. The Intra-Uterine Devices and progestogen implant can be removed after insertion and fertility return after removal; therefore they are name as long-acting reversible contraceptives [3].

LAC methods are ideal pregnancy prevention options for many women. These methods are safe, effective, inexpensive, and reversible, require little to no maintenance, and have much better compliance rates than other hormonal methods [4]. Still, the use of LAC methods is not widespread among women. Youth serving professionals, educators and health care providers should know the facts about these methods. LACs are over 99 percent effective at preventing pregnancy and can be used by almost all women, including adolescents and those who have never had children [4].

Understanding why people do not use LAC method is critical to address unmet needs and to increase awareness of contraceptive use. According to the Ethiopian Demographic and Health Survey (EDHS) 2011, most women and men had knowledge on some family planning methods but only about 29% of married women were using contraceptives and 25% women had an unmet need for family planning [5].

Women consider many factors when choosing a method of contraception. Some studies done on contraceptive knowledge and factors related to usage of LAC methods in the area [6,7]. A number of

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factors contribute were a negative attitude towards for LAC methods, fear of side effects, medical problems, the unavailability of methods, lack of awareness, desire to have more children, age, and preference of short acting contraceptive methods [3,8,9].

The purpose of this study was to identify socioeconomic factors affecting the use of LAC methods among women of reproductive age in Guto Gida District, East Wollega Zone.

Methods

A cross sectional study was conducted in Guto Gida District which is found in East Wollega zone, Oromia, Ethiopia to assess factors that affect usage of LAC methods from was conducted from 1st February 2016 to 14 March, 2016.

All women under reproductive age group (15-49) attending FP at Celeleki health center and Lugo health center of Guto Gida District were source of population for the study.

The study sample size was determined by statistical calculation based on the following assumptions.

P is proportion of women who use long acting contraceptive methods i.e. is prior judgement from different study of reviews=0.207, 95% confidence interval and 5% precision. Thus,

$$ni = \frac{(Z_{\alpha/2})^2 pq}{d^2} \quad (i)$$

$$ni = \frac{(1.96)^2 (0.207)(0.793)}{0.05^2} = 252$$

Then, the calculated sample size can be given as:-

$$n_f = \frac{ni}{\left(1 + \frac{ni}{N}\right)} = \frac{252}{\left(1 + \frac{252}{1904}\right)} = 223$$

Where

n_i is estimated sample size and n_f is calculated final sample size.

N is population size (all women of reproductive age group who presented to Celeleki health center and Lugo health center).

Including a contingency of 10% for non-response is 23 and it makes the total sample size 246. Systematic random sampling technique was used for this study.

Therefore, using all women of reproductive age group attending services at health center as sampling unit, Applying systematic random sampling, and researcher selected k^{th} women as respondents for our study.

Structured questionnaire was developed to be interviewed with women with 15-45 aged who were presented at Lugo health and Celeleki centers. Furthermore, in order to ensure a reduced possibility of questionnaire missing in transit or misplaced the questionnaires retrieved in same manner, which they be administered. Four data collectors were assigned and facilitate the data collection.

The response variable in the logistic model, namely using long acting contraceptive methods is binary (in the current study coded 1 to mean a woman use LAC methods, and 0 otherwise).

Based on the data set and literature review this study considered the following characteristics as independent variables: age of a woman, educational status, religion, number of living children, knowledge of family planning, media access, marital status, employment status,

source of information, ethnicity of women, attitudes for LAC. The study employed descriptive statistics (counts and percentages) to explain the empirical distribution of the socio-economic, demographic, cultural and environmental characteristics of the above mentioned factors/variables. In the logistic regression analysis the statistical significance of the independent variables was checked using chi-square tests for $P < 0.05$. After screening for significant variables has been accomplished, comparisons between/among categories of a single factor/variable (with a specified referent category) were made by controlling the remaining factors/predictors in the model.

To interpret this result, a measure of association called Odds Ratio (OR) is required:

$$OR = \frac{\pi(1)/[1-\pi(1)]}{\pi(0)/[1-\pi(0)]} = e^{\beta_{ik}} \quad (ii)$$

Odds ratio provides an approximation how much more likely or unlikely it is for the response variable to occur among those with $x = 1$ than among those with $x = 0$.

Once a model has been developed, we would like to know how effective the model is in describing the outcome variable. This is referred to as goodness-of-fit. In testing the hypothesis that the model fits the data, the common approaches are Pearson's χ^2 statistic, the likelihood-ratio statistic and Hosmer-Lemeshow test [9].

The findings of the analysis and the subsequent discussion make use of adjusted odds-ratios and confidence intervals. For computational purposes this study used SPSS and STATA statistical software packages.

Results

From the total sample 246 the proportion of participants currently using LAC methods was 28.9% while 71.1% were not using LAC methods. The Table 1 shows the baseline characteristics of women aged 15 to 49 years in the study. The proportion distribution of using LAC methods by age was 29.8%, 24.2% and 71.9% among the age groups 15-24, 25-34 and 35-49 years, respectively. Women using LAC methods 26.6%, 27.9% and 33.3% were unmarried, married or with a partner and widowed/separated respectively. Using LAC methods was high (48.4%) among women who follow Orthodox; the percentage was low (12.8%) among those follow Muslim. The proportion of Oromo, Amhara and Gurage who were using LAC methods were 30.4%, 31.2% and 28.6%, respectively. Of course, the percentage of women belonging to the category "others" (including Tigre, Silte, Gumuz, etc.) was highest (57.1%). But given the fact that there were only 14 women (from the total of 246) in this category (of which 8 which using LAC methods) this percentage is not considered as significant. From the total sample who had no more education 33 (i.e. 35.3%) using LAC methods; from a total of 122 women with primary education (1-8) 39 (32.0%) using LAC methods. Women with diploma and higher education were 77.8 % using LAC methods. About 36.5% of women who were house wife using LAC methods; women who were employed in public office using LAC methods (50.0%) and 43.3% of engage in trade (merchant) women also showed using LAC methods. A total of 226 women (92%) heard about LAC methods. About only 36.7 % of those who had heard about LAC methods using LAC methods while 63.3% were not using. 49 women who heard about LAC methods from health professionals (47.6%) had using LAC methods; 21 women (36.8%) who had heard from media were using LAC methods. The most common type of LAC methods women using were implant (55.4%) and IUCD (44.6%). Some

Table 1: Descriptive Statistics on Usage of long act contraceptive methods, n=246.

Variables	Categories	Using LAC		P value (X ²)
		Not using Count (%)	Using Count (%)	
Age of Women	15-24	40 (70.2%)	17(29.8%)	0.000
	25-34	119(75.8%)	38(24.2%)	
	35-49	9(28.1%)	23(71.9%)	
Marital status of Women	Single	19(70.4%)	8(26.6%)	0.020
	Married	132(72.1%)	51(27.9%)	
	Widowed/separated	24(66.7%)	12(33.3%)	
Religion of Women	Orthodox	47(51.6%)	44(48.4%)	0.008
	Muslim	75(87.2%)	11(12.8%)	
	Protestant	46(66.7%)	23(33.3%)	
Ethnicity of Women	Oromo	94(69.6%)	41(30.4%)	0.182
	Amhara	33(68.8%)	15(31.2%)	
	Gurage	35(71.4%)	14(28.6%)	
	Others	6(42.9%)	8(57.1%)	
Educational level of Women	Not educated	55(64.7%)	33(35.3%)	0.016
	Primary	83(68.0%)	39(32.0%)	
	Secondary	28(93.3%)	2(6.7%)	
	Diploma and higher	2(22.2%)	7(77.8%)	
Women's occupational status	Housewife	101(63.5%)	58(36.5%)	0.041
	Gov't employment	8(50.0%)	8(50.0%)	
	Self-employment	31(75.6%)	10(24.4%)	
	Merchant	17(56.7%)	13(43.3%)	
Heard about LAC	Not	15(75.0%)	5(25.0%)	0.457
	Yes	143(63.3%)	83(36.7%)	
Source to hear about LAC	Neighbors	47(78.3%)	13(21.7%)	0.022
	Husband	21(80.8%)	5(19.2%)	
	Health professions	54(52.4%)	49(47.6%)	
	Media	36(63.2%)	21(36.8%)	
No of Children	No child	40(74.1%)	14(25.9%)	0.040
	1-3	92(67.2%)	45(32.8%)	
	4 and above	26(47.3%)	29(52.7%)	
Attitudes on LACMs	Not good	82(95.3%)	4(4.7%)	0.000
	Good	17(20.0%)	68(80.0%)	
	Fear	59(78.7%)	16(21.3%)	

52.7% of the women who had four and more living children using LAC methods while 34.8 % of those with 1-3 children using LAC methods and it was lowest among women with no child (25.9%). A total of 68 women (80.0%) who had good attitudes were using LAC methods while only four women (4.7%) who had not good attitudes were using LAC methods and 21.3% had fear about the LAC methods were using the methods (Table 1).

The model building procedure used was the ENTER method. The reference categories of all variables are set by SPSS as the last category.

We would like to point out that the discussion of the logistic regression analysis assumed that a result about a factor/variable is given by controlling the effects of the remaining predictors (actors/variables) in the model.

With respect to the referent age category of 35-49 years, the AORs (with respective 95% confidence intervals of using LAC methods) for the age categories 15-24 and 25-34 years were 0.28(0.03-2.01) and 0.05(0.09-0.31) respectively.

AORs for women who had never lived in union and for those who were married or had a partner, respectively, were 13.35 (0.99-26.02) and 15.29 (2.51-35.26). In this case widowed/separated women formed the referent group. As the first interval covers 1 the empirical evidence shows that the level of using LAC methods were more likely for married women as well as those who had never lived in union than widowed/separated women.

The referent category being diploma and above education the AOR for women with no education was 0.06 (0.01-0.82) while for

those having primary education it was 0.37 (0.08-1.56). Similarly, the AOR for women with secondary was 0.56 (0.14-2.17). This shows that whilst there is no significant difference between primary and secondary levels of education, women with any education were 93.6 percent less likely to using LAC methods compared to diploma and above education.

When women engaged in merchant /trades as referent category, no statistically significant differences were observed within the two categories of working status, Government employment and merchant/trades showed the use of LAC methods (AOR=1.04; 0.29, 3.64). Women engaged in self-employment and not working were less likely to use LAC methods as compared women who engaged in merchant/trades less likely to use LAC methods than women (AOR=0.08; 0.01-1.54) and (AOR=0.48;0.17-1.38) respectively.

Women who heard about LAC methods were 23.3% more likely to using the LAC methods than women who had not heard about LAC methods (1.23; 0.23- 6.57). Women who heard about LAC methods from neighbors/relatives and husband were 15.9% and 55.6% less likely to using LAC methods (0.80; 0.19-3.39) and (0.44; 0.08-2.30) while women heard from health professionals were 152.3% times more likely using LAC methods compared to women who heard from media (2.52; 0.87-7.28). This showed that while women heard from health professionals (extension workers) empirically they accepted the awareness to use the LAC methods and the health professions provide varies methods at that time.

Women who were followers of the Coptic orthodox religion were more likely (AOR=2.19; 0.68-7.02) to use LAC methods than followers of Protestantism (referent category). Women, who were followers of Muslim showed the low level (AOR=0.83; 0.28-2.47) to use LAC methods as Protestants.

In the case of women having four or more children taken as the referent group, it was observed that women who had no children were 66.4% less likely to use LAC (AOR=0.34; 0.10-1.14). For women with 1-3 children the likelihood to use LAC methods was 48.2% lower compared to the referent category (AOR= 0.52; 0.20-1.35).

Using LAC methods was found to be associated significantly with attitudes of women to long act contraceptives methods. Women have had not good attitudes category had less using LAC methods (AOR= 0.32; 0.09-1.13) relative to women fearing category (reference group), those had good attitudes had higher using the LAC methods as women in fear (AOR=10.06; 3.74-27.18) (Table 2).

The goodness-of-fit measures how effectively the model describes the response variable. The most common assessment of overall model fit in logistic regression is likelihood ratio test and Hosmer-Lemeshow.

The likelihood ratio test is simply the chi-square difference between the null model (i.e., with the constant only) and the model containing the predictors. Under model summary in Table 3 we see that the results of -2Log Likelihood statistics is 172.113. This statistic measures how poorly the model predicts using LAC methods. The smaller the statistic value the better the model. SPSS does not give this statistic for the model that has only the intercept; we know it to be (172.113+123.534=295.647). When we add predictors' value of the -2 Log Likelihood statistics became smaller by 295.647-172.113=123.534, which is the statistic for omnibus test. If the model with the predictors is significantly different from the model with only the intercept we use the omnibus test of model coefficients test. The difference of these two yields a chi-square statistic which is a measure of how well factors /predictor variables affect the outcome variable. The value of $\chi^2=123.534$ with d.f=23, p-value<0.001, shows that there is adequate fit of the data to the model, meaning that at least one of the predictors is significantly related to the response variable. This means the null hypothesis that there is no difference between the model with only a constant and model with predictor variables was rejected (Table 3).

The proportional by chance accuracy rate is a proportional chance criterion that uses as a standard for assessing model's accuracy rate.

Table 2: Result of multivariate logistic regression on predictors of use of long acting contraceptive.

Variables	Categories	COR(95% CI)	AOR(95% CI)
Age of women	15-24	0.25(0.10, 0.63)**	0.28(0.039, 2.014)**
	25-34	0.17(0.07, 0.37)	0.05(0.09, 0.31)
	35-49	1	1
Marital status of women	Single	0.84(0.286, 2.475)	13.35(0.99-71.02)*
	Married	0.77(0.36, 1.66)	15.29(2.51, 35.26)
	Widowed /Separated	1	1
Educational level of women	No education	0.28(0.09, 0.85)*	0.06(0.01, 0.20)*
	Primary (1-8)	0.39(0.66, 0.92)	0.37(0.09, 1.56)
	Secondary (9-12)	0.30(0.13, 0.65)	0.56(0.14, 2.18)
	Diploma and above	1	1
Occupation of women	Housewife	0.03(0.01, 0.32)	0.08(0.01, 1.54)*
	Government employment	0.68(0.30, 1.55)	1.04(0.29, 3.64)
	Self-Employment	0.11(0.02, 0.75)	0.48(0.17, 1.38)
	Merchant /trade	1	1
Heard about any contraceptive methods	Yes	0.81(0.28, 2.31)	1.23(0.23, 6.57)
	No	1	1
Source of information	Neighbors/relatives	0.63(0.26, 1.52)*	0.81(0.19, 3.39)
	Husband	0.66(0.21, 2.08)	0.44(0.08, 2.30)
	Health Professionals	1.78(0.87, 3.62)	2.52(0.87, 7.28)
	Media	1	1
Religion of women	Orthodox	1.72(0.88, 3.38)	2.19(0.68, 7.02)
	Muslim	0.60(0.28, 1.28)	0.83(0.28, 2.47)
Ethnicity of women	Protestant	1	1
	Oromo	0.32(0.11, 0.99)	0.03(0.01, 0.35)*
	Amhara	0.50(0.15, 1.67)	0.05(0.01, 0.53)
	Gurage	0.44(0.13, 1.48)	0.03(0.01, 0.34)
No of children	Others (Tigre, Gumuz...)	1	1
	No child	0.43(0.18, 0.99)**	0.34(0.10, 1.14)**
	01-Mar	0.55(0.28, 1.07)	0.52(0.20, 1.35)
	>3	1	1
Attitudes for LAC	Not good	0.32(0.11, 0.97)**	0.32(0.09, 1.13)*
	Good	9.14(4.28, 19.53)	10.05(3.74, 27.18)
	Fear	1	1

*P value<0.05; ** P value<0.01

Even if the predictor variables had no relationship to the dependent variable, it would be expected to be correct in the predictions of group membership some percentage of the time [10]. The proportional by chance accuracy rate was computed by first calculating the proportion of cases for each group based on the number of cases in each group in the classification table at Step 0 which includes no predictors and just the intercept. The proportion in the “using LAC” group is 71/246=0.288. The proportion in the “not using LAC” group is 175/246=0.712. The proportional by chance accuracy rate is $0.288^2 + 0.712^2 = 0.507$ (Table 4).

The accuracy rate computed by SPSS was 83.7 percent which was greater than the proportional by chance accuracy criteria of 63.4 percent ($1.25 \times 50.7\% = 63.4\%$). Overall accuracy of this model to predict using LAC methods was 83.7% were correctly classified providing evidence that the model fits the data well.

The Hosmer-Lemeshow statistic measures the goodness-of-fit by creating 10 ordered groups of subjects and then compares the number actually in each group (observed) to the number predicted by the logistic regression model (predicted). Thus, the test statistic is a chi-square statistic with a desirable outcome of non-significance, indicating that the model prediction does not significantly differ from the observed. The p-value of Hosmer-Lemeshow test is 0.238 showing that we fail to reject the null hypothesis that there is no difference between observed and predicted values, implying that the model adequately fits the data at a 0.05 level of significance (Table 5).

Discussion

A total of 246 women of the reproductive age (15-49 years) who resided in Guto Gida District, East Wollega Ethiopia was included in this study. It was learned that 175 (71.1%) women not using LAC. On the other hand, 71 (28.9%) women were using LAC methods. Majority of women in this study used implants (55.7%) followed by IUCD (44.3%) This study revealed that women who were using LAC methods were: age category of 35-49, Orthodox religion followers, had Diploma and higher education, were working in government office,

had heard from health professions, had four and above children and had good attitudes for LAC methods.

Women’s at age 15-24 and 25-34 years were less likely to use long acting contraceptive methods as compared to women with age group of 35-49 years. This result is in line with study conducted in Debre Markos Town [11]. Similarly study conducted in Jigjiga Somalia revealed that age of mothers was found to be associated with the family planning method used [12].

Many study in Ethiopia showed that women using LAC methods as they educated more i.e. educated women have greater autonomy to make decisions and have greater ability to use quality health care services [13,14].

This study has indicated that women who were not working (house wise) and Self Employment were about 92.0% and 51.4% less likely to use LAC methods than women who were working merchant/trade. For those working in government sectors close to the referent category. This study consists with the study done in Nekemte town and Dembia District and Kelala Town [6,15]. A study undertaken in East of Iran showed no significant association between occupational status of women and their husbands and using LAC, which is similar to studies conducted by Earsido [16,17].

Mothers who had positive attitudes towards LAC methods were 10 times more likely to use LAC methods. This is consistent with study finding from Arba Minch town, Ethiopia [13]. This can be attributed to the fact that women who have good attitudes about LAC methods are more likely to fairly weigh the risks and benefits of using LAC methods and decide.

Using LAC method was low, despite multipronged activities have been undertaken throughout the country. From the socio-economic factors, educational status of the women, source of information, number of living children, good attitudes and women’s occupation were found to be predictors of long acting contraceptive methods usage. Thus, policy

Table 3: Omnibus Tests of Model Coefficients and Model summary.

		Chi-square	df	Sig.
Step 1	Step	123.534	23	0
	Block	123.534	23	0
	Model	123.534	23	0
Model Summary				
Step		-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1		172.113	0.395	0.564

a. Estimation terminated at iteration number 7 because parameter estimates changed by less than .001.

Table 4: The proportional by chance accuracy rate was computed by first calculating the proportion of cases for each group based on the number of cases in each group in the classification table at Step 0 which includes no predictors and just the intercept.

Classification Table ^a					
Observed			Predicted		
			Using LAC		Percentage Correct
			Not	Yes	
Step 1	Using LAC	Not	158	17	90.3
		Yes	23	48	67.6
Overall Percentage					83.7

The cut value is .500

Table 5: Implying that the model adequately fits the data at a 0.05 level of significance.

Step	Chi-square	df	Sig.
1	10.409	8	.238

makers should further encourage women to pursue their education to at least complete secondary school level. Moreover, community based health care workers should strengthen information, education and communication to ensure that women have higher knowledge and positive attitude towards long acting contraception methods.

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