Determinants of Long Acting and Permanent Contraceptive Methods Utilization among Married Women in Hossana Town, Southern Ethiopia: A Case - Control Study

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Abstract

Background: Long-acting and permanent contraceptive methods (LAPMs) are highly effective, safe, convenient, and cost effective. Many women in Ethiopia rely on short acting contraceptives. Hence, this study was conducted to assess determinants of long acting and permanent contraceptive methods utilization among married women in Hossana town, Southern Ethiopia.

Methods: A community based unmatched case control study was conducted in Hossana town among married women. Census was done to know the number of cases and controls in the study area before data collection. A total of 420 respondents (140 cases and 280 controls) were selected by using simple random sampling technique. Cases were married women who were using long acting and permanent contraceptive methods whereas controls were married women who were using short acting contraceptive methods. Data entry and cleaning were done by Epi-info version 3.5.3 and exported to SPSS version 20 for analysis.

Result: A total of 414 married women of reproductive age group were interviewed with response rate of 99%. Women with moderate and good level of knowledge about LAPM [AOR=13.9, 95% CI: 6.16, 31.56] and [AOR=8.74, 95% CI: 3.78, 20.2] respectively, discussion about modern contraceptives with their partners [AOR=3, 95%CI: 1.37, 5.1], plan or intention to give birth in the future [AOR=0.5, 95% CI: 0.25,0.98], source of modern contraceptives from non-governmental health facilities [AOR=7.4 95% CI: 2.62, 20.8] and women who had 3-4 children versus children[ AOR = 0.42 95% CI: 0.20, 0.90] were determinant factors of LAPM utilization.

Conclusion: More actions should be done in order to increase the utilization of LAPM by promoting discussion between partners about modern contraceptives, women’s knowledge about LAPM and provision of adequate LAPM in public health facilities.

Keywords: Long acting and permanent method; Contraceptives; Determinants; Ethiopia

Background

Globally, continuing growth of the population has become an urgent problem. Most of this growth is occurring in developing countries where the fertility rate is very high [1]. Africa’s population, currently increasing faster than any other major regions, is projected to account for 21 percent of world population by 2050 [2]. The condition in Ethiopia is still much worse than most African countries. The total fertility rate in the country is 4.8 and 4.9 in Southern Nation and Nationalities Population Region which is still very high when compared with other African countries [3]. In 2013, an estimated 289,000 women died worldwide, down from 523,000 in 1990. But 800 women a day are still dying from complications in pregnancy and childbirth globally-equivalent to 33 an hour. Sub-Saharan Africa is the riskiest region in the world and 99% of all maternal related deaths occur in developing countries [4].

Family planning is central to reduce poverty, promote economic growth, raise female productivity, lower fertility and better child survival and maternal health [5]. If enough money is invested in family planning to fulfill all unmet need, then an average of three times that amount could be saved on meeting five different Millennium Development Goals [6].

Long-acting and permanent methods (LAPMs) are highly effective contraceptives. Two of them are the intrauterine device (IUD) and the contraceptive implant are long-acting, when they are removed reversible options for women and couples who wish to delay, space, or limit their pregnancies and effective for up to 12 years and to 3–7 years respectively. The other two methods, female sterilization and vasectomy are permanent methods. LAPMs are convenient for users, effectively prevent pregnancy, cost effective for programs over time, can result in substantial cost savings for governments, and contribute directly to reaching national and international health goals [1]. Roughly 25 percent of women and couples in Sub-Saharan Africa who want to space or limit their births are not using any form of contraception. Although women in sub-Saharan Africa report that they prefer to space their births by more than two years, most births in the region are still spaced closer than that [7-9]. The utilization of LAPMs has not kept pace like that of short-acting methods. Data from demographic and health surveys from Sub-Saharan countries show that the proportion of women currently using LAPMs is significantly lower than the
Variables of the study based on the number of users. Finally, by using simple random sampling procedure, cases and 280 controls were included from previous study of the determinant factor of contraceptive use in Ethiopia is relying on short acting contraceptive methods in contrary to other many developing countries [3]. Long-acting and permanent methods are very safe, convenient, cost effective, and most effective of all methods. In addition there is higher unmet need then utilization of the LAPM. Therefore, this study tried to assess determinants for the utilization of LAPMs in Hossana town.

Methods

Study design and Study setting

Community based unmatched case control study design was applied from April 8-28, 2013. The study was conducted in Hossana town which is capital town of the Hadiya Zone, Southern Ethiopia. According to Central Statistics Agency estimation in 2013G.C, the total population of town was approximately 92,735. In the town there is one Zonal hospital and three health centers. The source populations of the study were all women using modern contraceptive methods who are residing in Hossana town. The study population those married women who were using modern contraceptives in the study area. Cases were married women who were using long acting and permanent contraceptive methods while controls were married women who were using short acting contraceptive methods. Cases and controls resided in the study area at least for six months were included in the study whereas seriously ill, unable to hear and mentally disabled among cases and controls during survey were excluded.

Sampling

The sample size was determined by using EPI INFO version 3.5.3 software of two population proportion formula by assumption of 95% confidence interval, 85% power, 10% non-response rate, case to control ratio of 1:2. Proportion of the cases for utilization of LAPM was 53.7% and expected frequency of exposure among control group was 37% which was taken from previous study of the determinant factor of “desire for more children” [12-25]. The total of sample size was 420 (140 cases and 280 controls).

Sampling procedure

All [8] kebeles (lowest administrative units) were included in the study. Census was done to distinguish all cases and controls. Accordingly, total sample were allocated proportionally to each kebele based on the number of users. Finally, by using simple random sampling technique study subjects were selected.

Variables of the study

Utilization of LAPM was dependent variable. The explanatory variables were age, religion, ethnicity, monthly income, educational level of the respondent, education of husband, desire for more children, occupation, age at first marriage, number of children alive, intention to give birth in the future, number of pregnancies, inter spouse’s communication, desired no of children, knowledge towards LAPM, cultural acceptability, service availability and accessibility, exposure to mass media.

Operational definition

Good Knowledge of LAPM: - those who scored 80 % and above distinct features of LAPMs from knowledge questions.

Moderate knowledge of LAPM: - those who scored 50 to 79% distinct features of LAPMs from knowledge questions.

Poor knowledge of LAPM: - those who scored less than 50% features of any of the LAPMs from knowledge questions.

LAPMs: - Intrauterine devices (IUDs), implants and permanent contraceptive method.

Short acting contraceptives: - Modern contraceptives which includes pills, female condom and injectables.

Data collection and quality control

Data was collected by face-to-face interview using a structured and pre-tested questionnaire. The questionnaire was prepared first in English and it was translated into Amharic to suit local applicability. Finally, to ensure its consistency, the questionnaire was back translated into English by other people who have similar work experience. These questionnaires were adapted from different literatures developed for similar purpose by considering the local situation of the study subjects. Eight diploma female nurses were selected and recruited for data collection and two Bachelor of Science nurse supervisors were assigned. Data quality was maintained by pre-testing the questionnaire on 5% of the randomly selected married contraceptive user women.

Data processing and analysis

All questionnaires were entered, edited, coded and cleaned into Epi-info version 3.5.3 and exported to SPSS version 20 software packages for analysis. The data were analyzed using logistic regression to determine the effect of various factors on the outcome variable and to control confounding. Most of the variables were fitted to the bivariate logistic regression. Then all variables having a p value ≤ 0.2 in the bivariate analysis were further entered into multivariate logistic regression model. In the multivariate analysis, standard enter techniques were fitted. Variables having p value ≤ 0.05 in the multivariate analysis were taken as significant predictors. Crude and adjusted odds ratios with their 95% confidence intervals were calculated. The Hosmer and Lemeshow goodness of- fit test was used to assess whether the necessary assumptions for the application of multiple logistic regression were fulfilled and p value > 0.05 was considered a good fit.

Ethical consideration

Ethical clearance and supportive letter to undertake the study was obtained from the University of Gonder Institute of Public Health Ethical review board. Both written and verbal permissions were obtained to undertake the study from the Hadiya Zone health department and Hossana health office. All the study participants were informed about the objective and importance of the study and their verbal consent was obtained before conducting data collection. They were also informed about their right of not participating in the study at
any time. Privacy and confidentiality of the information were assured and collected throughout the entire study period. Study was reviewed University ethical review board.

Results
Socio-demographic characteristics of the respondents

A total of 414 (138 cases and 276 controls) married women of reproductive age group with response rate of 99% were interviewed. Almost 36% of cases and 42% of controls were in the age group 25-29 years. The mean ages of study participants were 29.21 (SD ± 5.57) and 30.7 (SD ± 6.45) of cases and controls, respectively.

With regarding to family size, seventy-seven (56%) of cases and one hundred twenty-six (46%) of controls had five and above family size. Majority of the participants 105 (76.1%) of cases and 197 (71.4%) of controls were Protestants. Pertaining to educational status of the study subjects 5% of cases and 4.7% of controls could not read and write (illiterate) whereas 44% of cases and 34% of controls achieved secondary and above. Among the study participants, 66% of cases and 64% of controls were Hadiya in ethnicity (Table 1).

Reproductive characteristics of LAPM and short acting contraceptives users

About thirty percent of the study participants got first marriage between the age 15-19 in both cases and controls. Majority of the interviewed women were first gave birth within 20-24 years age in both cases and control groups. Almost ten percent of the cases and controls married at age 25 years and above. Study participants had mean number of children 2.9 of cases and 2.6 of controls whereas 47 (34.1%) of cases and 44 (15.9%) of controls did not practice their first choice of contraceptives. On the other hand, reasons not to use LAPM among short acting contraceptive users were fear of side effects 36%, partner's disapproval 22.5%, medical reasons 13.5%, and also some of the cases and controls were motivated by their husbands or family members to use contraceptives.

Of cases and one hundred twenty-six (46.4%) of controls were health extension worker were source of information for modern contraceptive methods. Among the total contraceptive users, sixty-two (44.9%) of cases and 72 (51.4%) of controls had poor, moderate and good knowledge, respectively. The score of respondents were minimum 0 and maximum 9 towards LAPM (Figure 1).

Knowledge of modern contraceptives user women on long acting and permanent contraceptive methods

The level of knowledge of study participants were assessed by interviewing 10 items. Based on that 8 (5.8%), 76 (55.1%), 54 (39%) of cases and 116 (42%), 83 (30.1%), 77 (27.9%) of controls had poor, moderate and good knowledge, respectively. The scores of respondents were minimum 0 and maximum 9 towards LAPM (Figure 1).

Practice of different long acting and permanent and short acting contraceptive methods of married women in Hossana town

The study subjects had different sources of information about modern contraceptive methods. Of these, 39 (28.3%) of cases and 72 (26.1%) of controls mentioned mass media (TV/radio) as their source of information. For 51 (37%) of cases and 95 (34.4%) of controls health extension worker were source of information for modern contraceptives.

Regarding current practice of contraceptives 109 (79%) implants, 17 (12.3%) IUD, 12 (8.7%) female sterilization of cases and 241 (87.3%) injectables, 33 (12%) pills and 2 (0.7%) female condoms of controls were practiced by study participants. Out of the total controls 162 (59%) had plan or intention to use LAPM. Nearly, eighty percent of cases and seventy two percent of controls decided to use contraceptives through inter spouse communication and almost 18% of cases and 25% of controls decided alone (Table 3).

Pertaining to source of family planning, 113 (81.9%) of cases and 266 (96.4%) of controls obtained contraceptives from governmental health facilities. Among the total contraceptive users, sixty-two (44.9%) of cases and one hundred twenty-nine (46.4%) of controls were motivated by their husbands or family members to use contraceptives. Out of the all interviewee, due to different reasons 35% of cases and 16% of controls did not practice their first choice of contraceptives. On other hand, reasons not to use LAPM among short acting contraceptive users were fear of side effects 36%, partner’s disapproval 22.5%, medical problems 9%, myths and misconceptions 8%, desire to become pregnant
Determinants of LAPM utilization among married women in Hossana town

Predictor variables which had determinant effect on LAPM utilization in bivariate analysis were age of respondents, family size, monthly income, desired number of children, educational status of respondent, number of pregnancy, level of the knowledge, inter-spouse communication or discussion, source of contraceptives, number of the children and plan to give birth in the future. On other the hand, most variables which showed determinant effect with the LAPM utilization in the bivariate analyses but they could not persist in having such effect in the multivariate analyses. Such variables were: age of respondents, family size, monthly income, desired number of children, educational status of respondent and number of pregnancy (Figure 3).

Level of the knowledge was main determinant factor of LAPM utilization. Women with moderate and good level of knowledge about LAPM were fourteen and nearly nine times more likely to use LAPM as compared to those having poor knowledge \([\text{AOR}=13.9, \ 95\% \ CI: 6.16, 31.56]\) and \([\text{AOR}=8.74, \ 95\% \ CI: 3.78, 20.2]\), respectively.

Table 2: Reproductive characteristics of long acting and permanent contraceptives user women, Hossana town, Southern Ethiopia, April 2013.

| Variables                          | Cases No (%) | Controls No (%) |
|------------------------------------|--------------|-----------------|
| **Age at first marriage**          |              |                 |
| 15-19                              | 42 (30.4)    | 84 (30.4)       |
| 20-24                              | 65 (47.1)    | 136 (49.3)      |
| ≥25                                | 14 (10.1)    | 26 (9.5)        |
| not sure                           | 17 (12.3)    | 30 (10.9)       |
| **Age at first give birth**        |              |                 |
| 15-19                              | 23 (16.7)    | 41 (14.9)       |
| 20-24                              | 78 (55.5)    | 153 (55.4)      |
| ≥25                                | 17 (12.3)    | 46 (16.7)       |
| Not sure                           | 20 (14.5)    | 36 (13.1)       |
| **Number of pregnancies**          |              |                 |
| ≤2                                 | 58 (42)      | 145 (52.6)      |
| 3-4                                | 34 (24.6)    | 84 (30.4)       |
| ≥5                                 | 46 (33.3)    | 47 (17.0)       |
| **Number of children**             |              |                 |
| ≤2                                 | 62 (44.9)    | 151 (54.8)      |
| 3-4                                | 29 (20.1)    | 81 (29.3)       |
| ≥5                                 | 47 (34.1)    | 44 (15.9)       |
| **Plan to give birth in future**   |              |                 |
| No                                 | 54 (39.1)    | 53 (19.2)       |
| Yes                                | 84 (60.9)    | 223 (80.8)      |
| **Desired no of children**         |              |                 |
| ≤4                                 | 61 (44.2)    | 142 (51.4)      |
| ≥5                                 | 77 (55.8)    | 134 (48.6)      |
| **Decision to limit no of children**|            |                 |
| Husband                            | 5 (3.6)      | 11 (4.0)        |
| Wife                               | 8 (5.8)      | 20 (7.2)        |
| Joint decision                     | 121 (87.7)   | 239 (86.6)      |
| God                                | 4 (2.9)      | 6 (2.2)         |

Figure 1: Knowledge of married women on long acting and permanent contraceptives utilization, Hossana town, Southern Ethiopia, 2013.
Source of contraceptives found to be determinant factor for use of LAPM. Women obtaining modern contraceptives from NGO were seven times more likely to use LAPM than those getting from governmental health facilities [AOR=7.4 95% CI: 2.62, 20.8].

Discussion about contraceptive utilization between partners was also found to be predictor of using LAPM. Respondents who discussed with their partners about modern contraceptives were three times more likely to use LAPMs than those who did not discuss about modern contraceptives [AOR=3, 95% CI: 1.37, 7.11].

Women who had plan or intention to give birth in the future were 50% less likely to use LAPM than those who did not plan [AOR=0.5, 95% CI: 0.25,0.98]. Finally, women who had 3-4 children were 58% less likely to use LAPM than those having 5 and above number of children [AOR = 0.42 95% CI: 0.20, 0.90] (Table 4).

Discussion

After handling other confounding factors level of the knowledge, source of contraceptives, number of the children alive, and plan/intention to give birth in the future and discussion with their husbands about modern contraceptives were found to be determinant factors for utilization of LAPM.

Level of the knowledge about LAPM tremendously affects utilization of LAPM. Accordingly, women who had good and moderate knowledge about LAPM of contraceptives were more likely to practice LAPM as compared to those who had poor knowledge. This finding was consistent with the study done in Mekelle town [25-37]. The reasons for higher variation in knowledge might be attributed to better understanding of family planning messages in general and LAPM in particular those practiced LAPM. Different literatures posit that women who practiced LAPM were not only more knowledgeable about the available options of LAPM, but also better equipped with discussion to health professionals about LAPM.

Women those decided after inter spousal communication about utilization of contraceptives were more likely to use LAPM than women who did not have inter spousal communication or discussion between them. This result was supported by the studies conducted in different parts of Ethiopia, such as in Mekelle, Jimma, and Addis Ababa revealed that discussion within partners preliminary for use of family planning services [24,25, 28,30]. The probable rationality might be due to men play a great role in decision making in every aspect of life activities including family planning utilization and method choice in developing countries like Ethiopia. This showed that male involvement was very crucial in family planning method choice.

Women obtaining modern contraceptives from NGO health facilities were more likely to practice LAPM than women getting from governmental health institutions. The possible reason might be inadequate discussion between health professionals with clients on reproductive health issues especially on LAPM due to work overload in governmental health facilities. These seem too short period to address reproductive health issues including family planning utilization and method choice in developing countries like Ethiopia. This showed that male involvement was very crucial in family planning method choice.

Women those obtaining modern contraceptives from NGO health facilities were more likely to practice LAPM than women getting from governmental health institutions. The possible reason might be inadequate discussion between health professionals with clients on reproductive health issues especially on LAPM due to work overload in governmental health facilities. These seem too short period to address individuals’ requirement and openly discuss their reproductive health issues with the health professionals. In contrast, in NGOs, employees commit to work since they are highly payable, intensively supervised and specific work. In addition, NGOs have good commitment to work since they are highly payable, intensively supervised and specific work. In addition, NGOs have good

![Figure 3](image.png)

**Figure 3**: Sources of contraceptives among married women for long acting or permanent and short acting contraceptive users in Hossana town, 2013.

| Variables                        | Cases   | Controls | Crude OR (95% CI) | Adjusted OR (95% CI) | P-value |
|----------------------------------|---------|----------|-------------------|----------------------|---------|
| **Level of Knowledge**           |         |          |                   |                      |         |
| Poor                             | 8(5.8)  | 116(42)  | 1                 | 1                    |         |
| Moderate                         | 76(55.1)| 83(30.1) | 13.6(6.1,28.99)*  | 13.9(6.16,31.56)**   | <0.001  |
| Good                             | 54(39.1)| 77(27.9)| 10.2(4.59,22.6)*  | 8.74(3.78,20.2)**    | <0.001  |
| **Source of MC**                 |         |          |                   |                      |         |
| Government                       | 113(81.9)| 226(66.4)| 1                 | 1                    |         |
| Private                          | 6(4.3)  | 3(1.1)   | 4.0(1.2,19.15)*   | 3.0(0.71,13.2)       |         |
| NGO                              | 19(13.8)| 7(2.5)   | 5.43(2.6,15.62)*  | 7.4(2.62,20.8)**     | <0.001  |
| **Discuss about MC with Husband**|         |          |                   |                      |         |
| No                               | 11(8.0) | 45(16.3) | 1                 | 1                    |         |
| Yes                              | 127(92.)| 231(83.7)| 2.25(1.32,5.51)*  | 3.0(1.37, 7.11)**    | 0.007   |
| **Number of children**           |         |          |                   |                      |         |
| ≤2                               | 62(44.9)| 151(54.8)| 0.38(0.23,0.64)*  | 0.54(0.26,1.15)      |         |
| 3-4                              | 29(21.0)| 81(28.3) | 0.34(0.19,0.61)*  | 0.42(0.20,0.90)**    | 0.025   |
| ≥5                               | 47(34.1)| 44(15.9)| 1                 | 1                    |         |
| **Plan to give birth in future** |         |          |                   |                      |         |
| No                               | 54(39.1)| 53(19.2)| 1                 | 1                    |         |
| Yes                              | 84(60.9)| 223(80.8)| 0.37(0.24,0.58)*  | 0.5(0.25,0.99)**     | 0.04    |

Where: - * Significant by binary logistic regression at p-value <0.05, whereas ** Significant by both binary and multiple logistic regression at p-value <0.05

**Table 4**: Determinants of long acting and permanent contraceptive methods among users’ women, Hossana town, Southern Ethiopia, 2013 N=414.
commodities or logistics, private areas for confidential counseling and dedicated clinical space for procedures than governmental institutions.

Current LAPM utilization was determined by intention to give birth in future. Accordingly, intention to give birth in the future had inverse impact on use of LAPM. This means, women who had intention to give birth in the future were less likely to use LAPM than those who did not have plan. This might be attributed to the preference of short acting contraceptive method to give birth within a short period after switching off the method and most of the women used short acting for spacing than limiting birth.

Finally, number of children alive had positive impact on use of LAPM. Women who had three to four children were less likely to use LAPM than those who had five and above children. This result was consistent with studies conducted in Mojo town [23]. This might be when women have sufficient amount of children, they want to limit the number of children and use long acting and permanent contraceptive methods than short acting.

Conclusion

More actions should be done in order to increase the utilization of LAPM by promoting discussion between partners about modern contraceptives, women's knowledge about LAPM and provision of adequate LAPM in public health facilities.

Competing Interests

The authors declare that they have no competing interests.

Authors’ Contributions

AE, AG and TK designed the study, analyzed the data drafted the manuscript and critically reviewed the article. All authors read and approved the final manuscript.

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