Women's Contraceptive Use, Fertility Intention, and Associated Factors: Evidence from Health and Demographic Surveillance System, Eastern Ethiopia

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Abstract

Background: Improving maternal health condition is a critical global health concern. But in 2012, 222 million women who want to avoid pregnancy are not using contraceptives in developing countries. The main purpose of this study was to assess women's contraceptive use and fertility intention, and the associated factors in eastern Ethiopia.

Methods: Community based survey was conducted among 2,072 women (15-49 years) in Harar Health Demographic Surveillance System (HDSS) site in eastern Ethiopia. Data were gathered by trained data collectors, and entered into computer based software and exported to Statistical Package for Social Sciences (SPSS) version 20.0 for analysis. Descriptive, binary and multiple logistic regression analysis were carried out. A statistical association was declared using adjusted odds ratio at 95% confidence interval and p values <0.05.

Results: Almost all the women (99.5%, n=2,061) have ever heard about family planning methods. Health professionals (62.1%, n=1286) were the main source of information about the family planning methods. The women who had ever used contraceptive and who were using currently (during study period) were 89.4% (1,853) and 73.0% (n=1512), respectively. Injectable method (52.3%) was the most popular method, followed by pills (24.8%). Implanon, Intrauterine contraceptive device and surgical methods were used 15.5%, 2.1% and 0.2%, respectively. Forty seven percent of the women had no desire to have a baby in the next two years. The women's age ranged 30-39 years (AOR =0.49; 95% CI: 0.37, 0.64), women's age ranged from 40-49 years (AOR=0.25; 95% CI: 0.18, 0.35), women unable to unable to read and write (AOR=0.64; 95% CI: 0.50, 0.84), women who had >2 alive children (AOR=0.28; 95% CI: 0.13, 0.57) had significant association with their contraceptive use. Also, women's age ranged 30-39 years (AOR=0 .68; 95% CI: 0.54, 0.85), women's age ranged from 40-49 years (AOR=0.24; 95% CI: 0.17, 0.32), women who had no alive children (AOR=5.42; 95% CI: 1.59, 18.46) and had <2 alive children (AOR=2.42; 95% CI: 1.22, 4.82) were significantly associated with women's fertility intention.

Conclusion: The women's contraceptive use and an intention not to have a baby were high compared with 2016 EDHS report of Harari Regional State. The study participants' age, educational status, and having alive children were the factors associated with their contraceptive use and fertility intention. Therefore, we recommend that concerned stakeholders focus on the associated factors to address the contraceptive use and realize the women's fertility intention.

Keywords: *Contraceptive Use, Fertility Intention, Associated factors, Harar, Eastern Ethiopia*

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Introduction

Improving maternal health condition is a global health target (Nieburg, 2012; UNFPA, 2012), and optimizing pregnancy through contractive is a crucial intervention to improve maternal health and to reduce maternal mortality (Nieburg, 2012).

Evidence has indicated that in developing countries, annually, 222 million women who wanted to avoid pregnancy are not using contraceptive methods, and 22 million women have unsafe abortions each year. The evidence further indicated that unmet need for modern contraceptive contributed to more than 80% of unintended pregnancies (UNFPA, 2012).

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In sub-Saharan Africa (SSA), only 23% of married women are using family planning (FP), and 25% of married women have unmet need of FP method (Gribble and Haffey, 2008).

In Ethiopia, even though maternal mortality ratio has reduced tremendously, from 673 in 2005 to 412 in 2016, still the current level appears to be too high (CSA, 2006, 2012, 2016). While the women's knowledge about contraceptives is quite high (97%) (CSA, 2012), the overall contraceptive use or prevalence in the country is very low, although it has increased from 15% in 2005 and 29% in 2011, to 36% in 2016 (CSA, 2006, 2012, 2016). More than 80% of the Ethiopian women have reported that public health sectors and local mass medias (television and radio) are the main source of information about contraceptives (CSA, 2006, 2012). More than half (52%) of married women have an intention to use FP method in the future (CSA, 2006).

Fertility, which has a tremendous impact on the size and structure of the population of a country, is one of the three principal components of population dynamics. In Ethiopia, the total fertility rate (TFR) has declined from 5.4 in 2005, 4.8 in 2011 and 4.6 in 2016 (CSA, 2006, 2012, 2016). The overall desired TFR was 3.0 children per woman in Ethiopia in 2011 (CSA, 2012). The married women's intention to have more child decreased sharply from 38.2% in 2011 to 22% in 2016 (CSA, 2012, 2016). We could not get a research which has been conducted on similar topic in Harar town and the surrounding in the eastern Ethiopia. Thus, there is paucity of research evidence on women's contraceptive use and fertility intention. The HDSS is one of the main source of evidence on these.

Therefore, this study aimed in assessing the level of women's contraceptive use, fertility intention, and the associated factors.

Materials and Methods

Study setting

The HDSS is based in Harar town which is the center of the Harari Regional state, eastern Ethiopia (Kersa HDSS, 2008; Assefa, 2016). The town is located about 526 km from Addis Ababa, with a total area of the Harari region is 343.2 square km. The town is divided into 19 sub-districts (the smallest administrative unit in Ethiopia with an average population of 5000). According to the 2007 national-population census, the total population of Harari region was 183,344.The average gross population density of the region is estimated to be 552 persons per Km^2. Harar HDSS was established in September 2011 with a total of six sub districts, and currently, it comprised of 12 sub districts.

Study design

We used a community-based cross-sectional study data which was conducted at Harar HDSS site, September 1, 2015 to February 2, 2016 to assess women's contraceptive use, fertility intention, and associated factors (Figure 1).

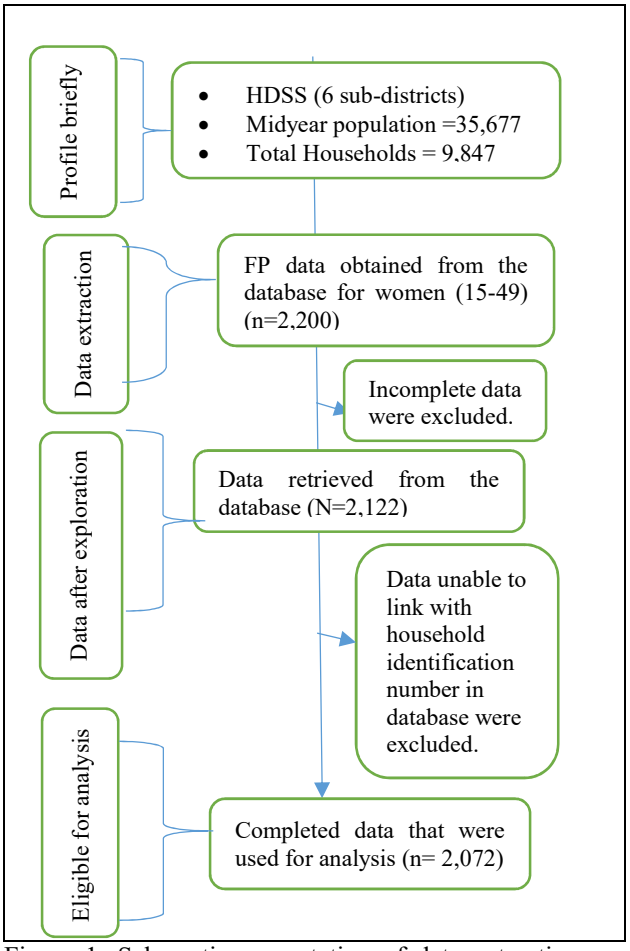

Figure 1: Schematic presentation of data extraction and inclusion in data analysis process.

Data management and extraction

Data for this study were extracted from Kersa Demographic Surveillance (KDS) database by the data managers and the two authors (AS and NA). The potential predictor variables such as socio-demographic characteristics of the women (age, education, marital status, religion,

number of children alive, occupational status and etc.), and obstetric histories (number of pregnancy, number of delivery) were extracted. The outcome variables (women's contraceptive use and fertility intention) were extracted from the database by the data manager. All the variables were linked to participant's identification code using the household registration system (HRS) in the data management software. Then the variables were coded and recoded accordingly to suit with the statistical analysis method.

Data quality control activities

Data quality control measures were taken at every step of the sampling and data collection activities by the HDSS research team and research assistants. Prior to the data extraction, the relevant variables were selected from the HDSS data collection tool. Furthermore, the data extraction was carried out by the data manager who had an experience on the KDS database management. In-complete participants information and unable to link with study participants identification code used by the HDSS were excluded from the analysis.

Measurement of variables

The women's contraceptive use: the status of the women's contraceptive use was assessed using a questions with a binary response. The women were asked "a*re you currently using family planning methods?" [Yes, No]*. Finally, their responses were coded Yes= 1 and No= 0.

The women's fertility intention: the women's fertility intention was explored to figure out whether they had an intention to limit their birth for the next two years. To address this, they were asked "*In the next two years, do you have any intention to have a baby?" [Yes, No]*. Then the responses were coded as Yes=1 and No=0.

In addition, all the data on predictor variables were collected as self-report of the women. For example, their age was recorded as self-report of the women in completed years, and the ages were recoded into three groups (1= younger than 30 years, 2=30-39 years, and 3=40-49 years). Other predictor variables were already predesigned with pre-determined categories (e.g. ethnicity, religion, occupation, type of school attending and others) for the HDSS.

Data processing and analysis

The data extracted from the database were stored (recorded) in Microsoft Excel© (2013) sheet. Then exported from the Excel to SPSS Version 23.0 statistical software for analysis. Data cleaning was made by running frequency to identify some outliers and data anomalies. Descriptive statistics were carried out to determine proportion, percentage, mean and standard deviations. Some variables were recoded into different categories to suit further analysis. Both SPSS and Microsoft Excel© (2013) were used as necessary to carry out analysis and construct figures for data presentation. Binary and multiple logistic regression analysis were carried-out to determine the relationship between explanatory variables and the women's contraceptive use and fertility intention. Hosmer-Lemshow goodness-of-fit was used to construct the final model. Explanatory variables that had achieved a p value less than 0.25 in the binary logistic regression were included in the multiple logistic regression analysis. Eventually, significant statistical association was declared using adjusted odds ratio (AOR) at 95% confidence interval (CI) with P Value less than 0.05.

Results

A total of 2,122 women aged 15-49 years were involved in this study. Of these, 2,072 (97.6%) of them were eligible for this analysis. Their mean age was 33.7($\pm$6.6) years. Many of them (83.4%) were literate and had formal education. Oromo and Amhara were the two dominant ethnic groups. Almost all of the women (98.8%) were married, and slightly more than half (53.6%) were housewives by occupation (Table 1).

Table 1: Sociodemographic characteristics of women (15-49 years) at Harar HDSS site, September 1, 2015 to February 2, 2016 (n=2,072).

Variable	Categories	Frequency	Percent
Age	≤29 years	600	29.0
	30-39 years	1021	49.3
	40-49 years	451	21.8
Educational status	Literate	1728	83.4
	Unable to read and write	344	16.6
Ethnicity	Oromo	758	36.6
	Amhara	827	39.9
	Gurage	228	11.0
	Harari	178	8.6
	Others (Tigrai, Somali, etc.)	81	3.9
Marital status	Married	2048	98.8
	Others (single, widowed, divorced, cohabitated)	24	1.2
Occupational status	Housewife	1110	53.6
	Merchant	216	10.4
	Government employee	299	14.4
	Pretty trader	99	4.8
	Private business	82	4.0
	Daily laborer	160	7.7
	Student	41	2.0
	Unemployed	47	2.3
	Others	18	0.9

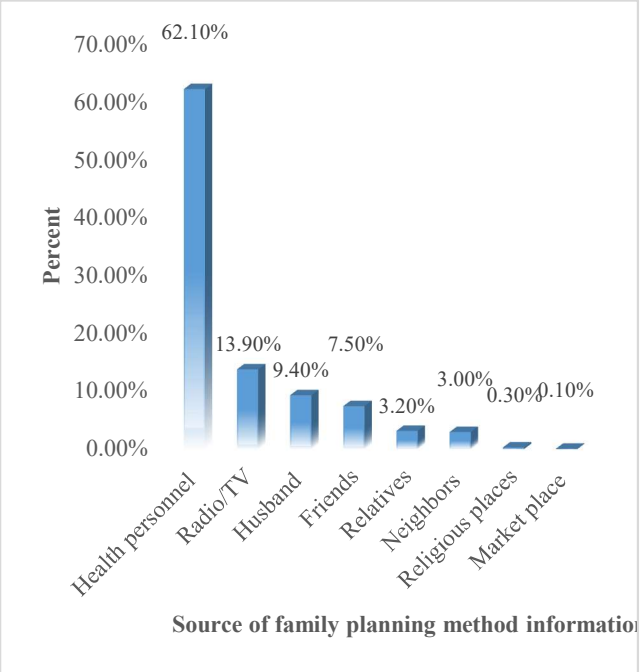

Figure 2: Source of family planning information among women (15-49 years) at Harar HDSS site, September 1, 2015 to February 2, 2016 (n=2,061).

Women ever used family planning methods

The women were asked whether they had ever heard about contraceptives or not and the source of information. Almost all of them (99.5%, n=2,061) had ever heard about at least one FP method; however, only 89.4% (n=1853) of the women have ever used FP methods. Health professionals were the main source of the information (62.1%, n=1,286), followed by mass media programs (listening Radio or watching Television) (13%, n=288) (Figure 2). Injectable method was the most popular (52.3%), followed by oral pills (24.8%), and implant was the most common long-acting contraceptive method (15.5%) (Figure 3).

Women use family planning method during study period

Almost three-quarters of the women (73.0%, n=1512) were using FP methods during the study period. Injectable (Depo-Provera) (46.9%) was the commonest method, followed by Implanon (21.3%) (Figure 4).

Women's reason for not using family planning method

The women disclosed some of the major reasons that hinder them from using FP. The desire to have more children (38.6%), fear of infertility in the future (18.6%),had pregnancy (13.2%), religious disapproval (5.5.%), unable to get the FP methods (4.3%), had pervious side-effect related bad experience (2.5%); husband or partner disapproval (1.8%) were the reasons for not using family planning methods.

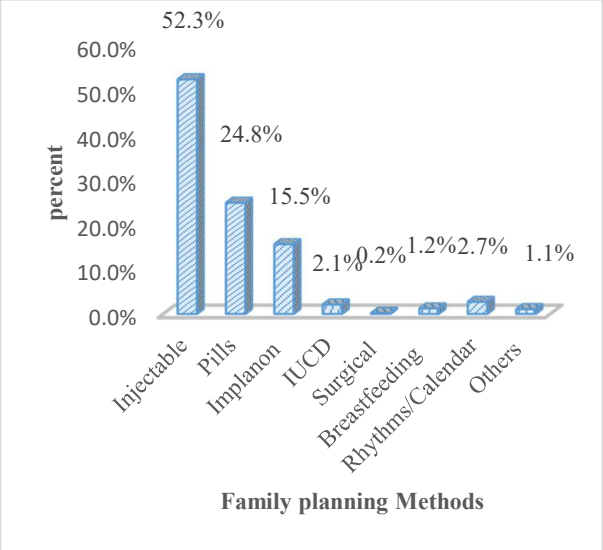

Figure 3: Women's ever used family planning methods at Harar HDSS site, September 1, 2015 to February 2, 2016 (n=1,853).

Relationship between independent variables and women's contraceptive use

The eight independent variables included in the binary regression method were age, education, ethnicity, occupational status, marital status, gravidity, parity, and number of alive children. Of these, the seven independent variables with p-value less than 0.25 were included into multiple logistic regression. The occupational status of the women was excluded from the analysis because of a P value greater than 0.25. Of the independent variables that were included in the final model, the women's age, educational status, parity and number of alive children were significantly associated with contraceptive use. The odds of the women aged 30-39 years were 51% less likely to use contraceptive than those younger than 30 years old (AOR=0.49; 95% CI: 0.37, 0.64). The odds of the study participants aged 40-49 years were 75% less likely to use contraceptive than ones younger than 30 years old (AOR=0.25; 95% CI: 0.18, 0.35). Likewise, the odds of the women who were illiterate were 36% less likely to use contraceptive than the literate women (AOR=0.64; 95% CI: 0.50, 0.84). In addition, the women who had more than two delivery (parity) were 3.7 times more likely to use contraceptive than women who had no previous deliveries (parity) (AOR=3.7; 95% CI: 1.44, 9.50). Women who had alive children were less likely to use family planning methods than women who had no alive child (null) (Table 2).

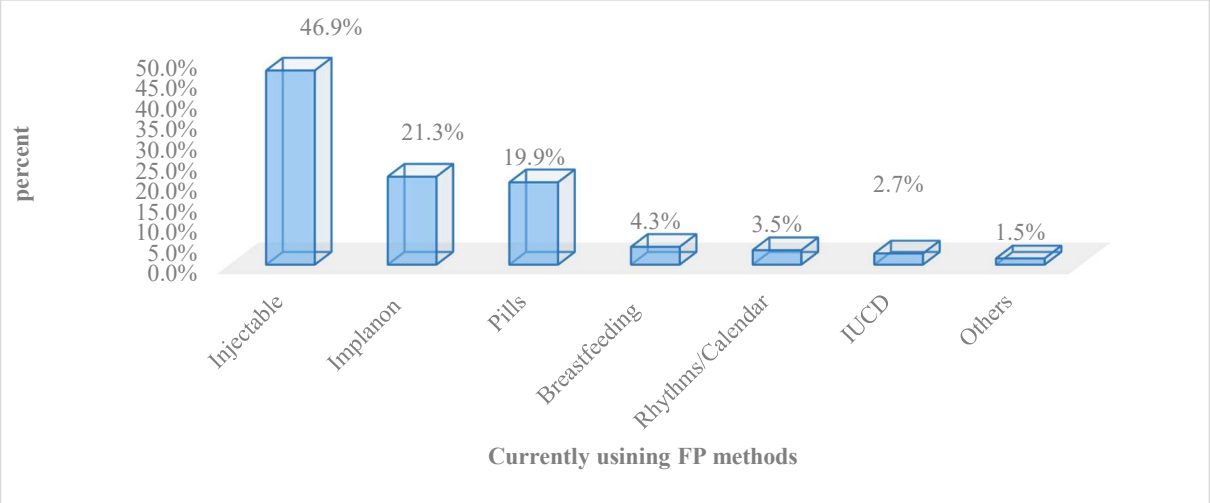

Figure 4: Contraceptive use during the survey period among women (15-49 years) at Harar HDSS site, September 1, 2015 to February 2, 2016 (n=1,557).

Table 2: Factors associated with women's contraceptive use at Harar HDSS site, September 1, 2015 to February 2, 2016 (n=2072).

Variables		Contraceptive practice		COR (95% CI)	AOR (95% CI)
	Category	Yes (%)	No (%)		
Age (years)	≤29	484(80.7)	116(19.3)	1.00	1.00
	30-39	752(73.3)	269(26.3)	0.67(0.52,0.86)*	0.49(0.37,0.64)*
	40-49	276(61.2)	175(38.8)	0.38(0.29,0.50)*	0.25(0.18,0.35)*
Educational status	Literate	1291(74.7)	437(25.3)	1.00	1.00
	Unable to read & write	221(64.2)	123(35.8)	0.61(0.58,0.78)*	0.64(0.50,0.84)*
Ethnicity	Oromo	552(72.8)	206(27.2)	1.00	1.00
	Amhara	624(75.5)	203(24.5)	1.15(0.92,1.44)	1.20(0.94,1.54))
	Gurage	151(66.2)	77(33.8)	0.73(0.53,1.01)	0.70(0.50,0.98)*
	Harari	124(69.7)	54(30.3)	0.86(0.59,1.23)	0.90(0.61,1.32)
	Others[&]	61(75.3)	20(24.7)	1.14(0.67,1.93)	1.09(0.63,1.90)
Marital status	Married	1498(73.1)	550(26.9)	1.00	1.00
	Others*	14(58.3)	10(41.7)	0.51(0.23,1.16)	0.52(0.21,1.29)
Women's ever pregnancy	Null	80(47.9)	87(52.1)	0.56(0.26,0.51)*	0.89(0.47,1.71)
	≤2	894(77.5)	260(22.5)	1.36(1.10,1.68)*	0.89(0.43,1.8)
	>2	538(71.6)	213(28.4)	1.00	1.00
Women's ever delivery	Null	75(44.6)	93(55.4)	0.33(0.24,0.47)*	1.49(0.39,5.68)
	≤2	890(78.6)	243(21.4)	1.50(1.22,1.85)*	3.7(1.44,9.50)*
	>2	547(70.9)	224(29.1)	1.00	1.00
Alive children	Null	81(45.0)	99(55.0)	0.31(0.22,0.44)*	0.12(0.04,0.42)*
	≤2	891(77.7)	255(22.3)	1.33(1.08,1.65)*	0.28(0.13,0.57)*
	>2	540(72.4)	206(27.6)	1.00	1.00

P value <0.05 significant statistical association; COR=crude odds ratio ; AOR=Adjusted odds ratio
**=single, widowed and divorced*
& = Somali, Tigray, Afar etc...

Women's fertility intention

Among the 2072 women, approximately half (47.0%, n=973) of them had no intention to have a baby in the next two years.

Relationship between independent variables and women's intention to have a baby

The eight independent variables included in the binary regression analysis method were age, education, ethnicity, occupational status, marital status, gravidity, parity, and number of alive children. Of these, the six independent variables with p-value less than 0.25 were included into multiple logistic regression. Of those independent variables that were included in the final model, age and number of alive children were significantly associated with the women's intention to have a baby for the next two years. The odds of women whose age ranged from 30 to 39 years were 32% less likely to have a fertility intention than those women who were younger than 30 years (AOR=0.68; 95% CI: 0.54, 0.85). The odds of women whose age ranged from 40 to 49 years were 76% less likely to have a fertility intention than those women who were younger than 30 years (AOR=0.24; 95% CI: 0.17, 0.32). Likewise, women who had no alive children were five times more likely to have fertility intention than women who had ≥2 children (AOR=5.42; 95% CI: 1.59, 18.46). Women who had ≤2 alive children were 2 times more likely to have fertility intention than women who had more than two children (AOR=2.42; 95% CI: 1.22, 4.82) (Table 3).

Discussion

This study determined the women's contraceptive use, fertility intention, and the associated factors in Harar HDSS site in eastern Ethiopia. Almost all of the participants (15-49 years) had ever heard about FP methods. Health personnel were the main source of FP information. Seventy three percent of the women were using FP methods during the study, and injectable method was the most preferred method, whereas long-acting contraceptive method was the least used.

Almost half of the women did not have a fertility intention in the next two years, and almost one-in-ten women would like to use contraceptives but did not have access for contraceptives. The women who were aged 30 to 39 years and those aged 40 to 49 years and had alive children were less likely to have fertility intention than the women aged less than 30 years and also had no children. Likewise, the women's contraceptive use was also associated with their age, educational status, parity, and having alive children.

In the present study almost all the women have ever heard about family planning methods (99%). This is consistent with the four consecutive Ethiopia demographic and Health Surveys (DHS) report (CSA, 2006, 2012, 2014, 2016).

In the present study almost all the women have ever heard about family planning methods (99%). This is consistent with the four consecutive Ethiopia demographic and Health Surveys (DHS) report (CSA, 2006, 2012, 2014, 2016). In the present study, most of the women have ever heard about pills and injectable (Depo-Provera) methods. However, relatively fewer number of women have ever heard about long-acting FP methods (Implanon=21.6% and IUCD=2.1%). This is similar to a study done in Ethiopia and indicated that 74.3% of the women knew short-acting contraceptives, and 28.4% of them knew long-acting methods (Mota *et al.*, 2015). This is quite similar with a study conducted in Iran and revealed that 21.4% of the women were using long-acting (Azmoude, 2017). On the other hand, the number of the women who had ever heard about contraceptive in the present study is quite higher than the one reported from a study conducted in Nigeria (pills=54% and injectable=47.4%) (Avidime, 2010), and in Bangladesh that reported that 31% of women were using contraceptive (Rahman, 2014).

In the present study, seventy three percent of the women were using contraceptives. This finding is quite consistent with a finding from analysis of the 13 SSA countries DHS data, including Ethiopia (Creanga *et al*., 2011). But the extent of contraceptive use found in this study finding is higher than the ones found by studies conducted in different part of Ethiopia, in which the use ranged from 8.5% to 25.4% (Mekonnen, 2011; Genet *et al*., 2015; Alemayehu, 2016).

Table 3: Factors associated with women's fertility intention among women (15-49 years) at Harar HDSS site, September 1, 2015 to February 2, 2016 (n=2072).

Variables		Women's intention		COR (95% CI)	AOR (95% CI)
	Category	Yes (%)	No (%)		
Age (years)	≤29	390(65.0)	210(35.0)	1.00	1.00
	30-39	484(47.4)	537(52.6)	0.49(0.39, 0.60)*	0.68(0.54,0.85)*
	40-49	99(22.0)	352(78.0)	0.15(0.12, 0.20)*	0.24(0.17,0.32)*
Educational status	Literate	831(48.1)	897(51.9)	1.00	1.00
	Unable to read & write	142(41.3)	202(58.7)	0.76(0.60, 0.96)*	0.69(0.21, 2.23)
Ethnicity	Oromo	359(47.4)	399(52.6)	1.00	1.00
	Amhara	372(45.0)	455(55.0)	0.91(0.75,1.11)	0.94(0.75,1.17)
	Gurage	131(57.5)	97(42.5)	1.50(1.11,2.02)	1.60 (1.16,2.21)*
	Harari	74(41.6)	104(58.4)	0.79(0.57,1.10)	0.99(0.69,1.43)
	Others[&]	37(45.7)	44(54.3)	0.94(0.59,1.48)	0.83(0.51,1.35)
Women's ever pregnancy	Null	111(66.5)	56(33.5)	4.69(3.28,6.71)*	1.07(0.54, 2.12)
	≤2	639(55.4)	515(44.6)	2.94(2.42,3.57)*	0.53(0.26,1.07)
	>2	223(29.7)	528(70.3)	1.00	1.00
Women's ever delivery	Null	124(73.8)	44(26.2)	7.01(4.81, 10.23)*	1.09(0.28, 4.22)
	≤2	628(55.4)	505(44.6)	3.10(2.55, 3.76)*	2.05(0.84,5.05)
	>2	221(28.7)	550(71.3)	1.00	1.00
Alive children	Null	133(73.9)	47(26.1)	7.32(5.06,10.59)*	5.42(1.59,18.46)*
	≤2	632(55.1)	514(44.9)	3.18(2.61,3.88)*	2.42(1.22, 4.82)*
	>2	208(27.9)	538(72.1)	1.00	1.00

**P value <0.05 shows significant statistical association; COR=crude odds ratio ; AOR=Adjusted odds ratio*
& = Somali, Tigray, Afar etc...

The difference in the level of use might be due to the communities living in rural or semi-urban and nomadic lifestyle in which contraceptive use is prohibited by their culture. This study finding is similar to other studies from various settings indicating that women had not used contraceptives mainly due to religion disapproval (mainly Muslims), non-supportive environment, desire to have more children, desire to have son, fear of side effects or complaints, husband's fear of infidelity suspect and husband's disapproval (Mekonnen, 2011; Rahman, 2014; Letamo and Navaneetham, 2015; Ajong, 2016; Alemayehu, 2016; Wulifan, 2016).

In this study, 47% of the women did not have intention to have a baby in the next two years. This is slightly lower than a study conducted in India, which indicated that 61% of the women did want to have a baby (Roy and Ram, 2003). The fact that women are encouraged to use contraceptive by the government and partner organization to improve maternal health in Ethiopia. Our finding is much lower than studies conducted in Nigeria that ranged from 73.2% (Umoh et al., 2012) to 87% (Avidime, 2010) and India (71.5%) (Kalhan, 2015) and Portugal (95.5%) (Almeida-Santos, 2017).

In the present study, the women's age was associated with their fertility intention, as well as their contraceptive use. This is quite similar with a finding in India (Roy and Ram, 2003),where the women's age was a significant factor associated with women's fertility intention. In addition, results from this study was consistent with a systematic review report which showed that increasing age was associated with unmet need for FP (Wulifan, 2016). Similarly, a study conducted in Botswana revealed that the women aged 25–34 years were less likely to have experienced unmet need (Letamo and Navaneetham, 2015).

In the present study, the women who had no children and those who had only one child were more likely to have fertility intention than their counterparts. This finding is consistent with a systematic review which showed that number of children was associated with unmet need for FP (Wulifan, 2016). Obviously, women who had children may plan to limit or space their children.

Strength and limitation of the study

This study used adequate sample size from health and demographic surveillance system data. The study site is well organized and properly managed by a team of senior researchers. Nevertheless, the knowledge level of the women was not deeply assessed, and only the information that have ever heard and source were asked. Likewise, the relationship of the economic status of the women with their contraceptive use and fertility intention was not examined due to some unclear and complex facts to determine the exact amount of income of the women or the households annually or monthly, as a result; we did not include the economic variable into the analysis.

Conclusions

The prevalence of contraceptive use and the women's intention not to have more baby were higher than Harari Regional State 2016 report. The women aged >30 years and having alive children were significantly associated factors that reduced women's fertility intention. Likewise, the women's age (>than 30 years), not attending school, multi-parity and having alive children were factors associated with women's contraceptive use during the study period in the study area. The identified factors associated with women's contraceptive use and fertility intention in this study should be the focus area for further measures to be taken by program planners. Further investigation is highly recommended to establish cause and effect relationship between associated factors and the outcome variables.

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Conflict of interests

The authors declare that they have no competing interests.

Contribution of Authors

AS conceived, designed, analyzed, interpreted the study finding and drafted the manuscript. AA, KT, AM and NA extensively reviewed the manuscript and incorporated their intellectual inputs. All authors read and approved the final version of the manuscript.

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