

1. INTRODUCTION

Family planning is a human right and is essential to women's empowerment. It is central to efforts to reduce poverty, promote economic growth, raise female productivity, lower fertility and improve child survival and maternal health. Family planning can prevent 20-35 % of all maternal deaths. By enabling smaller family size, family planning can help stabilize rural areas, slow urbanization and balance natural resource use with the needs of the population. Since reliable methods of family planning became available in the 1960s, the use of modern contraception has steadily risen to 54% among all women currently married or in union. As a result fertility rates continue to fall. In the developing world total fertility rate has fallen from over 6 in the 1960s to under 3 per woman today. In the least developed countries, however, fertility rates remain high at five children per woman on average. Sub Saharan Africa faces the most serious population and reproductive health challenges, including the highest maternal mortality, population growth rate, total fertility rate and unmet need for family planning in the world (1).

The situation in Ethiopia is still much worse than most African countries. The total fertility rate in the country is 5.4, which is still very high when compared with other African countries. The contraceptive prevalence rate is about 10 % and 14 % among all women and currently married women respectively. The MMR (673/100,000), the Under-5 MR (123/1000) and the IMR (77/1000) are also among the highest figures in Africa. The population growth rate is as high as 2.5% (2).

The intrauterine contraceptive device (IUCD) has long been recognized as a highly effective, long-acting, reversible method of contraception (3). The device costs the provider about US \$ 2 and offers duration of protection per unit that makes it the most cost-effective of the temporary methods if used for two years or more (4). Ideal in so many ways, the history of its development reflects the widespread interest in continual revision of the device concept in an effort to minimize side effects leading to early discontinuation, and maximize both contraceptive and non-contraceptive health benefits. In parts of the world where fertility rates, unintended pregnancy, and unmet need for contraception are high, the IUCD should play a greater role in providing a safe and highly effective contraceptive option than it does today (3).

The IUCD is the second most commonly used contraceptive method among married women of reproductive age, after female sterilization, and the most commonly used reversible contraceptive. However, in many developing countries, the IUCD is used at a very low rate compared to other modern methods (5). IUCDs are widely used only in a few countries, such as China, Egypt, and Vietnam, and very little is used in other developing countries (6).

While much has been written about the clinical aspects of IUCD use and discontinuation, less is known about the reasons why use is so low in some countries. Some research has pointed to the many misconceptions providers and potential acceptors have about the IUCD. In addition, many women lack knowledge about the IUCD (7). A study in Tanzania has pointed out socio demographic factors including education, residence, culture, religion as well as perceived attitudes towards IUCD, quality of care and other organizational factors as major determinants of IUCD use in the country (8). A study conducted in Ethiopia identified social, cultural, reproductive and economic factors as major determinants for the use of modern contraceptive methods in general (9).

The Ethiopian RH strategy set provision of all family planning methods with special emphasis on long term and permanent methods as a key strategy of achieving one of its primary goals of reducing unwanted pregnancies and enabling individuals to achieve their desired family size (10). Thus

utilization of IUCD which is effective, safe, reversible and long acting method of contraception is going to be crucial in meeting this goal. This study aimed at assessing factors that affect use of IUCD as method of contraception among family planning clients of health centers in Addis Ababa will be vital in designing strategies so as to promote utilization of the method and thereby improve family planning programs in the city.

2. OBJECTIVES

General Objective:

To assess factors affecting use of IUCD among FP clients of health centers in Addis Ababa.

Specific Objectives:

1. To assess knowledge and attitudes towards use of IUCD among FP clients of health centers in Addis Ababa.
2. To identify factors affecting use of IUCD among FP clients of health centers in Addis Ababa.

3. METHODOLOGY

3.1 Study area: The study was conducted in Addis Ababa from March-April, 2010. Addis Ababa is the federal capital of Ethiopia having three layers of administration: City Government at the top, 10 Sub City Administrations in the Middle, and 99 Kebele Administrations at the bottom. The city location is between 8055' and 9005' North Latitude and between 38040' and 38050' East Longitude with total land area of 54,000 hectares. The average elevation is 2,500 meters above sea level, and hence has a reasonably favorable climate and moderate weather conditions. Addis Ababa is also a city for the seat of the African Union (AU) and the United Nations Economic Commissions for Africa (UNECA) (11).

Addis Ababa has an estimated total population of 2,738,248 out of which 1,304,518 are male and 1,433,730 are female (12). According to “health and health related indicators” of the FMOH for the year 2006/2007 G.C. the coverage of FP services in the city is 47.6 % (13).

There are 24 public health centers in Addis Ababa providing range of primary health care services. Both short term and long term methods of family planning (FP) are also provided in all health centers.

This study was carried out in seven health centers namely: Kotebe health center, Kirkos health center, Arada health center, Gulele health center, Woreda-24 health center, Bole health center and Shiromeda health center.

3.2 Study design: Facility based unmatched case-control study design was used. Cases were women of reproductive age group who used IUCD during the study whereas controls were women of reproductive age group who used hormonal contraceptives (OCPs and injectable) during the study.

3.3 Study population: The source population for the study was women of reproductive age group who came to health centers for FP services. 54 women of reproductive age group who used IUCD during the study were included in the study as cases and 216 women of reproductive age group who used hormonal contraceptives (OCPs and injectables) during the study were enrolled in the study as controls.

3.4 Inclusion criteria:

For cases: Women of reproductive age group who live in Addis Ababa and are new users of IUCD in the health centers during the study were included in the study as cases.

For controls: Women of reproductive age group who live in Addis Ababa and used OCPs and injectables who were either new or revisit users during the study were included in the study as controls.

3.5 Exclusion criteria: women who used emergency contraception, condoms and implants were excluded from the study. Women who had IUCD inserted prior to the study and came to the health centers for removal or follow up visits were also excluded from the study.

3.6 Sample Size: The sample size calculated for the study was 53 for cases and 212 for controls.

3.7 Sampling Procedures: After the sample size was determined for the study, a list of 24 health centers found in the city was prepared. Among these health centers, ten health centers were chosen for the study randomly. The number of cases was proportionally allocated to each of the selected health center by considering the number of IUCD users in the health centers in the past one year preceding the study. In each facility, all reproductive age group women who used IUCD during the study were selected as cases for this study, if the selected case didn't fulfill the inclusion criteria, she would be dropped before controls were selected. For each case four adjacent controls that used OCPs or injectables during the study were selected and if the selected control didn't fulfill the inclusion criteria, the next woman who used OCPs or injectables during the study would be selected to be included in the study as a control.

3.8 Data collection procedures:

Structured questionnaire which was first prepared in English and then translated in to Amharic was utilized as data collection tool. IUCD users (cases) were approached and those who fulfilled the inclusion criteria were interviewed after informed consent was obtained from each participant at the same time data were collected from women who used OCPs or injectables in the health centers during the study and fulfilled the inclusion criteria after informed consent was obtained.

Five female nurses who were trained for two days on data collection were employed for data collection. Two nurse supervisors were trained for two days and were supervising the data collectors. Phone calls, direct visits to health centers as well as weekend discussions among data collectors, supervisors and the researcher were used as ways of supervision during the study. During these supervisory activities, quality and completeness of gathered information by the data collectors were checked and timely corrections were made which helped a lot in improving the quality, consistency and completeness of data of subsequent interviews.

Pretest: Pretest was done the next day after training of data collectors and supervisors was accomplished. Addis Ketema and Lideta health centers which weren't the actual study settings were selected for pretest. 15 women were interviewed during pretest by two of the data collectors. There was no non response or unwillingness for interview in the pretest. All of the women interviewed in the pretest were injectable and OCPs users. After pretest, two questions were modified.

3.9 Study variables: The study had one outcome variable and a number of independent variables.

The outcome variable of the study was: IUCD use

The independent variables include:

Demographic and socio-economic variables: Age, Marital status, Ethnicity, Educational status, Income, Occupation, Religion, Family size, Discussion with husbands on family planning and contraceptives.

Reproductive variables: History of pregnancy, Number of pregnancies, History of abortion, Types of abortion, Number of abortions in each type of abortion, History of births, Number of births, Number of living children in sex, Age of youngest child, Desired number of children in sex, Plan for future fertility, History of STIs, women's sero status for HIV/AIDS.

Knowledge, perceptions, attitude and decision making variables: knowledge of IUCD as method of contraception, source of information about contraceptives, FP clients' visual experience of IUCD, attitude towards exposing private organs while IUCD is inserted, attitudes towards the FP method they were using during the study, reasons why they decide to choose and use the contraceptive they were using during the study, and perceived myths and misconceptions associated with use of IUCD.

3.10 Operational definitions:

IUCD users: are women of reproductive age group who have got IUCD inserted only at the time of interview.

Non-IUCD users: are women of reproductive age group who used/got hormonal contraceptives (OCPs and injectable) only at the time of interview

Knowledge of IUCD as method of contraception was measured based on whether she has mentioned IUCD when asked to enumerate the FP methods she knew during the study. If the woman has mentioned IUCD as one of the FP methods, she would be considered as having knowledge of IUCD as method of contraception.

Women of reproductive age group: Women who are in the age group between 15 and 49 years old.

3.11 Data Management: The collected data were audited and cleaned at the health centers by the supervisors during their periodical visits; then the data had been rechecked by the investigator for validity and reliability. After manual cleaning, the data were entered in to Epi-info version 6 followed by repeated cleaning. Analysis was done by using SPSS version 15.

3.12 Data Analysis procedures: After the entered data were exported to SPSS version 15.0, they were checked for inconsistencies and missing values then variables were defined, categorized and recoded for analysis. Cross tabulation was used to describe frequencies of variables among cases and controls. With bi-variate analysis, crude odds ratios with 95% CI were calculated for selected explanatory variables. Then with multivariate analysis adjusted odds ratios with 95% CI were calculated for those variables which were found to have significant association with the out come variable.

4. Ethical consideration:

Ethical clearance was obtained from University of Gondar and Addis Ababa city administration health bureau.

Verbal informed consent was obtained from each study subject before participation.

Confidentiality was maintained for all respondents. Specific identifiers such as names weren't used on the study instrument and aren't quoted on the study report.

No incentive was provided to participate in the study. However, study participants were assured that the unbiased information they gave will be useful in improving family planning services for themselves as well as others.

5. Results

A total of 54 cases and 216 controls were interviewed with no non response rate in both groups (cases and controls).

With regard to age of study subjects, 10 (18.5%) of cases and 70 (32.4%) of controls were younger than 25 years of age whereas 44 (81.5%) of cases and 146 (67.6 %) of controls were 25 or older years of age. 1 (1.9%) of cases and 18 (8.3%) of controls weren't married (single, divorced or widowed) whereas 53 (98.1 %) of cases and 198 (91.7 %) of controls were married. When cases and controls were compared with regard to their religion, 44 (81.5%) of cases and 177 (81.9 %) of controls were Christian while 10 (18.5 %) of cases and 39 (18.1 %) of controls were Muslim. Majority of the respondents were from Amhara ethnic group which represented 25 (46.3%) of cases and 115 (53.2 %) of controls followed by Guraghe and Oromo ethnic groups.

As to the main occupation of mothers, 32 (59.3%) of cases and 120 (55.6%) of controls were house wives, 3 (5.6%) of cases and 10 (4.6%) of controls were government employees, 2 (3.7%) of cases and 14 (6.5%) of controls were traders, 9 (16.7%) of cases and 30 (13.9%) of controls were NGO or private company employees, 2 (3.7%) of cases and 6 (2.8%) of controls were professionals, 4 (7.4%) of cases and 23 (10.6%) of controls were daily laborers and 2 (3.7%) of cases and 13 (6%) of controls were engaged in other types of job.

52(96.3%) of cases and 189(87.5%) of controls had ever discussed with their husbands about family planning whereas 1(1.9%) of cases and 9(4.2) of controls had never discussed with their husbands about family planning. With regard to husbands' knowledge on FP method use; 52(96.3%) of cases and 189(87.5%) of controls stated that their husbands knew their use of modern FP method and 1(1.9%) of cases and 9 (4.2%) of controls stated that their husbands didn't know whether they use modern FP method. More over, 48(88.9%) of cases and 188 (87%) of controls stated that their husbands know the specific type of contraceptive used by the wives whereas 5(9.3%) of cases and 10 (4.6%) of controls claimed that their husbands didn't know the specific type of the contraceptive used by the wives.

Among the socio-economic and demographic factors; age, educational status and family size were found to have statistically significant association with use of IUCD as method of contraception ($P<0.05$) (Table 1).

Women who are 25 years and older were found to have higher odds of IUCD use than younger women (younger than 25) (OR=2.110, 95% CI: 1.003-4.437) (Table 1).

Higher level of education has positive influence on women's use of IUCD. The odds of IUCD use are 5.27 times higher among women who have completed secondary education or higher than those women who don't have any education. (OR=5.271, 95% CI: 1.579-17.6) (Table1).

Besides, it was found that women with their family size five or below are less likely to use IUCD than women with family size of six or above. The odds of IUCD use is 2.13 times higher among women with their family size of six and higher than those women in family size of five and lower (OR=2.131, 95% CI: 1.038- 4.375) (Table 2)

Table 1. IUCD use versus women's selected socio demographic variables, Addis Ababa, March-April, 2010.

Age group	IUCD use				Crude OR (95%CI)
	IUCD users (N= 54)		Non IUCD users (N=216)		
	No.	%	No.	%	
15-24	10	18.5	70	32.4	1
25-49	44	81.5	146	67.6	2.110(1.003, 4.437)*
Marital status					
Currently not married	1	1.9	18	8.3	1
Currently married	53	98.1	198	91.7	4.818(0.629,36.920)
Religion					
Christian	44	81.5	177	81.9	0.969(0.449, 2.092)
Muslim	10	18.5	39	18.1	1
Ethnicity					
Oromo	9	16.7	37	17.1	1
Amhara	25	46.3	115	53.2	0.894(0.383,2.085)
Tigre	6	11.1	12	5.6	2.056(0.606,6.970)
Gurage	12	22.2	47	21.8	1.050(0.400,2.757)
Other	2	3.7	5	2.3	1.644(0.273,9.892)
Educational status					
Illiterate	7	13.0	41	19.0	1
Read and write	2	3.7	18	8.3	0.651(0.123,3.444)
Primary	12	22.2	64	29.6	1.098(0.399,3.019)
Secondary	24	44.4	83	38.4	1.694(0.674,4.255)
Completed secondary & above	9	16.7	10	4.6	5.271(1.579,17.6)*

*- significant association (P<0.05), unadjusted.

Table 2: IUCD use versus monthly family income and family size, Addis Ababa, March-April, 2010.

	IUCD use				Crude OR (95% CI)
	IUCD users (N= 54)		Non-IUCD users (N= 216)		
Monthly family income					
lowest-400	14	25.9	45	21.2	1
401-1000	19	35.2	127	59.9	0.481 (0.223, 1.038)
1001 and higher	21	38.9	40	18.9	1.687 (0.759, 3.753)
Family size					
1-5	39	73.6	184	68.7	1
6-highest	14	26.4	31	14.4	2.131(1.038,4.375)*

***- significant association, unadjusted**

With regard to pregnancy history of women, 52 (96.3%) of cases and 194 (89.8%) of controls had at least one pregnancy, of these 17 (31.5%) of cases and 27 (12.5%) of controls had experience of abortion. Among those who had experienced abortion, 12 (70%) of cases and 23 (85.2%) of controls had one episode of abortion whereas 5(29.4%) of cases and 4(14.8%) of controls had two or more incidents of abortion. Pertaining to type of abortion experienced by the study subjects, 10(18.5%) of cases and 18(8.3%) of controls had history of at least one induced abortion whereas 7(13%) of cases and 9 (4.2%) of controls had at least one spontaneous abortion. There were 8 women of whom 5 cases and 3 controls who had 2 or more induced abortions and the remaining 20 (5 cases and 15 controls) had induced abortion once. Only one woman (control) had 2 or more spontaneous abortions and 15 women (7 cases and 8 controls) had one spontaneous abortion.

When we compare the cases and controls with regard to the no. of alive children, 18(36%) of cases and 86(45.7%) of controls had one child, 17(34%) of cases and 68(36.2%) of controls had two children, 15 (30%) of cases and 34 (18.1%) of controls had three or more children during the study. Of these women, 27 (64.3%) of cases and 95 (66.9%) of controls had one male child whereas 15 (35.7%) and 47 (33.7%) of controls had 2 or more male children, 20 (64.5%) of cases and 87 (77%) of controls had one female child and 11 (35.7%) of cases and 26 (23%) of controls had two or more female children.

Cases and controls were also compared by their desired no. of children and thus it was found that 32 (59.3%) of cases and 139 (65.3%) of controls had a desire to have 1-3 children in life time and 22 (40.7%) of cases and 74 (34.7%) of controls had a desire to have 4 or more children in their life time. The desired no. of children was also disaggregated in sex, 21 (42.9%) of cases and 95 (47%) of controls want to have one male child in their life time and 28 (53%) of cases and 107 (57.1%) of controls want to have 2 or more male children in their life time. 22 (44.9%) of cases and 118 (60.2%) of controls had a desire to have one female child in their life time while 27 (55.1%) of cases and 78 (39.8%) of controls were found to have a desire of 2 or more female children in their life time.

With regard to history of STDs among the study participants, a total of 11 women had history of STDs, of whom 6 (11.1%) were cases and 5(2.3%) were controls. Among these women 9(5 cases and 4 controls) had medical treatment for the STDs while 2 women (one case and one control) responded as they weren't medically treated. 51 (94.4%) of cases and 198 (91.7%) of controls were tested for HIV whereas 3 (5.6%) of cases and 18 (8.3%) of controls weren't tested for HIV. Among those tested, there was one positive woman who was at the same time a control for the study.

Among sexual and reproductive factors considered in this study; number of pregnancies, history of abortion, age of the youngest child and future plan of fertility have statistically significant association with use of IUCD ($P < 0.05$) (Table 3)..

Women who were pregnant for three or more times are 2.5 times more likely to use IUCD than those women who experienced pregnancy only once (OR=2.465, 95% CI: 1.161-5.233) (Table 3). History of abortion has a positive influence on use of IUCD, the odds of IUCD use is 3 times higher among women who had at least one abortion than those women who have no any history of abortion (OR= 3.004, 95% CI: 1.48-6.079) (Table 3)

Age of the youngest child has a positive influence on the use of IUCD. Among those women who have at least one child during the study, the odds of IUCD use is 4 times higher for those women having their youngest child of 45 days (1.5 months) of age than women who have a child who is two months and above old (OR= 4.022, 95% CI: 1.116-14.493) (Table 3).

Women's future plan of fertility has also influence on use of IUCD. Among those women who have given births to at least one child, the odds of IUCD use is about 2 times higher among those women who have plan to stop birth than those women who intend to space births rather than stop (OR=1.958, 95% CI: 1.035-3.072) (Table 3).

Table 3. IUCD use versus women's selected reproductive health variables, Addis Ababa, March-April, 2010.

	IUCD use				Crude OR (95%CI)
	IUCD users (N= 54)		Non-IUCD users (N= 216)		
	No.	%	No.	%	
No. of pregnancies					
1	16	30.8	77	39.9	1
2	15	28.8	75	38.9	0.963(0.444,2.085)
3-highest	21	40.4	41	21.2	2.465(1.161,5.233)*
History of abortion					
Yes	17	31.5	27	12.5	3.004(1.480,6.097)*
No	35	64.8	167	77.3	1
History of birth					
Yes	50	92.6	188	87.0	0.798(0.156,4.074)
No	2	3.7	6	2.8	1
No. of births					
1	18	36.0	84	44.7	1
2	17	34.0	69	36.7	1.15(0.551,2.399)
3-highest	15	30.0	35	18.6	2.000(0.907,4.409)
Age of the youngest child					
1.5 months	5	10.0	5	2.7	4.022(1.116,14.493)*
2-highest months	45	90.0	181	97.3	1
Future plan of fertility					
To stop birth	23	42.6	57	26.4	1.958(1.035,3.702)*
To space births	27	50.0	131	60.6	1

***- significant association (P<0.05), unadjusted**

There was a difference among cases and controls in their knowledge of contraceptives; 52(96.3%) of cases and 108(50%) of controls have mentioned IUCD when they were asked to enumerate FP methods whereas 2 (3.7%) of cases and 108(50%) of controls didn't mention IUCD as method of FP when they were asked to name the FP methods. 102 (47.2%) of controls had seen IUCD while 114 (52.8%) of controls had never seen IUCD. Furthermore, only 79 (36.6%) of controls knew how IUCD is inserted while 135 (62.5%) of controls didn't know how IUCD is inserted. Among those women who knew how IUCD is inserted, 38 (71.7%) of cases and 38 (48.1%) of controls stated that they don't feel discomfort by exposing genitalia when IUCD is inserted whereas 15 (28.3%) of cases and 41 (51.9%) of controls stated that they feel discomfort by exposing genitalia when IUCD is inserted.

The study subjects had different sources of information on family planning; 47(87%) of cases and 186 (86.1%) of controls mentioned health professionals as their source of information on FP among others, friends was mentioned as source of information by 12(22.2%) of cases and 73 (33.8%) of controls, mass media were cited as source of information by 28(51.9%) of cases and 120(55.6%) of controls, husbands as source of information was stated by 10(18.5) cases and 51(23.6%) of controls, other sources of information such as relatives, mother, school, teachers and college were mentioned by 7(13%) of cases and 36 (16.7%) of controls.

Almost all of the study subjects had positive attitude towards the method they use, however two women were found to have negative attitudes towards the method they use at the time of the study; 26 (48.1%) of cases and 146 (67.6%) of controls said that the method they use is effective in preventing pregnancy, 23(42.6%) of cases and 129 (59.7%) of controls stated the method as easy to use, 29 (53.7%) of cases and 68 (31.5%) of controls stated that the method is easily reversible, 30(55.6%) of cases and 59 (27.3%) of controls stated that the method has no side effect whereas 1(1.9%) of cases dislikes IUCD though she used it and 1(0.5%) of controls claimed the injectable as cause for her excessive menstrual bleedings. Among the reasons why they chose the method they were using at the time of the study; 30 (55.6%) of cases and 143(66.2%) of controls chose their method as it doesn't require daily motivation, 1(1.9%) of cases and 23(10.6%) of controls chose the method as it reduces menstrual bleeding, 6 (11.1%) of cases and 14 (6.5%) of controls chose the method since it doesn't result in weight gain, 29 (53.7%) of cases and 90 (41.7%) of controls chose the method because it provides complete protection from pregnancy, 2 (3.7%) of cases and 23 (10.6%) of controls choose the method because it was told by a friend to use, 3 (1.4%) of controls chose the method as they don't know other alternatives, 13 (24.1%) of cases and 7 (3.2%) of controls use the method because it was advised by a nurse to use, 8 (14.8%) of cases and 61 (28.2%) of controls use the method because they got approval from their husbands, 5 (9.3%) of cases and 6 (2.8%) of controls claimed side effects as reasons to switch to the current method from previous contraceptives. 1 control stated fear of injection as a reason why she chose to use the current method, another control stated infrequent sexual intercourse as the reason to use the current method and one case stated being non-hormonal as a reason to choose and use IUCD.

Knowledge of IUCD as method of contraception and perceived myths and misconceptions attached to IUCD have significant associations with use of IUCD (P<0.05) (Table 4 and 5). The odds of IUCD use is 26 times higher among women who know IUCD as a family planning method than those women who didn't know IUCD (OR=26.000, 95 % CI: 6.177-109.439) (Table 4).

Women who didn't think that "IUCD can cause infertility" are about 8 times more likely to use IUCD than those women who think "IUCD causes infertility" (OR=8.346, 95% CI: 1.085-64.179) (Table 5). Moreover, women who didn't think "IUCD can cause infection and cancer" are about 3 and 11 times

more likely to use IUCD as method of contraception than those women who think “IUCD can cause infection and cancer” respectively (OR=2.826, 95% CI:1.322-6.041, OR=10.577,95% CI:1.390-80.503)(Table 5). Perceived myths that IUCD touches penis during sex, IUCD results in pregnancy while it is in the uterus and IUCD migrates to other parts of the body were found to have no significant association with use of IUCD (P>0.05) (Table 5).

Table 4. IUCD use versus women’s knowledge of IUCD, Addis Ababa, March-April, 2010.

	IUCD use				Crude OR (95%CI)
	IUCD users (N=54)		Non-IUCD users (N= 216)		
Know IUCD	No.	%	No.	%	
yes	52	96.3	108	50	26.000(6.177,109.439)*
no	2	3.7	108	50	1

*- significant association (P<0.05), unadjusted

Table 5. IUCD use versus perceived myths and misconceptions about IUCD, Addis Ababa, March-April, 2010

Perceived myths and misconceptions	IUCD use				Crude OR (95% CI)
	IUCD users (N= 54)		Non-IUCD user (N= 216)		
	No.	%	No.	%	
IUCD causes infertility					
Yes	1	1.9	19	8.8	1
don’t think	47	87	107	49.5	8.346 (1.085,64.179)*
IUCD causes infection					
Yes	11	20.4	64	29.6	1
Don’t think	34	63	70	32.4	2.826(1.322,6.041)*
IUCD causes cancer					
Yes	1	1.9	25	11.6	1
Don’t think	44	81.5	104	48.1	10.577(1.390,80.503)*
IUCD touches penis during sex					
Yes	11	20.4	32	14.8	1
Don’t think	33	61.1	84	38.9	1.143(0.516,2.530)
IUCD results in pregnancy					
Yes	3	5.6	25	11.6	1
Don’t think	44	81.5	115	53.2	3.188(0.916,11.095)
IUCD migrates to other organs beyond the uterus					
Yes	8	14.8	28	13	1
Don’t think	42	77.8	111	51.4	1.324(0.559,3.137)

*- significant association (P<0.05), unadjusted

When variables that had significant association with IUCD use in the bivariate analysis were all included in the logistic regression model; educational status, history of abortion, age of youngest child and perception that IUCD can cause infection continued to have statistically significant association with use of IUCD (Table 6). Women who have completed their secondary education and above were found to be 8.78 times more likely to use IUCD than illiterate women (OR=8.782, 95% CI: 1.721-

44.822) (Table 6). The odds of IUCD use is 4.46 times higher among women who had a history of abortion than those women who had no experience of abortion (OR=4.468, 95% CI: 1.655-12.057) (Table 6). More over, women who had their youngest children of aged 45 days (1.5 months) were 6.32 times more likely to use IUCD than those women whose youngest children are 2 months or more old (OR=6.323, 95% CI: 1.472-27.151) (Table 6).

Mothers who don't have perception that IUCD causes infection were more likely to use IUCD as method of contraception than women who had perception of relating IUCD use with infection. The odds of IUCD use among women who don't perceive that IUCD can cause infection is 3.42 times higher than women who perceived that IUCD can cause infection (OR=3.420, 95% CI: 1.373-8.518) (Table 6).

Table 6. Adjusted OR for Variables Significantly Associated with IUCD use, Addis Ababa, March-April, 2010

Variables	Adjusted OR	95% CI
Age		
15-24	1	
25-49	1.035	0.347-3.086
Family size		
1-5	1	
6-higest	0.998	0.303-3.288
Educational status		
Illiterate	1	
Read and write	0.351	0.033-3.778
Primary	1.451	0.436-4.833
Secondary	1.547	0.514-4.653
Completed secondary and above	8.782	1.721-44.822**
No.of pregnancies		
1	1	
2	0.681	0.240-1.935
3-highest	0.667	0.170-2.607
History of abortion		
yes	4.468	1.655-12.057**
no	1	
Age of youngest child		
1.5 months	6.323	1.472-27.151**
2-highest months	1	
Future plan of fertility		
To stop birth	2.382	0.936-6.060
To space births	1	
IUCD causes infection		
yes	1	
Don't think	3.420	1.373-8.518**

** - significant association (P<0.05), adjusted

5. Discussion

This study aimed at assessing individual factors affecting use of IUCD among family planning clients of health centers has identified socio-demographic, reproductive, knowledge and perception factors having significant association with use of IUCD as method of birth control.

The use of modern contraception generally increases, then decreases, with age. The variation in contraceptive prevalence by age is similar in the higher prevalence countries: The use of a modern method among married women is lowest among women aged 15–19, gradually increases, and then decreases again toward the end of the reproductive years. The peak in the curve differs somewhat by country (14).

Age of women was found to be significantly associated with IUCD use in this study however; it turned out to be insignificant when adjustment was made for effects of other variables. Women who are 25 and older were more likely to use IUCD than those women who are younger than 25 years of age. Similarly, the 2000 Demographic and Health Survey of Ethiopia has revealed that women aged 30–34 were three times more likely to use the IUCD than were women in other age-groups. Meanwhile the 2005 Demographic and Health Survey has also identified that women aged 35-39 were five times more likely to use IUCD than women aged 20-24 and women aged 40-44 and 45-49 were three times more likely to use IUCD than women aged 20-24 (15,2). Another study in China found prevalence of IUCD use increased with age up to ages 25-29 years, but declined thereafter which may reflect a switch from IUD to other methods such as sterilization (16).

Increase use of IUCD with increase in age may be due to the fact that women in younger age group may not have yet given birth thus have desire to give birth soon while the older age group women may have given births and don't like giving birth soon such that they want to use long acting method of contraception. Knowledge of contraception is also related to age, thus, those older women in this study may have improved understanding of contraceptives, thus desired to use IUCD as method of contraception. In addition, as indicated by other studies and assessments, service providers may be occupied with the belief that "IUCDs are not appropriate for younger and nulliparous women" therefore younger women may be encouraged to use other methods.

One interesting aspect of the educational differentials in fertility in Africa is an apparent nonlinearity in the effect of women's schooling. In the majority of the countries examined by Cochrane and Farid, women with one to three years of schooling, and in some cases those with four to six years, display higher fertility rates than do women without schooling. The relationship takes the form of an inverted U, with women in the middle schooling group having the highest fertility. These nonlinearities are thought to derive from the reductions in postpartum abstinence and breastfeeding that accompany higher levels of education. They may also have to do with the unmeasured effects of income or wealth on fertility that come to be correlated with women's schooling via marriage. However, with proper controls for income for Cote d'Ivoire found that lifetime fertility significantly decreases with female education, holding income levels constant (14).

In this study respondents' level of education was found to be significantly associated with use of IUCD and it remained significant even after adjusting the effects of other significant variables. Women who have completed their secondary school education and above are more likely to use IUCD than their illiterate counterparts. Similar study in China has found that prevalence of IUCD use is higher among women with higher level of education than those women with no school. (17).

The reasons for higher rates of IUCD use among women with higher level of education may be attributed to better understanding of health messages in general and family planning in particular. The literature posits that women who are better educated are not only more knowledgeable about the available options for limiting fertility, but also better equipped to negotiate. Another possibility, perhaps more plausible in the African setting, is that better-educated women place greater emphasis on child quality, as opposed to child quantity.

In this study, family size was significantly associated with IUCD use though it didn't do so in the multivariate analysis. Women with six and more of family size were found to be more likely to use IUCD than women with less than six of their family size. However, a study carried out in Bangladesh found that 56 % of IUCD users reported that they lived in households of five or fewer people, while 38.5% of IUCD users lived in households of 6–10 people. Another study in China identified the existence of close association between IUCD use and family (19, 18)

Number of pregnancies was found to have significant association with use of IUCD in this study though it did not remain significant when entered to the multivariate model with other variables. Women who had three or more pregnancies are more likely to use IUCD as method of birth control than those women who had only one history of pregnancy. This may be due to the fact that such women may have improved knowledge about contraceptives thus choose IUCD than other methods. Another explanation may be this group of women may have experienced one or more unplanned and /or mistimed pregnancy due to failure of contraceptive such that they tend to choose more effective method of contraception.

Future plan of fertility influences IUCD use as method of contraception. Mothers who stated that they want no more children (planned to stop birth) are more likely to use IUCD than those who planned to space births. Studies in other parts of the world have shown that higher proportion of women who don't want more children use the method (20). Such group of women prefers IUCD to short acting methods as they have achieved their desired level of fertility and don't want more children. IUCDs are considered as important alternatives to permanent methods especially in those countries with lower rate of contraceptive use.

History of abortion had statistically significant association with use of IUCD in this study and it remained statistically significant even after adjusting for effects of the other variables. A study carried out in Turkey has also showed dramatic increase in use of IUCD among women who had experience of abortion. This study compared use of contraceptives before and after induced abortion, before induced abortion performed the total contraception usage (modern methods + traditional methods) rate was 44.7% and this rate increased to 80.1% at the end of one year with major increase in IUCD, there was no woman with IUD before induced abortion but 124 (52.3%) women had IUCD one year after the induced abortion performed. This difference seems to be caused by post-abortion counseling (21). In another study carried out in Canada, among women who were using IUCD during the study, 36.4% had terminated a prior pregnancy. This may have motivated them to seek a more reliable method of birth control or to lose confidence in their previous choice of contraception. Even though most of the women reported discomfort, such as cramping, during insertion of the IUD or post-insertion, almost all of the women were completely satisfied with their choice of an IUD, and this remained their primary option as a contraceptive within one year of insertion (22).

It was found that recent births have positive influence on use of IUCD. Women with their youngest child of 1.5 months of age were more likely to use IUCD than those women whose youngest children are older than 1.5 months, and this significant association continued to be significant in the multivariate

analysis. A similar study in the US has also identified more use of IUCD among post partum women than the total use rate of IUCD in the US (19). Another study in Libya indicated a strong association between effective reproduction at recent conception and use of IUCD (23).

This significant association may be explained by the fact that women with recent effective reproduction are adopting IUCDs probably because of improved quality and coverage of antenatal, natal and postnatal care and the resultant safe reproduction and better child health which may enforce them to think more about the care for the new baby rather than thinking about another conception thus they prefer to more effective and long term contraceptive to short acting ones. More over, it is known that IUCD has a distinct advantage for lactating women over oral contraceptive pills. Besides, post partum women are good candidates for IUCD use because insertion is relatively painless and loss to follow-up is rare

Knowledge of modern contraceptives is a necessary precondition for use of family planning services. This study has identified knowledge of IUCD as one of family planning methods was associated with IUCD use. Women who use IUCD mentioned at least IUCD as a contraceptive. However, there was no significant difference among the cases and controls with regard to whether they have ever seen IUCD or not, whether they knew how it is inserted as well as fear of exposing genitalia while IUCD is inserted. Similar studies carried out in Bangladesh and Guatemala showed women who use IUCD had at least heard about IUCD (24, 25).

Several studies pointed out the presence of myths and misconceptions towards IUCD among potential users. For instance, the formative research in India revealed a wide range of misconceptions among men and women regarding the IUCD: that it causes cancer, increases the weight of women, causes a lot of pain, moves inside the body until it reaches the heart or brain, hurts men during intercourse, etc. FGD participants in Ghana mentioned that they had heard several things about the IUCD. A participant narrated a story about a friend whose husband deserted her because he thought the IUCD strings felt like a snake. The most frequently expressed rumor was that the IUD causes severe bleeding leading to excessive weight loss and ugliness, unlike the injectable which makes one bleed less, and therefore leads to weight gain and beauty. Instances were cited where friends who had used IUCDs felt dizzy and collapsed. There was even one death cited. Other rumors stated are: can cause heart disease or heart attack, can lead to abdominal distension, can cause infertility, causes offensive discharge, can cause disease, can cause irritation of the genital area, can lead to painful intercourse, can shift (become displaced) resulting in pregnancy, can fail and one can get pregnant even with the IUCD in place. In such instances the baby may be born with it, can burn the womb (26, 27). A study carried out in South Africa found that 40% of women who knew about IUCD had misconceptions or incorrect information about IUCD that negatively influenced their opinion of method among these women; 14 % think that it might move to another place in body, 14% think IUCD might harm womb, another 14% believe that IUCD could cause women to get STIs/HIV and 9.5% think that it might cause cancer (28). As a result these myths and misconceptions are cited as among major reasons for low utilization of the method in the countries. This study examined the presence of association between IUCD use and some of the commonly cited perceptions. IUCD can cause infertility, IUCD can cause infection, IUCD can cause cancer, IUCD results in pregnancy while it is in place, IUCD can touch penis during sex, IUCD can migrate to other parts of the body beyond the uterus were assessed in this study. Perceptions of IUCD can cause infertility; infection and cancer were found to have significant association with use of IUCD. Those women who don't think that IUCD can cause infertility, infection and cancer were more likely to use the method as contraception than those women who think that IUCD can cause infertility, infection and cancer. While adjustment was made for the effects of multiple variables, Perceived thought of IUCD can cause infection remains one of the determinants for IUCD use.

6. Conclusion

This study has identified women's education, history of abortion, age of youngest child as well as perceived myth of relating use of IUCD with infection as major determinants for use of IUCD among family planning clients in Addis Ababa. Whereas other factors aren't found to be determinants for use of IUCD though some of them are significantly associated with use of IUCD.

Those women who have completed secondary education and above are more likely to use IUCD when compared with those women who have no education. Moreover, women who have had abortion in the past are more likely to use IUCD than those women who had no previous abortion. Those women whose youngest children are 1.5 months old are more likely to use IUCD as method of contraception than women whose youngest children are older than 1.5 months of age. Women who don't think that "IUCD can cause infection" are more likely to use IUCD than those women who think that "IUCD can cause infection". Similar findings were also documented in other studies in Africa and other regions.

Hence, strategies aimed at addressing the aforementioned determinants will be vital so as to improve utilization of IUCD.

7. Recommendation

- Increasing awareness of the IUCD as a family planning option should be intensified through multiple strategies. These could include branding and actively marketing the product and using the testimonies of satisfied clients to dispel misperceptions and demystify the technology.
- Post abortion period is the right time to introduce use of IUCD as a contraceptive because women are more ready to use it. Such that it is recommended to strengthen post abortion family planning counseling including proper communication skills.
- Post partum women are also ready to use IUCD thus it is important to strengthen family planning counseling with special emphasis on IUCD during antenatal and post natal visits.
- Improve access of women to higher levels of education and they have to be encouraged to continue their education up to the higher level.

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