

Complex Samples Logistic Regression Analysis of Predictors of the Use of Modern Contraceptives Among Married or In-Union Women in Ethiopia.

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Research

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Abstract

Background: Modern contraceptive use by currently married Ethiopian women has steadily increased over the last 15 years. The main objective of this study was to identify the magnitude and predictors of current use of modern contraceptives among married or in-union women aged (15-49) in Ethiopia using complex sampling.

Methods: The study used data from the 2016 Ethiopia Demographic and Health Survey (EDHS, 2016) dataset. In the study a total number of 7,346 married or in-union women age 15-49 in Ethiopia were included. The current use of modern contraceptives among reproductive-age married or in-union women in Ethiopia, measured as 'Yes' (currently using a modern method) and 'No'(using a folkloric method, traditional method, and no method) is considered as a dependent variable. Complex samples binary logistic regression was performed to examine the importance of each explanatory variables using SPSS version 23, and statistical significance was attached at $p=0.05$.

Results: The study found that age 40–44 years (AOR = 2.064), wealth index Middle (AOR = 1.553); Rich (AOR = 1.71), working status yes (AOR = 1.279), and sexual activity in the last 4 weeks active in the last 4 weeks (AOR=3.614) were highly significantly associated with current use of modern contraceptive.

Conclusion: The variables age, religion, residence, region, wealth status, husband desire for children, women's working status, sexual activity in the last 4 weeks, and total number of children ever born were statistically significant predictors for the current use of modern contraceptives among married or in union women in Ethiopia.

Plain English Summary

Contraception enables women who wish to limit the size of their families to do so. By reducing rates of unintended pregnancies, contraception also reduces the need for unsafe abortion. Modern contraceptive methods enable couples to enjoy sex without fear of the risk of pregnancy at any desired time.

The current study aims to see prevalence of current use of modern contraceptives and examining the predictors of current use of modern contraceptives among reproductive-age women in Ethiopia based on the 2016 EDHS data using complex sample logistic regression.

A total of 7,346 sample of married or in-union women aged 15-49 were considered in this study from 2016 EDHS data set. The prevalence of use of modern contraceptives was 3,095 (42.1%). Among a woman who lives in rural areas majority of them (61.8%) were not currently used modern contraceptive methods.

In conclusion, the model found that age, religion, residence, region, wealth status, husband desire for children, women's working status, sexual activity in the last 4 weeks, and total number of children ever

born were highly significantly predicted the use of modern contraceptives among married or in union women in Ethiopia.

Background

Contraception defined as a practice of methods of preventing or planning of conception. It is the most cost-effective investments a country can make in its future. Moreover, it offers a range of potential benefits that encompass economic development, maternal and child health, education, and women's empowerment. Contraception allows spacing of pregnancies, delaying pregnancies in young girls who are at increased risk of health problems from early childbearing, and preventing pregnancies among older women who also face increased risks. Contraception enables women who wish to limit the size of their families to do so. By reducing rates of unintended pregnancies, contraception also reduces the need for unsafe abortion. Some contraceptive methods help prevent the transmission of HIV and other sexually transmitted infections [1]. Contraceptive methods can be modern, traditional and folkloric methods of contraception. Modern method of contraception includes, intra uterine device (IUD), oral contraceptives, Pill, Progestogen-only pills (POPs) or "the minipill", Injectables, condom, Male sterilization (vasectomy) Female sterilization (tubal ligation) Emergency contraception pills, Lactational amenorrhea method (LAM), Sympto-thermal Method, etc. Contraceptive use is widely acknowledged as an important intervention towards achieving Millennium Development Goals (MDGs) four and five as it has proven to improve maternal health which calls for reduction of maternal and child mortality ratio [2–4].

Modern contraceptive methods enable couples to enjoy sex without fear of the risk of pregnancy at any desired time [5]. It also helps couples and individuals realize their basic right to decide freely and responsibly when and how many children to have. The growing use of contraceptive methods has resulted in not only improvements in health-related outcomes such as reduced maternal mortality and infant mortality, but also improvements in schooling and economic outcomes, especially for girls and women [6]. The benefits of modern contraception have long been established. It is estimated that up to 35% of maternal deaths and 13% of child mortalities could be averted whilst 25% of under-five mortalities could be prevented if birth intervals were at least three years and by the use of various contraceptive methods in planning their families [7].

Contraceptive prevalence and the unmet need for family planning are key indicators for measuring improvements in access to reproductive health as asserted in the 2030 Agenda for Sustainable Development under target 3.7. "By 2030, ensure universal access to sexual and reproductive health-care services, including for family planning, information and education, and the integration of reproductive health into national strategies and programs"[8]. Globally, 62 percent of married women ages 15 to 49 use a method of family planning and 56 percent use a modern method. At a country level, use of any method of family planning among married women can vary significantly, ranging from 4 percent in South Sudan to 88 percent in Norway [9]. Contraceptive use has increased in many parts of the world, especially in Asia and Latin America, but continues to be low in sub-Saharan Africa [10]. The use of modern family

planning has expanded rapidly across Ethiopia, rising from about 8 per cent of married women in 2000 to 36 per cent in 2016, according to the country's demographic and health survey [11].

Previous studies have considered the determinants of contraceptive use in Ethiopia [12, 13]. In most of the previous studies, complex sampling design is not considered and since this data is from multistage sampling, which involves the use of different strata, clustered sampling techniques and unequal selection probabilities, it is inappropriate to conduct analysis without taking the survey sampling designs into account. Also, fitting such data without considering the survey sampling design may lead to biased estimates of parameters and incorrect variance estimate [14]. Thus, the current study aims to see prevalence of current use of modern contraceptives and examining the predictors of current use of modern contraceptives among reproductive-age women in Ethiopia based on the 2016 EDHS data using complex sample logistic regression.

Methods

Data Source

Data for this secondary data analysis was extracted from the 2016 Ethiopian Demographic and Health Survey (EDHS) dataset to identify Factors of the current use of modern contraceptive among married and in-union women in Ethiopia. The author accessed the data by requesting it from the Demographic Health Survey Program Team through online ([http:// dhsprogram.com/](http://dhsprogram.com/)). The survey was conducted from January 18, 2016, to June 27, 2016, based on a nationally representative sample that provides estimates at the national and regional levels and for urban and rural areas. The survey target groups were women age 15-49 and men age 15-59 in randomly selected households across Ethiopia [11].

Sample Design

The 2016 EDHS data is stratified and selected in two stages. In the first stage, 645 EAs, 202 urban areas and 443 rural areas were selected using probability proportional to the size of enumeration area. Lists of households were prepared from the selected enumeration areas and served as a sampling frame for the selection of representative households in the second stage. Lastly, 18,008 households were selected for the study out of which only 17, 067 households were occupied. Complete interview was obtained from 16,650 households making the response rate 98%. In those interviewed households, 16,583 women were identified and 15,683 women completed the interview making a response rate of 95%. Therefore, sample data for the current study came from an individual record of 15,683 reproductive-age women. Details of the study design for these survey can be obtained from CSA, ICF and Rockville [11].

Study sample

This study restricted the analysis to women who were currently in union. Consequently, women who were currently not in any ardent union, who never had sex, who were currently pregnant, and were infecund were excluded from the dataset. The study sample selected was 6,989. We accounted for the multistage

sampling design during analysis, which resulted in weighting the dataset using a weight variable in the dataset for reproductive-age women. Thus, the weighted study sample used for analysis was 7,346 reproductive-aged married or in-union women in Ethiopia [figure 1]. We used ETIR71SV.sav ,SPSS data file from 2016.

Study Variables

The dependent variable in this study was 'current use of modern contraceptives' among reproductive-age married or in-union women in Ethiopia. In this study, the responses to the contraceptive use question 'no method' or 'modern method' or 'traditional' or 'folkloric method' were dichotomized and measured as 'Yes' (currently using a modern method) and 'No' (using a folkloric method, traditional method, and no method).

To predict current use of modern contraceptive methods among married or in union women's, several independent variables were selected based on literatures and their relevance [12, 24]. These variables included; age in 5-year group of respondents, region, respondent and husband/partner educational level, place of residence, religion, wealth index, respondent current working status, age difference, media exposure, husband desire for children, sexual activity and total children ever born. Age difference was calculated by subtracting the husband/partner age with respondent age and grouped as 1= same or older than man and 2= man older than women.

Data Analysis

The study variable was coded as binary variable (Yes= 1 and No= 0) and the data analysis was performed using SPSS version 23. We account for the multistage sample design in the DHS dataset during the descriptive analyses, test of association, and logistic regression analyses. We selected a subpopulation (women who were currently in-union/living with a man); we used the "Currently/formerly/never in union" variable to specify the subpopulation during the analysis. The DHS calculate the individual sample weights to six decimal places but it is presented in the dataset without points. Thus, the sample weight for each case was computed by dividing the available weight in the dataset by 1,000,000 before using it in the analyses. This was done according to the guideline of DHS on handling the individual weight variable [11] .

The data analysis part includes first descriptive statistics then chi-square test and finally binary logistic regression analysis. The descriptive statistical technique was used at the univariate level to describe the characteristics of the sample using frequency and percentage distribution for categorical variables. Bivariate analysis is used Pearson's Chi-square (χ^2) test to examine the association between the dependent variable and the independent variable. In logistic regression, factors that showed unadjusted odds ratio (OR) with a P-value <0.25 were subjected to multiple logistic regression analysis. Adjusted odds ratio and confidence interval (CI) were respectively, used to measure the association between current use of modern contraceptive and predictor variables and their statistical significance in the final model.

Results

Descriptive Statistics: Socio Demographic Characteristics

A total of 7,346 sample of married or in-union women aged 15–49 were considered in this study from 2016 EDHS data set. The prevalence of use of modern contraceptives was 3,095 (42.1%). Six thousand one hundred eighty five (84.2%) of the respondents were from rural areas and the remaining 1,161 (15.8%) were from the urban areas. Majority of the respondents had no education (61.0%), were sexually active in the last 4 weeks (81%), were found in the age group of 25–29 years (25.3%), were not currently working(69.8%), were not exposed to media(72.1%), were from poor family (40%) and were Orthodox Christians (41.1%).

Table 1
Frequency distribution and Association of explanatory variables with current use of modern contraceptives

Variables	Categories	Count (%)	Current use of modern contraceptives		Chi-square	p-value
Current use of modern contraceptives	Yes	3095(42.1)				
	No	4251(57.9)				
Age in 5-year group			Yes (%)	No (%)	40.01	0.000
	15–19	457 (6.2)	153(33.4)	305(66.6)		
	20–24	1328 (18.1)	589(44.4)	738(55.6)		
	25–29	1856 (25.3)	857(46.1)	1000(53.9)		
	30–34	1571 (21.4)	645(41.1)	926(58.9)		
	35–39	1182 (16.1)	453(38.3)	729(61.7)		
	40–44	657 (8.9)	288(43.8)	369(56.2)		
	45–49	295 (4.0)	112(38.0)	183(62.0)		
	Region	Tigray	496 (6.7)	204(41.1)		
Afar		67 (0.9)	9(13.6)	57(86.4)		
Amhara		1770 (24.1)	937(52.9)	833(47.1)		
Oromia		2888 (39.3)	988(34.2)	1900(65.8)		
Somali		215 (2.9)	4(1.9)	210(98.1)		
Benishangul		80 (1.1)	27(34.2)	52(65.8)		
SNNPR		1489 (20.3)	718(48.2)	771(51.8)		
Gambela		21 (0.3)	9(40.9)	13(59.1)		
Harari		17 (0.2)	6(35.3)	11(64.7)		
Addis Ababa		267 (3.6)	179(67.0)	88(33.0)		
Dire Dawa	36 (0.5)	13(36.1)	23(63.9)			
Type of place residence	Rural	6185 (84.2)	2360(38.2)	3825(61.8)	255.33	0.000

Variables	Categories	Count (%)	Current use of modern contraceptives		Chi-square	p-value
	Urban	1161 (15.8)	736(63.4)	425(36.6)		
Women highest education level	No education	4482 (61.0)	1658(37.0)	2824(63.0)		
	Primary	2069 (28.2)	940(45.4)	1129(54.6)		
	Secondary	474 (6.5)	293(61.8)	181(38.2)	195.276	0.000
	Higher	321 (4.4)	205(63.9)	116(36.1)		
Religion	Orthodox	3020 (41.1)	1556(51.5)	1465(48.5)		
	Muslim	2551 (34.7)	676(26.5)	1875(73.5)		
	Protestant	1586 (21.6)	815(51.4)	771(48.6)	440.637	0.000
	Others	189 (2.6)	49(25.9)	140(74.1)		
Wealth index	Poor	2937(40.0)	882(30.0)	2056(70.0)	343.737	0.000
	Middle	1511(20.6)	649(43.0)	861(57.0)		
	Rich	2898(39.5)	1564(54.0)	1334(46.0)		
Husbands desire for children	Both wants same	2918 (39.7)	1372(47.0)	1546(53.0)		
	Husband wants more	1827 (24.9)	685(37.5)	1142(62.5)	181.146	0.000
	Husband wants fewer	2580 (35.1)	1017(39.4)	1563(60.6)		
Husband education level	No education	3346 (45.5)	1194(35.7)	2152(64.3)	159.267	0.000
	Primary	2803 (38.2)	1235(44.1)	1568(55.9)		
	Secondary	673 (9.2)	351(52.2)	322(47.8)		
	Higher	525 (7.1)	316(60.2)	209(39.8)		
Respondent currently working	Yes	2215 (30.2)	1120(50.6)	1095(49.4)	92.489	0.000
	No	5131 (69.8)	1975(39.5)	3156(61.5)		

Variables	Categories	Count (%)	Current use of modern contraceptives		Chi-square	p-value
Recent sexual activity	Active in last 4 weeks	5950 (81.0)	2784(46.8)	3167(53.2)	276.84	0.000
	Not active in last 4 weeks	1396 (19.0)	321(22.3)	1084(77.3)		
Age difference	Same or older than man	308 (4.2)	157(51.0)	151(49.0)	10.309	0.001
	man older than women	7038 (95.8)	2938(41.7)	4100(58.3)		
Total children ever born	No child	505 (6.9)	218(43.3)	286(56.7)	181.146	0.000
	1–2	2127(29.0)	1090(51.2)	1037(48.8)		
	3–4	1829 (24.9)	835(45.7)	993(54.3)		
	5 and above	2886 (39.3)	952(33.0)	1934(67.0)		
Media exposure	Not exposed	5293 (72.1)	2019(38.1)	3274(61.9)	124.32	0.000
	Exposed	2053(27.9)	1077(52.5)	976(47.5)		

Chi-square Test of Association

Table 1 above shows the results of the magnitude of prevalence of current use of modern contraceptives and background characteristics of the respondents. Of the study samples, most of the women (63.4%) residing urban place used modern contraceptive compared to about 38.2% of rural women. That is among a woman who lives in rural areas majority of them (61.8%) were not currently used modern contraceptive methods. Among women who participated in this study, the highest prevalence of modern contraceptive was from Addis Ababa (67%) followed by Amhara (52.9%) and SNNPR (48.2%) regions whereas the lowest prevalence for the use of modern contraception were from Somali (1.9%) region. Married or in union women, who are currently working showed high prevalence (50.6%) of use of modern contraceptives, while prevalence of the use of modern contraceptives for women not working is 39.5%. Among highly educated women, there was 63.9% prevalence of current use of modern contraceptive compared to 37% among women with no formal education. The chi-square test shows that, predictors age of respondents, region, place of residence, religion, women's educational level, wealth index, husband's desire for more children, total children ever born, working status of women, husband education level, age difference, sexual activity, and media exposure about family planning were statistically significant at 5% level of significance (Table 1).

Binary Logistic Regressions

The results of the binary logistic regression are given in Table 2, which displays the crude and adjusted odds ratio, significance level (p-value) and confidence interval for the coefficients associated with each of the independent variable entered into the logistic regression model. In the complex samples multiple logistic regression model, factors age, Region, residence, religion, wealth index, husband desire for children, women working status, sexual activity, and total children ever born were significantly associated with current use of modern contraceptives (Table 2).

Women within the age group of 40–44 years were 2.064 times more likely to use modern contraceptive methods (AOR = 2.064, CI: (1.461, 2.916)) than the reference age group 15–19 years. The odds of using modern contraceptive of married or in-union women in Amhara are 1.587 times (AOR: 1.587 CI: (1.270, 1.982)) higher than that of the odds of using modern contraceptive of married women in Tigray region which is the reference region. On the other hand, Married women who lived in Somali and Afar were 94.9% and 63.6% less likely to use modern contraceptive methods as compared to married women in Tigray respectively. While the odds of married women living in Oromia, Benishangul-Gumuz, SNNPR, Gambela, Harari Addis Ababa and Dire Dawa were not statistically significant. Women who resided in the rural areas were 44.7% less likely to use modern contraceptive compared to those women living in urban areas. Married or in-union women who were followers of Muslim and Other religions were (41.4% and 42.9% respectively) less likely to use modern contraceptives than those who were followers of Orthodox Christian. Women who were in middle and rich wealth status were (1.553 times and 1.710 times respectively) more likely to use modern contraception than those in the poor wealth status which is the reference group. Women who had husband who wants more children to have were 12.6% (AOR = 0.874 CI: (0.765, 0.999)) less likely to use contraceptive than women who desired same number of children with their husband. Women who had 1–2 number of children were 1.587 times more likely to use modern contraception (AOR: 1.587, CI: (1.257, 2.004)) than those married women with no children ever born. Similarly, the odds of married women with five and above children were 29.1% less likely to use modern contraception than those with no children ever born. In addition, women working status was also statistically significant. The odds of married or in-union women who were currently working are 27.9% higher than the odds of married women who were not currently working.

Women who were sexually active four weeks before the survey were 3.614 times more likely to use a modern contraceptive method than women who were sexually inactive in the last 4 weeks. Also, the study verified that respondents education level, husband/partner's educational level, age difference between husband and women, and mass media exposure were significantly associated with modern contraceptive use in the bivariate analysis but have no statistical significant association after controlling for potential confounders (Table 2)

Table 2
Predictors of current use of modern contraceptive among married or in-union women in Ethiopia

Variables	COR	95% CI:COR		P-value	AOR	95% CI:AOR		P-value
		Lower	Upper			Lower	Upper	
Age (reference = 15–19)								
20–24	1.595	1.277	1.993	0.000	1.247	0.966	1.609	0.090
25–29	1.712	1.381	2.122	0.000	1.379	1.049	1.813	0.021
30–34	1.391	1.117	1.731	0.003	1.472	1.091	1.986	0.011
35–39	1.241	0.989	1.558	0.062	1.474	1.072	2.028	0.017
40–44	1.561	1.218	2.001	0.000	2.064	1.461	2.916	0.000
45–49	1.217	0.897	1.652	0.207	1.503	1.009	2.237	0.045
Region (ref = Tgray)								
Afar	0.236	0.116	0.480	0.000	0.364	0.167	0.794	0.011
Amhara	1.612	1.317	1.972	0.000	1.587	1.270	1.982	0.000
Oromia	0.745	0.613	0.905	0.003	0.876	0.693	1.109	0.272
Somali	0.028	0.010	0.076	0.000	0.055	0.020	0.152	0.000
Benishangul	0.751	0.458	1.233	0.258	0.782	0.457	1.336	0.368
SNNPR	1.334	1.086	1.639	0.006	1.220	0.942	1.581	0.132
Gambela	0.991	0.410	2.396	0.983	0.832	0.316	2.192	0.710
Harari	0.844	0.310	2.299	0.741	0.720	0.235	2.204	0.565
Addis Ababa	2.915	2.135	3.981	0.000	1.121	0.781	1.608	0.537
Diredawa	0.794	0.393	1.603	0.519	0.622	0.282	1.370	0.238
Residence (ref = urban)								
Rural	0.357	0.313	0.406	0.000	0.553	0.454	0.675	0.000
Women education (ref = No education)								
Primary	1.418	1.276	1.576	0.000	0.999	0.872	1.144	0.986
Secondary	2.747	2.261	3.338	0.000	1.132	0.870	1.474	0.356
Higher	3.006	2.375	3.805	0.000	0.830	0.579	1.189	0.309
Religion (ref = Orthodox)								

Variables	COR	95% CI:COR		P-value	AOR	95% CI:AOR		P-value
		Lower	Upper			Lower	Upper	
Muslim	0.339	0.303	0.380	0.000	0.586	0.506	0.678	0.000
Protestant	0.994	0.880	1.122	0.922	1.181	0.993	1.405	0.060
Others	0.332	0.238	0.464	0.000	0.571	0.394	0.830	0.003
Wealth (ref = poor)								
Middle	1.758	1.545	1.999	0.000	1.553	1.351	1.785	0.000
Rich	2.735	2.456	3.045	0.000	1.710	1.491	1.961	0.000
Desire(ref = both want same)								
Husband wants more	0.675	0.599	0.761	0.000	0.874	0.765	0.999	0.048
Husband wants fewer	0.732	0.658	0.815	0.000	0.862	0.765	0.970	0.014
Work status(ref = No)								
Yes	1.634	1.478	1.807	0.000	1.279	1.139	1.437	0.000
Sexual activity (ref = Not active)								
Active in last 4 weeks	3.055	2.667	3.499	0.000	3.614	3.109	4.201	0.000
Age difference (ref = same or older than man)								
Man older than women	0.688	0.547	0.864	0.001	0.938	0.724	1.214	0.626
Total children (ref = No child)								
1–2	1.324	1.095	1.600	0.004	1.587	1.257	2.004	0.000
3–4	0.987	0.814	1.197	0.896	1.170	0.890	1.538	0.259
5 and above	0.632	0.522	0.765	0.000	0.709	0.526	0.956	0.024
Husband education (ref = No education)								
Primary	1.420	1.281	1.573	0.000	1.106	0.977	1.251	0.111
Secondary	1.969	1.666	2.327	0.000	1.039	0.836	1.290	0.732
Higher	2.726	2.258	3.292	0.000	1.040	0.783	1.383	0.786
Media Exposure (ref = Not exposed)								

Variables	COR	95% CI:COR		P-value	AOR	95% CI:AOR		P-value
		Lower	Upper			Lower	Upper	
Exposed	1.789	1.614	1.983	0.000	1.043	0.912	1.193	0.538

Discussion

The objective of this study is to assess predictors of modern contraceptive use among married or in-union women age between 15–49 years in Ethiopia. The prevalence of current use of modern contraceptives in this study was 3095 (42.1%). This finding was nearly the same with the study done in North Shoa Zone (46.9%) [23]. But it is higher than the previous study conducted in Ethiopia [15]. A woman whose age was 25–29, 30–34, 35–39, 40–44, and 45–49 was nearly 1.379, 1.472, 1.474, 2.064 and 1.503 times more likely to use modern contraceptive methods as compared to a woman whose age was between 15 and 19 years. Thus, the study showed that age (40–44 years) was highly associated with modern contraceptive use compared with a very young age (15–19 years); which is consistent with results from Ethiopia and Zambia [13, 16, 17]. However, we found that there was no significant association between women aged (20–24 years) and contraceptive use. This study shows that the odds of using modern contraceptive of married or in-union women is high in Amhara region. On the other hand, Married women who lived in Somali had smaller odds than other regions. This finding is similar to a study in Ethiopia [12]. Residence was another significant factor, which is associated with current use of modern contraceptive in the current study. The odds of women who resided in the rural areas were 44.7% less likely to use modern contraceptive compared to those women living in urban areas. This result is consistent with the results of Ethiopia, and Sierra Leone [2, 18–20]. In addition, the study also revealed that religion is a major predictor of contraceptive use among women. Women belonging to Muslim and other religion (Catholic, traditional and other) were less likely to use contraceptive methods than Orthodox Christian's. This result is consistent with findings from Ethiopia and Zambia, which reported religion as a major predictor of modern contraceptive use [12, 16, 21]. In this study women's who were married or in union, wealth status shows statistically significant effect on the current use of modern contraceptive method, as the level of women's wealth status increases, the likelihood of using modern contraceptives increases. Married women who were in the middle and rich wealth status were more likely to use modern contraception than those in the poor wealth status, which is the reference group. This result is similar to that of a study in Ethiopia, Ghana, and Sierra Leone [12, 13, 18].

Women's working status was a significant predictor of modern contraceptive use. Workers were more likely to use modern contraceptive methods than the non-working women's were. This finding was consistent with other studies [12]. Women who were sexually active four weeks before the survey were more likely to have used a modern contraceptive methods [5, 18].

Women who had 1–2 numbers of children were 58.7% more likely to use modern contraception than those married women with no children were ever born. Similarly, the odds of married women with five and above children were 29.1% less likely to use modern contraception than those with no children ever born.

This finding is similar to previous reports from Bangladesh, Tanzania, and Ethiopia which reported that as the number of total children increases, use of modern contraceptives increase [20, 22, 23]. Formal education viewed as a fundamental to increase individual understanding, and to adopt method of contraceptive use. Nevertheless, it is surprising to find that both respondent's education level and husband's educational level had no significant effect on the use of modern contraceptives. This contradict multiple studies done by other researchers [16, 18, 21, 25]. The variable media exposure is not significantly associated with modern contraceptive use which is inconsistent to previous studies showing that exposure to mass media is an important factor to use any form of modern contraception [12, 26].

Conclusions

The study identified how socio demographic characteristics of married or in-union women affect the current use of modern contraception. The chi-square test of association indicated that a number of factors, including age, region, place of residence, religion, wealth status, total number of children, women and husbands education level, media exposure, husband desire for children, age difference, women working status and sexual activity in the last 4 weeks were associated with current use of modern contraceptives. While in the final binary logistic regression model with complex sampling design found that age, religion, residence, region, wealth status, husband desire for children, women's working status, sexual activity in the last 4 weeks, and total number of children ever born were highly significantly predicted the use of modern contraceptives among married or in union women in Ethiopia.

Limitations Of The Study

This study has some limitations. There are certain important determinants that can predict current use of modern contraceptives, which are not included in this study. Therefore, our findings need to be interpreted with caution, since women may have used or not used modern contraception for reasons not included in this study. In addition, the study did not adjust for other important factors like cultural, social, relationship-related factors that could influence women's use of modern contraception that are not explored in the EDHS data set. Additionally, our use of secondary data for analysis has limited us to choose from available variables in the dataset.

Abbreviations

CSA- Central Statistical Agency, EDHS- Ethiopian Demographic and Health Survey, COR-Crude Odds Ratio, AOD- Adjusted Odds Ratio, CI- Confidence Interval, SNNPR- Southern Nations, Nationalities, and Peoples' Region.

Declarations

Ethics approval and consent to participate

This study used secondary data of freely available data online. Permission to access the 2016 EDHS data was obtained from the DHS program by agreeing with the conditions of DHS data use stated on the DHS consent letter. Ethical clearance to conduct the survey was approved by the Ethical Review Board of Ethiopia Central Statistical Agency (CSA) and written informed consent was taken from study participants.

Consent for Publications

Participants were made aware in the consent form that the results of the study would be published but that no data would be presented to allow the identification of individuals.

Availability of data and materials

The SPSS datasets used during the current study are available from the corresponding author on reasonable request.

Competing Interests

The authors declare that they have no conflict of interests.

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Authors' Contributions

SC develops, wrote the proposal, analyzed the data, and wrote the manuscript. DT approved the proposal with some revisions, participated in analysis and manuscript writing. Both authors read and approved the final manuscript.

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References

1. Organization WH: WHO recommendations on self-care interventions: self-administration of injectable contraception. In.: World Health Organization; 2020.
2. Eliason S, Baiden F, Quansah-Asare G, Graham-Hayfron Y, Bonsu D, Phillips J, Awusabo-Asare K: Factors influencing the intention of women in rural Ghana to adopt postpartum family planning. *Reproductive health* 2013, 10(1):34.
3. Cates W, Karim QA, El-Sadr W, Haffner DW, Kalema-Zikusoka G, Rogo K, Petruney T, Averill EMD: Family planning and the millennium development goals. *Science* 2010, 329(5999):1603-1603.

4. Sachs JD, McArthur JW: The millennium project: a plan for meeting the millennium development goals. *The Lancet* 2005, 365(9456):347-353.
5. Hubacher D, Trussell J: A definition of modern contraceptive methods. *Contraception* 2015, 92(5):420-421.
6. Nations U: World contraceptive use 2007 (wall chart). In.: United Nations, Department of Economic and Social Affairs, Population ...; 2008.
7. Eliason S, Awoonor-Williams JK, Eliason C, Novignon J, Nonvignon J, Aikins M: Determinants of modern family planning use among women of reproductive age in the Nkwanta district of Ghana: a case–control study. *Reproductive health* 2014, 11(1):65.
8. Tunau KA, Awosan KJ: CONTRACEPTIVE USE AND FAMILY SIZE PREFERENCES AMONG RURAL WOMEN IN SOKOTO STATE, NIGERIA. *Journal of Drug Delivery and Therapeutics* 2018, 8(2):1-7.
9. United Nations DoE, Affairs S: World Family Planning 2017—Highlights. In.: United Nations New York; 2017.
10. Shah IH, Say L: Maternal mortality and maternity care from 1990 to 2005: uneven but important gains. *Reproductive Health Matters* 2007, 15(30):17-27.
11. CSACE I: Ethiopia demographic and health survey 2016. *Addis Ababa, Ethiopia, and Rockville, Maryland, USA: CSA and ICF* 2016.
12. Aragaw KA: Application of logistic regression in determining the factors influencing the use of modern contraceptive among married women in Ethiopia. *American Journal of Theoretical and Applied Statistics* 2015, 4(3):156-162.
13. Gebre MN, Edossa ZK: Modern contraceptive utilization and associated factors among reproductive-age women in Ethiopia: evidence from 2016 Ethiopia demographic and health survey. *BMC Women's Health* 2020, 20(1):1-14.
14. Liu X, Koirala H: Fitting proportional odds models to educational data with complex sampling designs in ordinal logistic regression. *Journal of Modern Applied Statistical Methods* 2013, 12(1):26.
15. Lakew Y, Reda AA, Tamene H, Benedict S, Deribe K: Geographical variation and factors influencing modern contraceptive use among married women in Ethiopia: evidence from a national population based survey. *Reproductive health* 2013, 10(1):52.
16. Tiruneh FN, Chuang K-Y, Ntenda PA, Chuang Y-C: Factors associated with contraceptive use and intention to use contraceptives among married women in Ethiopia. *Women & health* 2016, 56(1):1-22.
17. Mekonnen W, Worku A: Determinants of low family planning use and high unmet need in Butajira District, South Central Ethiopia. *Reproductive health* 2011, 8(1):37.
18. Agbadi P, Eunice TT, Akosua AF, Owusu S: Complex samples logistic regression analysis of predictors of the current use of modern contraceptive among married or in-union women in Sierra Leone: Insight from the 2013 demographic and health survey. *PloS one* 2020, 15(4):e0231630.

19. Moore Jr JA, Pubantz J: The new United Nations: International organization in the twenty-first century: Taylor & Francis; 2017.
20. Bogale B, Wondafrash M, Tilahun T, Girma E: Married women's decision making power on modern contraceptive use in urban and rural southern Ethiopia. *BMC public health* 2011, 11(1):342.
21. Lasong J, Zhang Y, Gebremedhin SA, Opoku S, Abaidoo CS, Mkandawire T, Zhao K, Zhang H: Determinants of modern contraceptive use among married women of reproductive age: a cross-sectional study in rural Zambia. *BMJ open* 2020, 10(3):e030980.
22. Lwelamira J, Mnyamagola G, Msaki M: Knowledge, Attitude and Practice (KAP) towards modern contraceptives among married women of reproductive age in Mpwapwa District, Central Tanzania. *Current Research Journal of Social Sciences* 2012, 4(3):235-245.
23. Mohammed A, Woldeyohannes D, Feleke A, Megabiaw B: Determinants of modern contraceptive utilization among married women of reproductive age group in North Shoa Zone, Amhara Region, Ethiopia. *Reproductive health* 2014, 11(1):13.
24. Asiiimwe JB, Ndugga P, Mushomi J: Socio-demographic factors associated with contraceptive use among young women in comparison with older women in Uganda: ICF International; 2013.
25. Gupta N, Katende C, Bessinger R: Associations of mass media exposure with family planning attitudes and practices in Uganda. *Studies in family planning* 2003, 34(1):19-31.
26. Mostafa Kamal S, Aynul Islam M: Contraceptive use: socioeconomic correlates and method choices in rural Bangladesh. *Asia Pacific Journal of Public Health* 2010, 22(4):436-450.

Figures

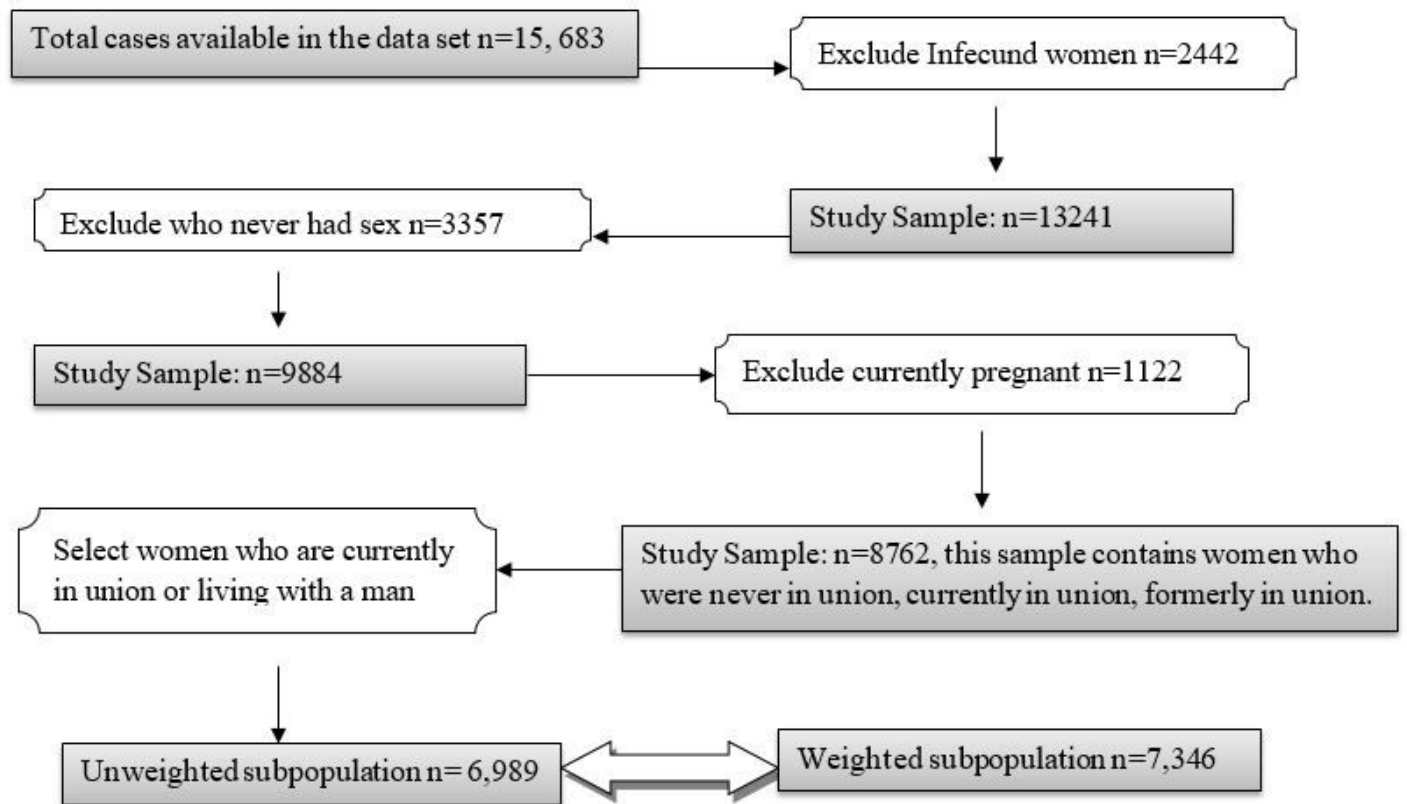


Figure 1

Shows how the subsample of the study was derived