Unmet need for modern contraceptive method and associated factors among married women in mekelle city, Tigray, Ethiopia: Community based cross sectional study

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Abstract

Background: Contraceptive use has increased markedly in the recent years in most developing countries, due to desire for smaller families; however, millions of women still want to delay or avoid pregnancy but are not using contraception to limit or to space their birth.Thus, the objective of this study is to assess unmet need for family planning among married women in Mekelle city, Tigray.

Methods: Community based cross-sectional study was conducted among married reproductive age women. Data were collected from October, 15 up to Novmber, 15/ 2018. A total of 426 study participants were interviewed using a systematic random sampling technique. Structured and interviewer administered questionnaire was used to collect the data and were analyzed using SPSS version 22. Bivariate and multivariable logistic regression models were used to assess the predictors of the outcome variable. P-value of less than 0.05 was considered to test statistical significance.

Results: The overall unmet need for modern contraception among the currently married women of reproductive age women was 19.7% (95% CI: 16.2%-23.7%) and of which 13.3% was unmet need for spacing and 6.4% was unmet need for limiting.Age of mother (25-34 years: AOR =2.79, 95%CI =1.03-7.60), occupational status of mother (AOR =2.72, 95%CI =1.72-4.02), number of living children (AOR =2.31 95%CI =1.09-4.84) and knowledge of mother about modern contraceptive methods (AOR =3.38, 95%CI=1.82-9.92) were independent predicators for unmet need for modern contraception.

Conclusion: The prevalence of unmet need for contraception is low. Age of mother, occupational status of mother, number of children and knowledge of mother about modern contraceptive methods were the independent predicators for unmet need of modern contraception. Strong effort should be made by health care workers to reduce unmet need and policy makers should use different approaches to educate women about modern contraception and increase its utilization for spacing and limiting.

1. Introduction

According to world health organization (WHO), unmet need for contraception is the proportion of currently married women or in a sexual union desiring to limit or space childbearing but not using any contraceptive methods. The concept of unmet need points to the gap between women's reproductive intentions and their contraceptive behavior (1).It remains a useful tool for identifying and targeting women at high risk of unintended pregnancy. Unmet need for contraception is one of the several frequently used indicators for monitoring of family planning programs, and it was lastly added to the millennium development goal(MDG) of improving child and maternal health (2). The use of modern contraceptive method remains an important component in the reduction of fertility, maternal, infant and child mortality. This allows couples to fulfill their fertility desires and will improve the health of mothers, children, and the family. The method used to give couples the ability to space child births, the ability of women and their partners to plan their pregnancies and avoid unwanted pregnancy which may lead to unsafe abortions that have negative health consequences for the women (3, 4).

Family planning has many potential benefits. It reduces poverty, maternal and child mortality; empowers women by lightening the burden of excessive childbearing and it reduces environmental degradation by stabilizing the population of the planet. (5, 6)

Unintended pregnancy related to unmet need is a worldwide problem that affects women and their families and societies at large. About 40% of all births that occurred globally in 2012 were unwanted posing hardships for families and jeopardizing the health of millions of women and children (7).

"Family Planning; is the Changing Path of Unmet Need" [8]. Unmet need for family planning is defined as percentage of all fecund reproductive age women who are married and in consensual union and presumed to be sexually active but are not using any method of contraception, either do not want to have more children, "Limiter" or want to postpone their next birth for at least two years, "Spacer" [9–11].

In order for modern methods of FP to be used, they need to be available, affordable and acceptable. Interventions that make FP methods more available and affordable are necessary but not sufficient. Use of contraception increased in areas where it was more readily available and not cost prohibitive for a population with few to no discretionary funds. However, efforts to improve rates of contraception uptake in low resourced areas such as sub-Saharan Africa should include factors of acceptability (12)

Results of different literature reviews indicate that many women have only limited access to health centers or FP services. Increasing utilization of FP methods are a safe and affordable intervention that will not only decrease maternal mortality, but also improve maternal morbidity, infant mortality, women's opportunities for education, reduce poverty, and decrease unsafe abortion (13,14).

When human reproduction is left unchecked, it causes high birth rates, getting large family size with the negative effects on the health of mothers and children. Consequently, this leads to negative impact on the family, community and nation at large as a result of economic crisis. Globally, the prevalence of contraceptive use has been increasing, but the unmet need for contraception still remains a problem especially in sub-Saharan Africa. More than 80 million unwanted pregnancies occur each year worldwide leading to high rates of induced abortion, maternal morbidity and mortality, and infant mortality. Women with unmet need for contraception account for over 80% of unintended pregnancy (15, 16)

Globally, 12% of married or in-union women are estimated to have had unmet need for contraceptive methods. The level is much higher, 22%, in the least developed countries. Many of the latter countries are in sub-Saharan Africa, which is also the region where unmet need for contraception method is highest (24%), double the world average. More than half a million women aged 15–49 years die annually from preventable pregnancy-related complications (17, 18).

According to the WHO report, the 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.The prevalence of unmet need for contraception in Africa, Asia, and Latin America is 23.2%, 10.9% and 10.4% respectively. This high

magnitude of unmet need caused for a rapid population growth and a shortage of services particularly in less developed countries (19).

In Saudi Arabia the prevalence of unmet need was 32.6%. The proportion of spacers and limiters among this group was 65.7% and 34.4% respectively (20). In sub-Saharan Africa, 25% of women of reproductive age who are married or in union have anUnmet need for family planning (21).

In Nigeria the level of unmet need is like the other African countries the unmet need for family planning was 16.1%.(22)

According to the latest national survey, almost one-quarter of young married women in Tanzania reported having an unmet need for family planning, and one-third of sexually active unmarried women reported having an unmet need. (23)

Modern contraceptive use by currently married Ethiopian women has steadily increased over the last 15 years, jumping from 6% of women using modern contraceptive method in 2000 to 35% in 2016. Analysis conducted on demographic health survey shows that unmet need for family planning has decreased over time as contraceptive use has risen. From 2000 to 2011, the unmet need for family planning declined by 10.3 absolute percentage points, from 36.6 percent in 2000 to 26.3 percent in 2011. The results show that there was 38 percent decline in unmet need for limiting and a 21 percent decline in unmet need for spacing. According to the few surveys conducted on unmet need for FP suggested that unwanted pregnancy and unsafe abortion are main causes of maternal mortality in Ethiopia .According to the 2016 Ethiopian demographic and health survey, the level of unmet need in Ethiopia was 22% and the level of unmet need for family planning in Tigray is lower than the national level 18%(24−26) and thisis supported by the single study conducted in shire endasilasie 21.4%.(27)

According to an estimate, 225 million women in developing countries had an unmet need for contraception. Annually, an estimated 74 million unintended pregnancies occur in developing regions, most of them are women using no contraception or a traditional method. If all unmet need for modern methods were met, 70,000 deaths from pregnancy related causes could be prevented (28).

Even if the level of contraceptive prevalence rate was increased from time to time large number of currently married women was still found with high number of unmet need for modern family planning. To the best of my knowledge little is known about the level of unmet need among currently married women of Mekelle city. That's why this study aims to assess the level of unmet need among currently married women of Mekelle city, Tigray region, northern Ethiopia

2. Methods And Materials

2.1. Study Area and period

The study was conducted in Mekelle city. Mekelle is found in the northern part of Ethiopia which is 783 kilometers away from Addis Ababa, the country's capital. Mekelle is a capital city of the national state of Tigray. The population of Mekelle city is estimated to be 396,570, of these 191,664 are women. Mekelle is found 2000–2200 meters above sea level and it has 618 mm of annual rainfall. The weather condition of Mekelle city is weinadega; on average it has 17.6 °C temperatures (37). The study was conducted from October, 15 up to Novmber, 15/ 2018.

2.2. Study design and population

Community based cross-sectional study was employed among randomely selected participants. Married/in union and sexually active women who live in Mekelle were included. Where as, reproductive age women (15–49 years) who were critically ill and having hearing or mental health problems during data collection period were excluded from the study.

2.3. Sample size determination and sampling procedure

Sample size was calculated using the single population proportion formula based on the following assumptions, 95% confidence interval with a 5% margin of error, the expected proportion of prevalence unmet need for family planning from previously conducted study in Shire Endaselassie (P) is 21.4% (27).

Formula (N) = = 1.96 at CI of 95%

(N)= $(1.96)^2$ (0.786 × 0.214)/ (0.05) N = 258.47 = 259

Adding 10% (25.85 = 26) non-response rate, sample size became 284.32 = 285; and since the sampling method was multistage, design effect of 1.5 was taken and then, final sample size became (n) = 426.48 = 426.

Multistage sampling method was used as a sampling procedure. Under Mekelle city there were seven sub cities. Three sub cities including Ayder, kedamay weyane and Adi haqi subcities were randomely selected.The number of ketenas to be studied in each sub cities was obtained from each sub cities administration.The ketenas were similarly selected randomly using lottery method and four ketenas were selected from each sub cities. The ketenas' arrangement and references list information were obtained from respective urban health extension workers (UHEWs). Based on the number of married reproductive age group women in each ketena, a total sample size of 426 were proportionally allocated to each ketena depending on their total number of currently married reproductive age group women. To select the study units from each ketena, systematic random sampling method was used to determine the women to be interviewed. Every K[th] interval participant was enrolled to the study and randomly generated numbers were used to select the first study unit.

2.5. Data collection tools and techniques

Data were collected using structured interview administered questionnaire and prepared in English and was translated into Tigrigna and then translated back to English language by language experts to check for its consistency and clarity. Questionnaires were adapted and modified from Ethiopian Demographic and Health Survey (EDHS) 2016, for contraceptive methods and other literature reviews (38,39).

Information about Sociodemographic, economic, reproductive history, contraceptive and service provider was gathered. The questionnaire was pretested in 5% of the total sample size who live in non-selected ketenas, of Mekelle ciy.

Data were collected through house to house visiting in the sub cities by interviewing the respondents with the trained data collectors after informed consent was obtained. Data were collected by 4 trained diploma nurses and supervised by 2 BSc nurses to check the overall data collection process. The filled questionnaires were checked daily by the supervisors and principal investigator. During data collection, if there were more than two eligible women in households, one woman was selected randomly. The principal investigator was also checking for completeness, errors and ambiguities on daily basis.

2.6. Operational definitions

Unmet need of contraception:refers to the contraceptive need of fecund and currently married women or living in union who are either not pregnant and want child latter on or not at all, or who are pregnant as result of a mistimed or unwanted pregnancy but not using any contraceptive method (19). Unmet need for spacing: - the percentages of not pregnant women who want another child after two years and who are pregnant as result of a mistimed pregnancy but not using modern any modern contraceptive methods. Unmet need for limiting: - the percentages of not pregnant women who do not want another child at all and who were pregnant as a result of unwanted pregnancy but not using any modern contraceptive methods.

Favorable attitude towards methods-: those respondents who scored points greater than or equal the attitude mean score (45.2) of the total 12 items of attitude related questionswith 1 to 5 pointsLikert scale. Unfavorable attitude towards methods-: those respondents who scored points less than the attitude mean score (45.2) of the total 12 items of attitude related questionswith 1 to 5 points Likert scale. (33).

- Data processing, management and Quality Assurance
- After appropriate coding, the data were entered using Epi Info version 3.5.3 software and exported to SPSS version 20 software for analysis. Univariate analysis was computed for each independent variable to assess their individual proportion. Then, bivariate analysis was executed to examine crude association of predictors with short inter birth intervals. Finally, variables which had p-value less than or equal to 0.4 on bivariate analysis were selected as candidates for multivariable analysis. In multivariable logistic regression analysis, the independent effect of predictors on short inter birth interval were examined. Backward step wise LR was used to identify variables which had the largest contribution to the model. Odds ratio and 95% CI were used to measure the statistical association. P

value 0.05 was used to determine the statistical significance of the tests. Finally, the results were presented in texts, tables and graphs.

To assure the quality of the data, training was given to the data collectors and supervisors by the principal investigator for two days on instruction for the methods, how to take informed consent, how to approach participants, ethical procedure and general information on unmet need of contraception and the objective of the study. The questionnaire was prepared in English and translated in to Tigrigna then back to English by different persons to check its consistency. Data quality was assured through pre-test of the questionnaire among 5% (n = 22) of the participants living out side trhe study area. Filled out questionnaires were checked for completeness and errors in entries daily by supervisors and principal investigator and necessary corrections were made on the spot.

Ethical considerations
- After approval, ethical clearance was obtained from institutional Review Board (IRB) of College of Health sciences, Mekelle University. Then, official letter was written from Mekelle University, College of Health sciences to Tigray health office. Permission letters from district health office were processed before starting data collection. At the beginning of the data collection, written informed consent was obtained from each respondent after through explanation of the purpose and the procedures of the study. Mothers were also informed that all the data obtained from them would be kept confidential and anonymous.To ensure confidentiality, names of respondents were replaced by code numbers.

3. Results

3.1. Socio-demographic characteristics of study participants

In this study, a total of 426 currently married women were included which makes a response rate of 100%. The mean age (± SD) of the respondents was 28.4 ± 7.0 years old. More than half, 245(57.5%) of the respondents' were Orthodox followed by Muslim, 87(20.4%) and about 78 (18.3%) of the respondents were illiterate. Of the total respondents, 271 (63.6%) of them were Tegaru in ethnicity and around 219 (51.4%) of the household's monthly income were in the range of 1001–2000 Ethiopian Birr (Table 1).

Table 1

Socio-demographic characteristics of study participants in Mekelle City, Tigray region, Northern Ethiopia, 2018/9 (n = 426)

Variables	Variable category	n	%
Age in years	15−19	41	9.6
	20−24	90	21.1
	25−29	127	29.8
	30−34	86	20.2
	35−39	44	10.3
	40−44	26	6.1
	45−49	12	2.8
Religion	Orthodox	245	57.5
	Muslim	87	20.4
	Protestant	38	8.9
	Catholic	56	13.1
Ethnicity	Tigray	271	63.6
	Amhara	83	19.5
	Others*	72	16.9
Educational status	Illiterate	78	18.3
	Elementary school (1_8th)	226	53.1
	High school (9th _ 12th)	99	23.2
	Higher education (Diploma and above)	23	5.4
Partner's education	Illiterate	92	21.6
	Elementary school (1_8th)	158	37.1
	High school (9th _ 12th)	143	33.6
	Higher education (Diploma and above)	33	7.7
Occupational status	Housewife	293	68.8
	Merchant	85	20.0
	Student	20	4.7

Variables	Variable category	n	%
	Daily laborer	24	5.6
	Others	4	0.9
Partner's occupation	Jobless	100	23.5
	Gov't employed	214	50.2
	Merchant	64	15.0
	Student	10	2.3
	Others**	38	8.9
Family monthly income (ETB)	< 1000	31	7.3
	1001−2000	219	51.4
	2001−3000	176	41.3
	>3000	31	7.3

3.2. Reproductive characteristics of study participants

From the total respondents, around two third,287(67.4%) of them got married in the age range of 18−24 years old. Most, 369 (86.6%), of the respondents had pregnancy history and 320 (86.7%) had ever gave birth. Moreover, 85(23.0%) of the respondents were currently pregnant of which, 65 (76.5%) of them were wanted. Moreover, 159(43.1%) of respondents had more than five currently living children (Table 2).

Table 2
Reproductive characteristics of study participants in Mekelle City, Tigray region, Northern Ethiopia, 2018/9 (n = 426)

Variables	Variable categories	N	%
Age at first marriage (in years)	< 18	121	28.4
	18−24	287	67.4
	> 25	18	4.2
History of pregnancy	Yes	369	86.6
	No	57	13.4
History of delivery(n = 369)	Yes	320	86.7
	No	49	13.3
Number of pregnancies(n = 369)	1−2	87	23.6
	3−4	159	43.1
	≥ 5	123	33.3
History of abortion (n = 369)	Yes	55	14.9
	No	314	85.1
Number of experienced abortion (n = 55)	1 time	46	83.6
	≥ 2 times	9	16.4
Number of living children	< 5	210	56.9
	≥ 5	159	43.1
Are you currently pregnant(n = 200)	Yes	85	23.0
	No	115	77.0
Status of pregnancy (n = 85)	Wanted now	65	76.5
	Unwanted	16	18.8
	Mistimed	4	4.7
Reasons for not being pregnant (n = 115)	Want later on after two years	53	46.1
	No more child needed	11	9.6
	Want soon with in two years	31	26.9
	Infecund	20	17.4

Variables	Variable categories	N	%
	Unsure when want to have	0	0.0

3.3. Modern contraceptive method utilization status

Out of 426 married women interviewed, 305 (71.6%) of them were ever used some methods of contraception in their life time while 226 (53.1%) currently used modern contraceptive methods during the time of the interview of which, 187(82.7%) were for spacing and 39(17.3) for limiting birth. The main reasons for not to using modern contraceptive methods were, fear of side effects, 102(65.0%), want to have more children, 84(52.9%) and other health concerns 79(50.1%) (Table 3).

Table 3

Modern contraceprive productive related characteristics of study participants in Mekelle City, Tigray region, Northern Ethiopia, 2018/9 (n = 426)

Variables	Variable categories	N	%
Ever use of modern contraceptive methods	Yes	305	71.6
	No	121	28.4
Current use of modern contraceptive methods	Yes	226	53.1
	No	200	46.9
Type contraceptive methods used (n = 226)*	Oral pill	23	28.0
	Injectable	34	41.5
	Implant	15	18.3
	IUCD	4	4.9
	Condom	3	3.7
	Permanent	3	3.7
Reasons for use of modern contraceptive methods (n = 226)	Spacing birth	187	82.7
	Limiting birth	39	17.3
Reasons for not using contraceptive methods (n = 200)*	Husband is not present now	59	8.1
	Want to have more children	84	11.5
	Difficulty of getting pregnant/infertility	20	2.7
	Breast feeding	38	5.2
	Respondent opposition	64	8.8
	Husband opposition	78	10.8
	Religious opposition	38	5.2
	Lack of knowledge about methods	54	7.4
	Lack of information about source of methods	37	5.1
	health concerns	79	10.9
	fear of side effects	102	14.0
	other reason	75	10.3

3.4. Knowledge and attitude towards to contraceptive methods

A total of 342 (80.3%) of respondents ever heard about modern contraceptive methods and the most frequently mentioned source of information of them were health professionals, 259(73.0%) followed by CHWs, 225 (63.4%).Regarding to the over all knowledge and favorable attitude towards modern contraceptive among women was,259(60.8%) and 135(31.7%), respectively (Table 4).

Table 4

Knowledge and attitude to modern contraceptives methods of study participants in Mekelle City, Tigray region, Northern Ethiopia, 2018/9 (n = 426)

Variables	Categories	N	%
Ever heard of modern contraceptive methods	Yes	342	80.3
	No	84	19.7
Type of modern contraceptive method you know*	Oral pills	290	90.3
	emergency contraception	104	32.4
	Injectable	282	87.9
	Female Condom	277	86.3
	Male condom	83	25.9
	Implant	201	62.6
	Intrauterine device (IUCD)	153	47.7
	Male sterilization	61	19.0
	Female sterilization	84	26.2
Source of information for modern contraceptive methods*	Health professional (Dr & nurse)	259	73.0
	Health institutions	202	58.6
	CHWs	225	63.4
	Friends	139	39.2
	Radio	170	47.9
	Television	85	23.9
	Newspaper	158	44.5
	Husband	270	76.1
Main places to get modern contraceptive methods*	Health institutions	202	82.8
	Pharmacy	134	54.9
	Reproductive health clinic	118	48.4
	Others	78	32.0
Advantages of modern contraceptive methods*	To avoid unwanted pregnancy	325	92.3

Variables	Categories	N	%
	To space for family size	218	61.9
	To regulate period	120	34.1
	To prevent STD/HIV	228	64.8
Knowledge about modern contraceptive methods	Yes	259	60.8
	No	167	39.2
Mothers attitude towards contraceptive	Favorable attitude	135	31.7
	Unfavorable attitude	291	68.3
Exposure to media(Radio, TV)	Yes	201	47.2
	No	225	52.8

3.5. Partners and health service related charactersitics

A total of 275 (64.6%) of respondents ever discussed about modern contraceptive methods with their partners and almost half, 208 (48.8%) get partners support to use contraceptive methods preceeding the survey.Similarly, 244(57.3%) of the respondnets discussed with health professionals about contraceptive methods (Table 5).

Table 5

Partner and health service related charactersitics of study participants in Mekelle City, Tigray region, Northern Ethiopia, 2016 (n = 426)

Variables	Categories	N	%
Ever discussed about contraceptive methods with your partner	Yes	275	64.6
	No	151	35.4
Partner support to use contraceptive methods	Yes	208	48.8
	No	218	51.2
Decision on number of children to have	My decision	50	11.7
	My partner	53	12.4
	Both of us	323	75.8
Availability of modern contraceptive methods	Yes	140	61.9
	No	86	38.1
Convenient site of modern contraceptive services	Yes	198	87.6
	No	28	12.4
Reasons for not convenient site*	Providers Ignorance	57	82.6
	Lack of privacy	52	75.4
	Difficult to obtain health professionals	33	47.8
	Fearful for health professionals to be discuss	60	87.0
Ever discussed about contraceptive methods with health professional	Yes	244	57.3
	No	182	42.7
Ever discussed about contraceptive methods with CHWs	Yes	266	62.4
	No	160	37.6
Ever visited health facility for modern contraceptive methods?	Yes	218	51.2
	No	208	48.8

3.6. Prevalence of unmet need among women

The overall unmet need for modern contraceptive methods among currently married women was found to be 84 (19.7%) of which, 57(13.3%) for spacing and 27(6.4%) for limiting (Fig. 2).

Figure 2. Total unmet need for modern contraceptive methods of study participants in Mekelle City, Tigray region, Northern Ethiopia, 2016 (n = 426)

3.7. Factors associated with unmet need of modern contraceptive methods

Among the variables entered into bivariate logistic regression analysis, age of mother, educational status of mother, partner's educational status, occupational status of mother, age at first marriage, ever gave birth a child, number of living children, history of abortion, reasons for use of modern contraceptive methods, knowledge of mother about modern contraceptive methods, attitude of mother towards modern contraceptive methods, ever discussed about modern contraceptive methods with partner and decision maker on number of children to have were found to be significantly associated (at p-value < 0.25) and were candidate variables for the final multivariable logistic regression model analysis (Table 6).

Table 6

Factors associated with unmet need of modern contraception among study participants in Mekelle City, Tigray region, Northern Ethiopia, 2018/9 (n = 426)

Variables	Category	Unmet need for modern contraception (n = 426)		COR 95% CI	AOR 95% CI
		Yes (84)	No(342)		
Age in years	15−24	9(6.9)	122(93.1)	1	1
	25−34	52(24.4)	161(75.6)	4.38(2.08−9.23)	2.79(1.03−7.60)*
	35−49	23(28.0)	59(72.0)	5.28(2.30-12.13)	3.94(1.17-13.19)*
Educational status	Illiterate	25(32.1)	53(67.9)	2.31(1.33−4.01)	0.87(0.36−2.19)
	Educated	59(17.0)	289(83.0)	1	1
Partner's education	Illiterate	23(25.0)	69(75.0)	1.49(0.86−2.57)	0.48(0.19−1.23)
	Educated	61(18.3)	273(81.7)	1	
Occupational status	Housewife	71(24.2)	222(75.8)	2.95(1.57−2.55)	2.72(1.73−4.02)*
	Working	13(9.8)	120(90.2)	1	1
Age at first marriage	< 18 years	16(13.2)	105(86.8)	1	1
	≥ 18 years	68(22.3)	237(77.7)	1.88(1.04−3.40)	0.81(0.37−1.79)
Ever given birth a child	Yes	76(23.8)	244(76.3)	1.87(0.81−4.33)	0.75(0.25−2.26)
	No	7(14.3)	42(85.7)	1	1
Number of living children	≥ 5	50(31.4)	109(68.6)	2.46(1.49−4.06)	2.31(1.09−4.84)*
	< 5	33(15.7)	177(84.3)	1	1
History of abortion	Yes	16(29.1)	39(70.9)	1.51(0.79−2.87)	2.46(0.99−6.12)
	No	67(21.3)	247(78.7)	1	1
Reasons for use of modern contraceptive methods	Spacing	42(22.5)	145(77.5)	0.52(0.25−1.08)	0.48(0.21−1.14)
	Limiting	14(35.9)	25(64.1)	1	1

Knowledge about modern contraceptive methods	Yes	67(25.9)	192(74.1)	3.08(1.74–5.46)	3.38(1.82–9.92)*
	No	17(10.2)	150(89.8)	1	1
Attitude towards modern contraceptive methods	Favorable	33(24.4)	102(75.6)	1.52(0.93–2.49)	1.67(0.73–3.15)
	Unfavorable	51(17.5)	240(82.5)	1	1
Ever discussed about modern contraceptive methods with partner	Yes	72(26.2)	203(73.8)	4.12(2.15–7.86)	1.02(0.39–2.67)
	No	12(7.9)	139(92.1)	1	1
Decision on number of children have	My decision	7(14.0)	43(86.0)	1	1
	My partner	5(9.4)	48(90.6)	0.64(0.19–2.67)	0.58(0.21–1.43)
	Both	72(22.3)	251(77.7)	1.76(0.96–4.09)	0.98(0.71–3.56)

After controlling the effect of probable confounders, final multivariable logistic regression analysis revealed that age of mother (25–34 years: AOR = 2.79, 95%CI = 1.03–7.60 and 35–49: AOR = 3.94, 95%CI = 1.17–13.19), occupational status of mother (AOR = 2.72, 95%CI = 1.72–4.02), number of living children, (AOR = 2.31 95%CI = 1.09–4.84) and knowledge of mother about modern contraceptive methods (AOR = 3.38, 95%CI = 1.82–9.92) were the independent predicators for unmet need of modern contraception among the study participants.

Therefore, married women who were in the age groups of 25–34 and 35–49 were about 2.8 and 3.9 times, respectively, more likely to have unmet need as compared to women in the age group of 15–24 years old. Women who were housewife were 2.7 times more likely to have unmet need than working women. Women who have greater than five living children were 2.3 more likely to face unmet need for contraception over those who had fewer than five children. Women who had knowledge on modern contraception were 3.4 times more likely to have unmet need than women who did knew modern contraception.

4. Discussion

Contraceptive use has increased markedly in the recent years in most developing countries, due to desire for smaller families; however, millions of women still want to delay or avoid pregnancy but are not using contraception to limit or to spacing their birth (29). Therefore, this community based cross-sectional study was designed to assess prevalence of unmet need for modern contraception and associated factors among currently married women of reproductive age in Mekelle city, Tigray, Northern Ethiopia.

This study revealed that, overall unmet need for modern contraception among currently married women of reproductive age were 19.7% (95% CI: 16.2%-23.7%) and of which 13.3% were unmet need for spacing and 6.4% were unmet needs for limiting. The present findings were similar with the regional (18.0%) and

national (22.3%) figure of EDHS 2016 report (24), 22.0% (24), Shire Endasilasie, Ethiopia 21.4% (27), Awi zone, Ethiopia, 17.4% (11) and Nigeria,16.1% % (22), Cameroon,20.4% (31); but much higher than the findings of various studies conducted in Egypt, 12.7% [30] and Botswana,9.6% (32). The possible reason for the difference may be due to study area, design and time of the study. However, it is also lower than the studies done in Misha district, Ethiopia, 26.5% (34), Bahir Dar City, Ethiopia, 24.3% (40) and Rural India, 42.0% (41). The possible explanation of large variation may be due to expansion of health facilities and improved access of health services in the study area. It may also be because of differences in study setting, study population, time of the study, awareness of people on contraceptives and other related socioeconomic characteristics among the study participants.

In the current study, age of the mother was a factor associated with increased unmet need for modern contraception. The married women who were in the age groups of 25–34 and 35–49 were about 2.8 and 3.9 times, more likely to have unmet need as compared to women in the age group of 15–24 years old respectively. The possible explanation could be as age of women increased, there might have better experience sharing and social interaction & this can improve the awareness on family planning so that level of unmet need also increased in the higher age groups. The other possible explanation may be also due to the fact that women who may face high labour experience and pregnancy related problems as age increases.This finding is similar to studies done in Shire Endasilasie, Ethiopia (27), Bahir Dar City, Ethiopia, (40), India (44).

Another most important factor significantly associated with increased unmet need for modern contraception among the women was occupational status of mother. Women who were housewives were 2.7 times more likely to have unmet need than working women. The possible reason for this might be employed women were more likely to have better access for information about contraception than non-employed. The result of this studywas similar with other studies conducted in Awi zone, Ethiopia (11), Nagpur, Maharashtra (43), Haryana, India (46).

The current study also revealed an association between women's knowing about family planning and unmet need to modern contraception. Women who had knowledge on modern contraception were 3.4 times less likely to have unmet need than women who did knew modern contraception. This may reflect having awareness or knowledge about modern contraceptives can improve on having better access to information and utilization for modern contraceptives and this leads to increased demand for family planning. There result of this study is in line with other studies conducted in Misha District, Ethiopia, (34), Enemy District, Ethiopia (50) and Lahore, Pakistan (45) and Gumi District, Nepal (49).

Number of living children was also found to be a predictor for unmet need to modern contraceptive methods.Woman who had five or more currently living children were 2.3 times more likely to have unmet need for modern contraceptive than those who has less than five children. The possible explanation could be the likelihood of wanting no more children increases with the actual number of living children. It was consistent with other studies done in Sibu Sire District and North Shoa Zone, Ethiopia (47,48) which indicated that couples who have more children are more likely to have unmet need than the ones who

have fewer children or none at all.When interpreting the findning of this study, the following limitations should be considered:

First, men were not included as participants to understand their perception towards the unmet need for modern contraception. Second, the study involved a single cross-sectionaldesign. Hence since temporal relation ship of exposure and outcome variables is not known, it is difficult to establish cause -effect relationship. Third, there might be the possibility of recall and reporting bias in some questions which might be loss of information and responded carelessly.

5. Conclusions And Recommendations

The present study revealed that the overall unmet need for modern contraception among the currently married women of reproductive age was low during the survey. According to analysis of independent variables with the outcome variables, age of mother, occupational status of mother, number of living children and knowledge of mother about modern contraceptive methods were the independent predicators for unmet need of modern contraception.

Even if unmet need is lower than the national level, health care workers should make a strong effort to reduce the unmet need. Policy makers should also use different approaches to educate reproductive age women targeting house wives, older age women, women with poor knowledge of family planning and those having more than four children so that family planning utilization for spacing and limiting will increase. Finally, conducting large scale study using lobust designs is recommended to be carried out.

Abbreviations

HSDP:Health sector development plan; EDHS:Ethiopian Demographic and Health Survey; STI:Sexual transmitted infections; FP:family planning; CPR:contraceptive prevalence rate

Declarations

Ethics approval and consent to participate

After approval, ethical clearance was obtained from institutional Review Board of Arba Minch University. Then, letter was written to the concerned bodies and permission was secured at all levels. No personal identifiers were declared .lindividual level patient consent is not secured as it was deemed unnecessary

Consent for publication

Not applicable.

Availability of data and materials

All the data are presented in the manuscript. Raw data can be obtained from the principal author through email.

Authors' contributions

ST, DH & DS conceived the study, participated in data collection, performed analysis and interpretation of the data and drafted the paper and prepared all versions of the manuscript. All authors read and approved the final manuscript.

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Figures

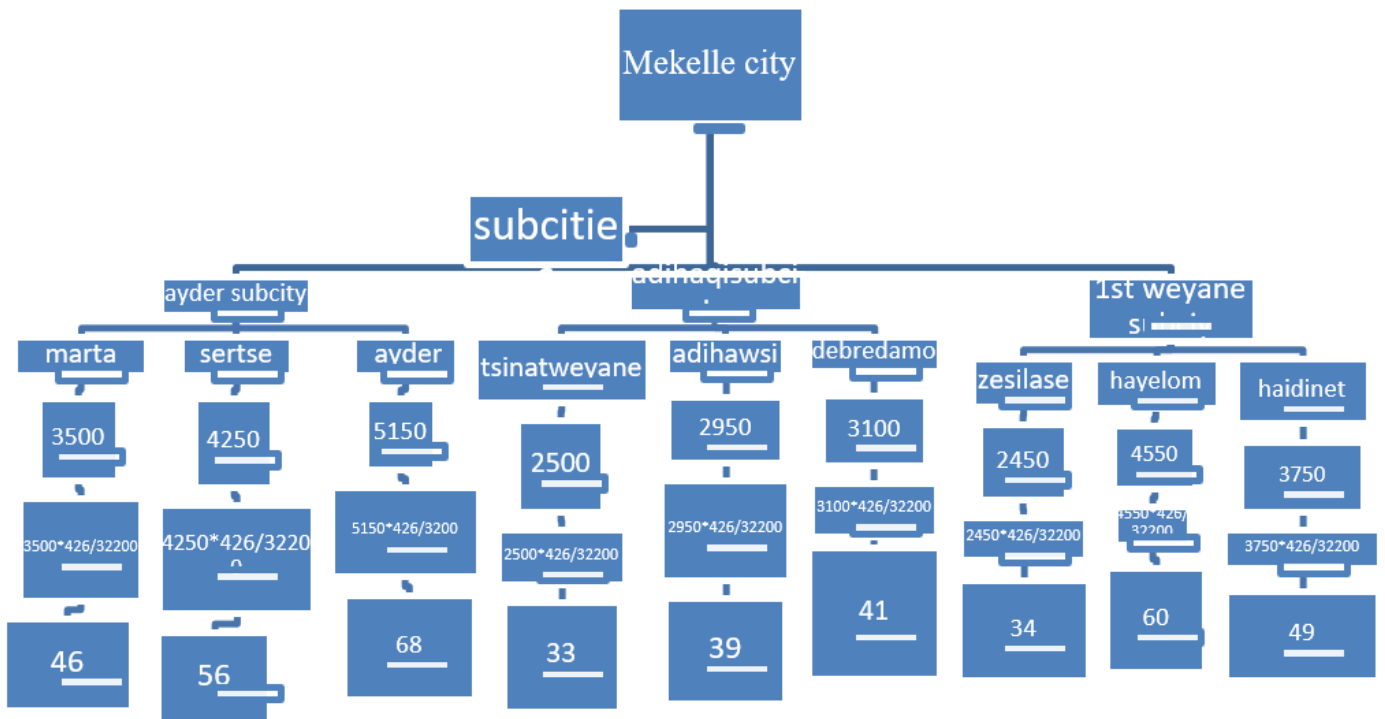**Figure 1**

Schematic presentation of sampling procedure for a study on unmet need for modern contraception and associated factors among married women in Mekelle city, Tigray, Northern Ethiopia
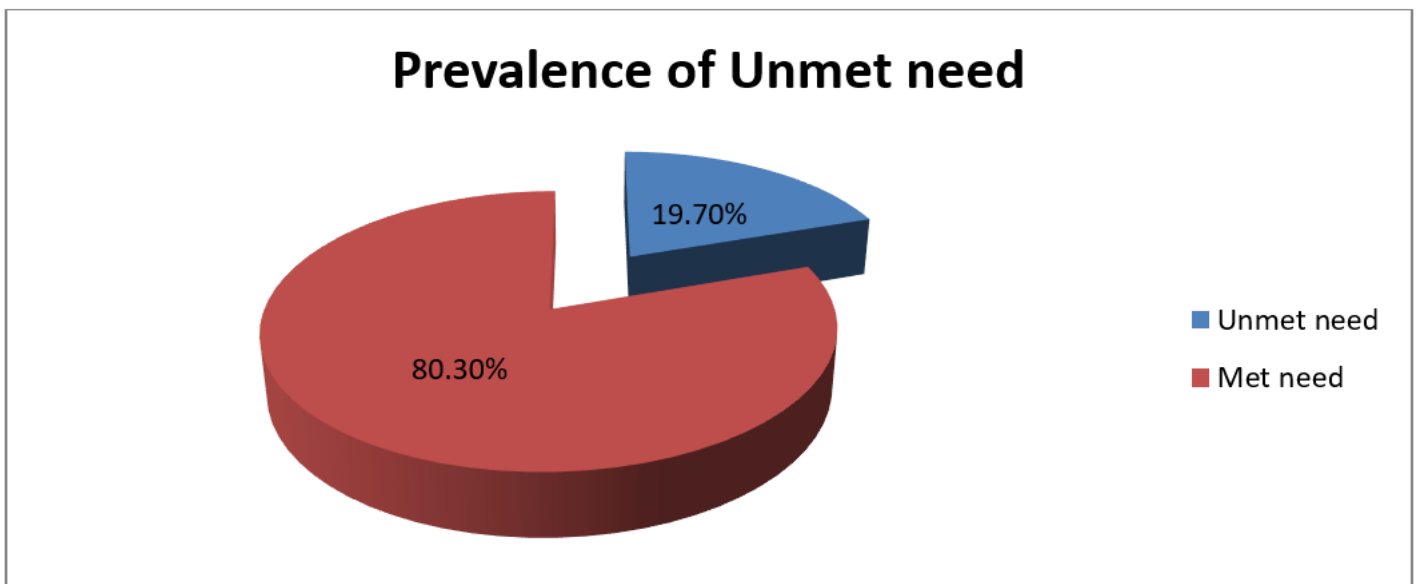

Figure 2

Total unmet need for modern contraceptive methods of study participants in Mekelle City, Tigray region, Northern Ethiopia, 2016 (n=426)