Explaining Unmet Need for Family Planning in Rural Tigrai, Ethiopia

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Abstract

This paper examined factors associated with unmet needs for family planning among married women in rural Tigrai, Ethiopia using cross-sectional primary data collected from married women age group 15-49 years (n=1240) in 2014. A logistic probability distribution approach was used for the statistical analysis. The total unmet need for family planning among married women was 31.5 percent, of which 17.5 percent accounted for childbirth spacing and 14.2 percent for limiting childbirth. Findings of regression analysis revealed that unmet needs were higher among married women fertile age group (34-44 years). Results indicated that women's age, number of living children, women's employment status, open discussion of family planning with partners, women's and partner's education levels were significantly associated with unmet needs. Improving women's and partners' access to education and encouraging open discussion family planning among partners could substantially enhance use of family planning and consequently reduce unmet needs to an optimal level.

Keywords: Childbirth; Family planning; Rural; Tigrai; Unmet need; Women

Introduction

In Ethiopia, family planning services was started in 1966 by the family guidance association of Ethiopia, a non-governmental organization. In 1975, the Ethiopian government started integrating family planning with maternal and child health services. After the adoption of the population policy in 1993, several other stakeholders have been involved in family planning promotion [1]. The total fertility rate in Ethiopia has declined from 6.4 in 1990 to 4.8 in 2011 and 4.6 childbirths per woman [2,3]. Furthermore, the use of contraceptive methods among married women in union or those who are sexually active married women has increased nearly six-fold in the last 15 years, from 6 percent in 2000 to 14 percent in 2005, 28 percent in 2011, and 35 percent in 2016 [2-4]. These are significant achievements by any standard, though the current total fertility rate and unmet need for family planning remain high. Furthermore, population growth remains around 2.6 percent annually, making Ethiopia Africa's second-most-populous country with over 99.4 million population in 2015 [5].

Ethiopia has among the highest levels of unmet need for contraception in developing countries with 22percent of married women had unmet need for family planning, 13 for spacing while 9 percent for limiting childbirths in 2016 [6][13]. Unmet need both for Ethiopian women to space and limit childbirths is higher among rural residents than their urban counter parts [3,6,7]. Unmet need for family planning (total) among married women age 15-49 has declined from 37 percent in 2000 to 25 percent in 2011, and 22 percent in 2016 [8-10].Though there has been a drop in the proportion of married women with the unmet needs for the contraception, still the number of women with unmet needs has remained more compared to the Sub-Saharan African countries [11-15]. Furthermore, there has been significant variations in rate of reduction for unmet need for family planning among the Ethiopian regional states. It ranges from a low of 13 percent in Benshangul-Gumuz to a high of 28 percent in Oromia region [8].

Unmet needs for family planning could have many advantages for individuals as well as society. To reduce the unmet need, there should be proper understanding of various factors that could possibly associated with unmet needs. There have been

[13]Unmet need for family planning can be defined as the desire of married women to delay or postpone their next childbirth for at least two years, or to not have any more childbirths, while not using any methods of family planning [6].

many studies that focus upon the number of factors determining unmet needs for family planning [16-20]. Though these studies have provided useful information on correlates of unmet needs for the contraception and family planning among married women, the focus of these studies were on factors operating at individual level and household level. Similarly, the scope of most studies on unmet needs for family planning in Ethiopia were focused on the urban women using individual and household level factors [20-27]. The community factors have been largely ignored that were more applicable for reducing the overall unmet needs. For better program implementation and policy formulation, there is a huge need to integrate all these factors (individual, household, and community level factors). Thus, studies dealing with the issue of unmet needs for family planning should incorporate all these factors such as individual, household and community level, as they are highly correlated with each other [28-33]. Despite the high level of unmet need in Ethiopia, much less is known about the determinants of unmet need for family planning for married women in rural areas of Tigrai, Ethiopia. Furthermore, identified the determinants of unmet need could allow for development of targeted, effective and feasible intervention strategies of unmet need for family planning. A proper understanding of the extent of unmet need among married women of reproductive age and associated factors are of paramount importance in reducing unmet need for family planning. More importantly, the proportion of Ethiopian women with unmet need is higher than their counter parts unmarried women. The level of unmet need for rural married women is higher than that of urban married women implying higher unmet need in rural areas reflects the more limited availability and acceptability of family planning among women in these areas. The unmet need among married women of Tigrai region remains to be among the highest regions in the country. Furthermore, women's fertility level in rural areas (5.2) is more than twice for women's in urban areas. Based on these rationale, this study, therefore, examined the association between various factors with the level of unmet need of family planning for married women in rural Tigrai, Ethiopia.

Methods

Data and sampling procedure

Tigrai is one of the nine regions of the Federal Democratic Republic of Ethiopia which lies in the Northernmost of Ethiopia, extending from $12^0 15'$ to $14^0 57'$ longitude and $36^0 27'$ to $39^0 59'$ latitude. The region (Tigrai) shares common borders with Eritrea in the north, Afar region in the east, Amhara region in the south, and the Republic of the Sudan in the west. Excluding Mekelle town, the state capital, there are five administrative zones: comprising a total of 47 were das (districts) and 673 tabias (sub-districts). Thus, this study employed cross-sectional primary data collected from sexually active married rural women through a combined quantitative and qualitative structure and semi-structure questionnaire eat household level in 2014 in Tigrai national regional state, Ethiopia. Data was collected mainly regarding family planning practices and potential factors influencing the unmet need for family planning of the sexually

active married women in rural areas of Tigrai. It employed a multi-stage sampling technique procedure and in the fist-stage, the survey covered three zones of the region based on random probability of sampling technique. In the second-stage, from each selected zone two rural were randomly selected for a total of six. In the third-stage, from each selected were das three villages for a total of twelve villages were selected randomly. Finally, total of 1240 households, on an average, one-woman age group 15-49 years per household was selected proportionally from selected village.

Dependent variable

The outcome variable of this study was the unmet needs for family planning. A sexually active woman age group 15-49 years who is sexually active would prefer to use family planning methods for avoiding unwanted pregnancy but are unable to or not using any method of contraception, are considered to have an "unmet need" for family planning. Conversely, women using a family planning method are said to have a "met need" for family planning. The combination of women with unmet need and met need for family planning constitutes the total demand for family planning. The outcome variable of interest is a binary outcome variable (dependent variable) represented and is assigned a value of, otherwise=0. by a value of 1 for unmet need for family planning (UFP_i=1); 0 otherwise.

Independent variables (covariates)

Several previous studies have highlighted the importance of various factors as predictors of unmet need for family planning. Hence, the selection of independent variables (covariates) was mainly guided by these previous studies and availability of data. Accordingly, A range of various variables in the analysis that have been found to be significantly associated with unmet need for family planning in Ethiopia (Tigrai) and elsewhere. The independent variables (covariates) at the individual and household level factors included in the present study include women's age (five years age interval), religion (Muslim, Christian), number of living children, partners desire for children (both want same; husband wants fewer; husband wants more), and women's current employment status (yes; no). The community level factors include women's education level (illiterate; primary; secondary and above), husband's/partner's education level (illiterate; primary; secondary and above), women's exposure to family planning media (yes; no), discussion of family planning with partner (yes; no), and visiting health facilities (yes; no) visit to make use of family planning services.

Model specification

Since the outcome variable of interest is dichotomous in nature, making use of a binary choice model is an appropriate analytical tool to analyze the obtained data [33]. On an average, one woman was interviewed per household. The variations within the household level were ignored in the present analysis. A binary logistic regression model was used to analyze the unmet needs of family planning to space childbirth and/ or limit the number of child births. This study explained factors that determine unmet

need for family planning between the two groups of married women: (a) with unmet needs (UFP$_i$=1); and (b) with met needs (UFP$_i$=0).A logistic probability distribution approach or binary logistic regression model was used to estimate the factors that influences the unmet need for family planning among married women [33].

Empirically, the model is defined as:

$$\text{Logit} = \ln\left(\frac{\pi_{ij}(x_i)}{1-\pi_{ij}(x_i)}\right) = \alpha_{0i} + \alpha_{i1}x_{i1} + \alpha_{i2}x + \alpha_{i3}c_{xi3} + \alpha_{i4}x_{i4} + \alpha_{i5}x_{i5} + \alpha_{i6}x_{i6} \quad [1]$$
$$+ \alpha_{i7}x_{i7} + \alpha_{i8}x_{i8} + \alpha_{i9}x_{i9} + \alpha_{i10}x_{i10}$$

Where:$\Pi_{ij}(x_i)$ is the probability that an ith women in j^{th} household is having unmet need for family planning.x_i = are factors that affect women's unmet needs for family planning, α_0=constant term and α_i are coefficients of covariables.

Statistics and data analysis

To make valid inference, both descriptive and inferential techniques were applied to statistically analyse the obtained data. The statistical computations for the obtained cleaned database were made using State statistical software package, version 14.

Results

Descriptive analysis

Table 1 reports percentage of currently married women age 15-49 with unmet need, met need, and total demand for family planning for selected background characteristics (covariates). Accordingly, about 59.3 percent of currently married women had a total demand (the need for spacing and the need for limiting childbirths) for family planning for family planning; 32.4 percent want to space while 26.9 percent want to limit childbirths. Twenty-eight percent of women are using a contraceptive method either to space (15.1 percent) or to limit childbirths (12.7 percent), that is their family planning was met. However, unmet need for family planning was 31.5 percent; 17.5 percent want to space, and 14.2 percent want to limit childbirths among married women who have never used any contraceptives for family planning. A little more than half (59.3 percent) of the total demand for family planning was satisfied; of this, the demand for spacing is 1.2 times as great as the demand for limiting child births (32.4 and 26.9 percent, respectively).

For the two groups of married women (women with unmet and women with met need), the percentage that discussed family planning was the highest in the youngest age cohort, age 15-19, but decreased significantly with advancement of age groups. The levels of unmet need for family planning were higher among younger married women age group 15-19 years (32.5 percent), and lower among the older married women i.e. for women age groups between 40-44 and 45-49 years (15.5 and 12.1 percent, respectively). While the levels of met need for family planning were also higher among younger women age group 15-19 years (30 percent), and lower among the older women age group 35-49 years. Similarly, for both groups, the total demand (unmet and met need) for family planning among women was higher for the

younger married women age group 15-19 years (62.5 percent) than that of older women in the other age cohorts. In this study, most unmet needs among younger women was for spacing childbirths. On the other hand, among older women, most unmet need was for limiting childbirths.

Furthermore, religion affiliation indicated that Muslims women have higher level of unmet need (29 percent) than their Christian women counterparts (21.8 percent) in the rural areas of the region (Tigrai). The prevalence of unmet need was high among uneducated married women (illiterate women) (31.1 percent), compared to that in primary and above secondary education level (24.4 and 19 percent, respectively). The level of unmet needs decreased significantly with educational levels among currently married women for family planning. Similarly, married women's who had an exposure to family planning information on media and had currently working status reduced the unmet need for family planning or modern contraception by 17.7 and 28 percent, respectively. Furthermore, among married women who are not currently using any contraception, the level of unmet need was less for those women who have visited health facilities where family planning issues were discussed (24.2 percent), with the highest total demand for family planning (82.5 percent). While about 47.5 percent of women who either never visited such health facilities or visited without any information on family planning discussed had unmet need for family planning **(Table 1).**

Empirical results (regression analysis)

As reported in **Table 2,** the results revealed that the odds ratios associated with unmet need for modern contraceptive were 6.16 (p<0.05) and 7.43 (p<0.1) for married women belongs to the age group of 30-34 and 40-44 years respectively. This estimates (odds ratios) were higher than those associated with married women aged 15-19 years, the reference category. Similarly, the number of living children were significantly associated with the level of unmet need for family planning among married women in rural Tigrai. The odds of unmet need were higher among women who had four or more children compared to those who had less than four children. For instance, women who have at least four children were nearly 1.002 times less likely to have unmet need for modern contraceptive than those who do not have any living children (p<0.01).Furthermore, results from regression analysis revealed that there was significant relationship between women's level of education and their unmet need for family planning. Women with primary-level education have much lower likely to have an unmet need for family planning than their counterpart illiterate women (OR=5.15; p<0.01).

The findings from this analysis indicated that women with primary-level education have significantly higher level of unmet needs for family planning than their illiterate counterparts (p<0.01). Similarly, results further show that married women whose husbands have secondary-level education and above (OR=1.123; p<0.01) have higher odds of unmet need for modern contraceptive than their counterparts whose husbands have no formal education. It is quite interesting to observe that married women who were currently working (OR=1.001; p<0.01) have

Table 1 Need and demand for family planning among married women age 15-49.

Covariates	Unmet need for family planning (%)			Met need for family planning (%)			Total demand for family planning (%)		
	For spacing	For limiting	Total	For spacing	For limiting	Total	For spacing	For limiting	Total
Women's age									
15-19	21.3	11.2	32.5	17	13	30	38.3	24.2	62.5
20-24	17.2	11.1	28.3	16.3	13.3	29.9	33.5	26.2	59.2
25-29	16.1	9.4	25.5	15.6	13	28.6	31.5	18.4	51.1
30-34	12.6	8.1	20.7	16	12	28	28.6	20.1	48.7
35-39	9.1	7.4	16.5	15.1	10.4	25.5	24.2	17.8	42.0
40-44	8.1	7.4	15.5	13.2	11.1	24.3	21.3	18.5	39.8
45-49	6.7	5.4	12.1	13	11.2	24.2	31.7	18.6	34.3
Women's education									
No education	18.7	12.4	31.1	23.3	14	37.3	42	26.4	68.4
Primary	15.3	9.1	24.4	15.7	9	24.7	31	18.1	49.1
Secondary+	11.4	7.6	19	13.7	11	24.7	25.1	18.6	43.7
Maternal religion									
Muslim	17.3	11.7	29	11	8	19	28.3	19.7	48
Christian	13.5	8.3	21.8	26.7	16	42.7	40.2	24.3	64.5
Women's employment status									
Not working	13.1	11.4	24.5	16	10.3	26.3	29.1	21.7	50.8
Working	9.2	8.5	17.7	21.7	14.2	35.9	30.9	22.7	53.6
Exposure to FP media									
No	23.1	14.2	37.3	8.8	7	15.8	31.9	21.2	53.1
Yes	17.7	10.3	28	28.6	19	47.6	46.3	29.3	75.6
Health facility									
No	33.2	14.3	47.5	7.9	8	15.9	41.1	22.3	63.4
Yes	14.7	9.5	24.2	32.3	26	58.3	47	35.5	82.5
Total	17.3	14.2	31.5	15.1	12.7	27.8	32.4	26.9	59.3

Note: Unmet need for spacing includes women who are fecund and are not using family planning and want to wait at least two years for their next childbirth. Conversely, women using a family planning method are said to have a "met need" for family planning. The combination of women with unmet need and women with met need for family planning constitutes the total demand for family planning.

higher odds of unmet need for modern contraceptive than those who were not working. Furthermore, the likelihood of unmet need for modern contraceptive was lower among married women who had ever have open discussion more often about family planning matters with their partners (spouses), the level of unmet needs declines significantly, compared to those who have never discussed with their partners (OR=3.41; p<0.05 percent).The results from the regression analysis, however, did not indicate the statistically significant difference between groups of married women (women with unmet and women with met needs for family planning) for covariates such as women's religion, partners desire for children, women's exposure to family planning media, and visiting health facility **(Table 2).**

Discussion

An attempt has been made in this study to examine the proportion of married women who were not using modern contraception and having unmet needs for family planning. Overall, women who have unmet needs are targets of family planning programs since there is considerable difference between their fertility goals and contraceptive practice and most of them live in rural areas. Accordingly, meeting the unmet needs for contraception among rural women in Tigrai national regional state, Ethiopia may play a significant role in reducing the rapidity of population

growth, improving maternal and child health, and improving the problems associated with sustainable development that prevail in the country. This study, therefore, focused on factors associated with unmet need for family planning among currently married women in rural Tigrai, Ethiopia.

Results of this study revealed that level of unmet need for family planning among married women was 31.5 percent, which was lower than the results observed by Bhattacharya et al. [4] (41.67 percent); [7] (41.6 percent); [27] (40.7 percent). However; this finding is slightly greater than that of previous studies such as [2] (16 percent); and [24] (20 percent). The differences in the levels of unmet need for family planning may arise due to differences in demographic and social background of the society under study, along with individual and community level factors affecting the unmet needs.

This study indicated that unmet needs were higher in the youngest age group of women as compared to the older age married women. This result was in line with some previous studies [4,7,22,23,27]. On top of this, many studies revealed that a clear relationship emerges between married women's age and the level of unmet need for family planning (i.e. more in younger age group) and when unmet needs is categorized into its spacing and limiting childbirths. Most importantly, in the present study,

Table 2 Effect of various factors associated with unmet need for family planning among currently married women age group 15-49 (n=1240).

Covariates	Co ef.	Odds ratio (OR)	Robust Std. Err.	p-value	[95%CI Interval]
Women's age (15-19®)		**1.00**			
20-24	0.06253	1.0645	0.09794	0.497	[0.88888 1.27488]
25-29	1.18277	3.2634	3.93262	0.326	[0.3075534 0.6274]
30-34	1.81742	6.1559**	4.61631	0.015	[1.4157 26.7674]
35-39	-0.08257	0.9208	0.15251	0.618	[0.665511 0.27389]
40-44	2.00499	7.4250*	8.28672	0.072	[0.8331266 0.1732]
45-49	0.06751	1.0698	0.08451	0.393	[0.91638 1.24898]
Religion (Christian®)		1.00			
Muslim	-0.012983	0.9871	0.06757	0.850	[0.863161 0.1288]
Number of living children (none®)		1.00			
1	0.00013	1.0001	0.00009	0.171	[0.999941 0.0003]
2-3	-0.73066	0.4823	0.23531	0.135	[1.0006 1.0032]
4+	0.00194	1.002***	0.00072	0.003	[1.0006 1.0032]
Women's employment status (not working®)		1.00			
Currently working	-0.000582	0.98710***	0.000205	0.004	[1.00018 1.00098]
Partners desire for children (Both want same®)		1.00			
Husband wants fewer	-0.0988457	0.905883	0.077748	0.249	[0.765631 0.07183]
Husband wants more	-0.07265	1.028679	0.058301	0.618	[0.92053 1.14954]
Women's education level (No education®)		1.00			
Primary	1.63856	5.1478***	2.56732	0.001	[1.93691 3.6815]
Secondary+	0.116165	1.1232	0.099511	0.190	[0.94414 1.33618]
Partner's education level (No education®)		1.00			
Primary	0.000141	1.0001	0.000098	0.148	[0.99995 1.00033]
Secondary+	0.166048	1.1806*	0.109195	0.073	[0.98489 1.41527]
Exposure to FP media (No®)		1.00			
Yes=1		0.7903372	0.6117184	0.761	[0.173375 3.6028]
Discussion of FP with partner (Never®)		1.00			
Once or twice	0.0719471	1.074598	0.0725349	0.286	[0.94144 1.22659]
More often	1.226373	3.4088**	2.060443	0.042	[1.042571 1.1457]
Health facility visit (No®)		1.00			
Health facility visit (Yes=1)	-0.003012	0.99699	0.0021901	0.170	[0.99271 1.00129]
_cons	-0.00284	0.9971695	0.0015078	0.061	[0.99422 1.00013]
Model summary	Statistics	Prob>χ²			
Model wald χ²	11.63	0.0030			
Pseudo R-squared	0.1903				
Number of Obs.					1240

Source: Own computation.

Note: i) ®: Reference Category; FP: Family Planning; Std. Err.: Standard Error and CI: Confidence Interval based on the corresponding estimates of odds ratio.

ii) Asterisks denote the level of significance: ***p<0.01, **p<0.05, and *p<0.1.

most unmet needs among younger married women was for spacing childbirths because they still want to have more children although, the level of unmet need for spacing varies considerably by age groups and by other covariates. On the other hand, among the older married women, most unmet need was for limiting childbirths because older women may have as many children as they want and often more. Finding of this regression analysis also found that contraceptive use was predominantly higher among married women who have discussed family planning matters with their husbands (partners) than those who have not. The results from similar studies were consistent with this outcome. A married

woman who has not discussed family planning matters with her partner (husband) is not only less likely to use contraception, but she may also assume that husband is opposed when he may not be. Therefore, couple or partners' communication could significantly help to overcome misunderstandings and enables them to realize both their contraceptive needs and their fertility desires. Similarly, unmet need for modern contraception in the rural areas of Tigrai, Ethiopia was higher among older married women (30-44 years) than their younger counterparts (15-19 years).The observed pattern could be that most older married women intended to limit other than space childbirth which is

more peculiar to younger women. A similar pattern as found in this study was observed in other studies conducted by [16-27]. However, this result was contrary to the findings from related studies where older married women reported lower unmet need for modern contraception. Furthermore, among married women who were not using any contraception, the highest unmet needs were reported by those women who were currently working than those who were not working. This finding was in line with previous studies.

Level of education is an important determinant of unmet need of family planning that was adequately reflected in the present study. Lower level of unmet need was observed in married woman with primary-level education as compared to women with no education. Therefore, it was evident that with increasing level of education decline in unmet need for family planning was observed. Similar results were observed in other studies [27], but inconsistent with findings [7]. Unmet need for family planning had been significantly influenced by women's literacy status. This could be educated women are better informed about various methods, availability and have greater access to family planning. Married women with lower levels of education may face greater obstacles to using contraception than married women with more education level. Similar pattern was seen with education of the husbands of the respondents, that is married women whose husbands have secondary-level education and above have significant higher level of unmet needs for modern contraceptive than their counterparts whose husbands have no formal education. Thus, previous studies [23-27] reported a significant difference between met need and unmet need with husbands' educational status. Furthermore, number of living children was observed as an important determinant of unmet need and contraceptive usage in the present study. The number of living children among currently married women were significantly associated with unmet need for family planning. Women who have four or more children have higher unmet needs than their counterparts who have less number of children. Other studies also reported similar results that occurred with the present study [23-27], however, this finding was in contrary to the findings of [4].

Conclusion

The level of unmet need for family planning was higher in more fertile age group (i.e. 34-44 years), therefore family planning program should be focusing on this age group is paramount important in reducing the risk of unmet needs. The number of living children that women have, women's employment status, women's education level, partner's (husband's) education level, and open discussion of family planning with partners were identified as significant contributing factors. Thus, improving mainly women's and partners' access to education and encouraging open discussion family planning matters among partners or couples could considerably enhance use of family planning and consequently reduce unmet needs. The high level of unmet need for family planning observed in study provides an important rationale for expanding access to family planning and reproductive health services in rural areas of the country. Therefore, addressing the barriers of unmet needs is paramount important for Ethiopia's population policy and family planning program to reach the large segment of the rural community with family planning services mainly to women with high unmet needs. This study can provide policy-makers, planners and program managers with information required for strengthening family planning programs in various parts of the country and among women with differing unmet needs.

Limitation

Other potential factors that were not included in the regression analysis (e.g., household wealth or women's income level, quality of healthcare services) could have influenced the associations with the unmet need for family planning. In addition, a cross-sectional study was used in this study, which may only reveal associations rather than causal relationships between the regressed variables and the outcomes variable of interest (unmet needs for family planning among married women). Nevertheless, since the findings of the present study appear consistent with the results of the existing literature, the authors believe that this study contributes to the understanding of the unmet need for family planning and adds to the existing knowledge in this domain.

Acknowledgement

Ethical Considerations

The study was approved by the research council committee as an ethical committee of Adigrat University (ADU), Ethiopia. Moreover, a written informed consent was obtained from the respondents.

Declaration of Interest

The authors report no conflicts of interest.

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