

Unmet need for contraception and associated factors among women with cardiovascular disease having follow-up at Saint Paul's Hospital Millennium Medical College, Addis Ababa, Ethiopia: a cross-sectional study

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Research

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Abstract

Background

Pregnancies complicated by cardiovascular disease carry a high risk of morbidity and mortality. Contraception offers a unique opportunity to avoid unintended pregnancy and/or optimize preconception cardiac health status. Such planning will also allow possible modification of medical therapy that can be detrimental to the growing fetus. However, unmet need for contraception can become a barrier to achieving these goals. This research was aimed to determine the rate of unmet need for contraceptives and associated factors among women with cardiovascular disease.

Methods

A facility-based cross-sectional study was conducted from February 1 – May 31/2020. A convenient sampling technique was used to enroll 284 reproductive age women with cardiovascular disease having follow-up at Saint Paul's Hospital Millennium Medical College. Data was collected through an exit interview using a structured and pretested questionnaire. Descriptive, bivariate, and multivariate methods were used to analyze the level of unmet need and its associated factors.

Results

The overall unmet need for contraception was 36%. The majority of the respondents lack counseling on contraception use. The most common reasons for non-use of a contraceptive method was fear of drug side effects and drug interaction. Unmet need for contraception was found to be more likely among those who have not been counseled on contraceptive utilization (AOR 6.7, CI 1.8–24.7) and those who lack partner support on contraception use (AOR = 6.2, CI: 1.91–19.8). Unmet need was also found to be more likely among women who have never used contraception before (AOR = 3.2, CI 1.12–8.92).

Conclusion

Unmet need for contraception was high in this high-risk population group. Tailored counseling can alleviate fear and concerns about contraceptive use. Appropriate strategies that enhance male partner involvement should also be implemented.

Background

Pregnancies complicated by cardiovascular disease (CVD) are associated with significant obstetric and fetal complications. There appears to be a geographic variation in the epidemiology of maternal cardiovascular disease. Globally, hypertensive disorders are the most frequent CVD complicating 5–10% of all pregnancies. Congenital heart diseases are the second leading CVD during pregnancy in the

developed world whereas rheumatic valvular heart diseases are more frequently encountered in the developing world and commonly occur in women of reproductive age [1, 2].

Recent advances in medical and obstetric care have enabled the majority of women with cardiovascular morbidity to successfully undergo pregnancy [3]. However, cardiac disease remains the leading cause of maternal mortality in the developed world. In addition, it is the most common indirect cause of maternal death in low/middle-income countries [2, 4].

The risk of perinatal & maternal morbidity and mortality are directly associated with the type and severity of the CVD. For example, pulmonary hypertension and Eisenmenger's syndrome carry a 50% risk of maternal death during pregnancy [3, 5]. Similarly, women with severely impaired ventricular function, severe left heart obstruction, or dilated aorta due to Marfan syndrome are at a significantly increased risk of morbidity and mortality. Pregnancy should ideally be avoided in these women and if pregnancy occurs, termination should be discussed [1]. Thus, concerted efforts that enable women to avoid unintended pregnancy are highly imperative.

Evidence-based guidance is available from the World Health Organization (WHO) to help guide clinicians in counseling and provision of safe and effective contraception methods for women with various medical conditions or medically-relevant characteristics [6]. The WHO medical eligibility criteria (MEC) has been modified to further stratify the risk of pregnancy in heart disease into classes I through IV [7].

Most patients with CVD have multiple visits before conception, offering a golden opportunity for contraceptive counseling. However, studies show a high rate of unintended pregnancy among patients with chronic medical conditions such as cardiac illness, diabetes, hypertension, and asthma [8]. Studies among women with CVD showed 40–65% of pregnancies were unintended [9, 10]. Furthermore, cardiac illness was found to be one of the most common medical indications for termination of pregnancy [11].

All women with CVD can benefit from preconception counseling, which should include a detailed discussion of the risk of pregnancy. The ability to plan a pregnancy is key in improving pregnancy outcomes, and planned pregnancy and birth spacing are crucial to prevent complications of cardiovascular illness during pregnancy [3, 9]. To this end, appropriate planning is essential to ensure that pregnancy is either avoided or postponed until the woman's cardiovascular illness is optimized. For those women considering pregnancy, potentially teratogenic medications can be switched to safer medications when possible. Consistent use of contraceptives is crucial to achieving all these goals [7, 12].

Contraceptive utilization offers a unique opportunity and has a pivotal role to play in reducing maternal morbidity and mortality in women with CVD. Thus, information regarding rates of unmet need for contraception is especially important as removing barriers of contraceptive uptake can reduce the incidence of unintended pregnancy and thereby prevent potential maternal and neonatal complications [1, 7]. Unmet need for contraception has been extensively studied among women in the general population and to some extent in different subpopulations such as women living with HIV [13–15]. However, there are no studies among women with cardiovascular disease. The aim of this study was

therefore to determine the rate of unmet need for contraceptives and associated factors among women with cardiovascular disease.

Methods

Study design and setting

A facility-based cross-sectional study was conducted at the cardiac clinic of Saint Paul's Hospital Millennium Medical College (SPHMMC), in Addis Ababa, Ethiopia from February 1 to May 31, 2020. SPHMMC is a tertiary teaching hospital and mainly serves as a public referral center. The cardiac clinic runs two days per week from 8:00 AM to 5:00 PM and is visited by an average of 40-50 patients per day.

Study population

Currently married or in-union women of reproductive age (15–49 years) with cardiovascular disease attending the cardiac clinic of the hospital were eligible for the study. We excluded women who presented with acute medical conditions and unable to give consent and women who were visiting the cardiac clinic for the first time.

Sample size and sampling

The required sample size was determined using a single population proportion formula with an assumption of a 95% confidence interval and 0.05 margin of error. Since no previous study has been done in the setting, the proportion of women with unmet need was assumed to be 50%. After making finite population correction and adding 5% to compensate for non-response, the final sample size was calculated to be 291. A Convenient sampling method was used to identify and include all the study participants.

Data collection

Data was collected through an exit interview of sampled women using a structured and pretested questionnaire. The questionnaire used in this study was developed by referring to various literature and the algorithm to assess unmet need was adopted from the DHS analytical studies definition of unmet need revised in 2012 [16]. The data collection tool was prepared in English and translated into Amharic and translated back to English again to check for consistency. A pre-test was done on 10% (29) participants before data collection. Four trained and experienced data collectors were supervised by the principal investigator during the interview.

Data processing and analysis

All the filled questionnaires were verified by the principal investigator. Consecutive code was given to each case and the data was explored again for inconsistencies and missing values. After completeness

and coding of questionnaires were checked, data were analyzed using IBM SPSS Statistics for Windows, version 20 (IBM Corp., Armonk, N.Y., USA).

Univariate analyses were carried out to describe the data. The DHS algorithm was applied to assess the unmet need for contraception. A two-stage process was then carried out to identify variables associated with unmet need. Bivariate associations between unmet need and covariates were explored using a Chi-square test. Variables with a p-value of less than 0.2 in binary logistic regression were selected as candidates for multivariate logistic regression to control for possible confounding factors. Finally, multivariate logistic regression with odds ratio and 95% confidence interval were computed to assess the presence and strength of association between unmet need and explanatory variables. A p-value of less than 0.05 was taken as statically significant.

Operational definitions

Unmet need for contraception: percentage of women who (1) are not pregnant and not postpartum amenorrhoeic and are considered fecund and want to postpone their next birth for 2 or more years or stop childbearing altogether but are not using a contraceptive method, or (2) have a mistimed or unwanted current pregnancy, or (3) are postpartum amenorrhoeic and their last birth in the last 2 years was mistimed or unwanted.

Total demand for contraception: refers to women with unmet need plus the percentage of women currently using contraception (representing “met need”).

Proportion of demand satisfied: the percentage of women using contraception divided by the percentage of women with demand for contraception.

Ethical considerations

Ethical clearance for the study was obtained from the Institutional Review Board of SPHMMC before the start of data collection. All participants were informed about the purpose of the study and its procedures. It was made clear to all subjects that participation was voluntary. Privacy and confidentiality of study participants were ensured throughout the study. All participants provided written informed consent.

Results

Socio-demographic characteristics of study participants

A total of 291 eligible women were approached for the interview. Out of these, 7 were non-responders (5 did not consent to the study, and 2 discontinued the interview) which makes the response rate 97.6%. The majority of the study subjects were between the age of 19-34 years with a mean age of 34 ± 7.4 years. Three fourth of them were married (Table 1).

Table 1: Socio-Demographic characteristics of study subjects, Addis Ababa, Ethiopia, 2020

Characteristics	Frequency (n)	Percentage (%)
Age (years)		
15-19	7	2.5
20-24	23	8.1
25-29	48	16.9
30-34	78	27.5
35-39	62	21.8
40-44	48	16.9
45-49	18	6.3
Level of education		
No formal education	53	18.7
Primary	67	23.6
Secondary	83	29.2
Technical/vocational	23	8.1
Higher	58	20.4
Marital status		
Married	214	75.4
In union (living with a man)	70	24.6
Occupation		
Student	16	5.6
Unemployed	16	5.6
Housewife	135	47.5
House servant	9	3.2
Daily laborer	20	7.0
Merchant	55	19.4
Government employee	33	11.6
Private employee	16	5.6
Other	16	5.6
Monthly income (Ethiopian Birr)		

No monthly income	171	60.2
Less than 1000	7	2.5
1001- 3000	54	19.0
3001-5000	25	8.8
More than 5001	27	9.5

Sexual and reproductive characteristics of study participants

Among 284 interviewed women, 198 (69.8%) have used a modern contraceptive method at least once in their lifetime. There were 51 pregnant women during the study, of which 25 (49%) had an unintended pregnancy. More than 87% of the participant were sexually active within the past year and close to 70% reported sexual activity in the month preceding the study.

Cardiac care and follow up

The most commonly observed cardiovascular disease were hypertension 90 (31.7%), chronic rheumatic valve disease 89 (31.3%), and congenital heart disease 47 (16.4%). The duration of chronic care and treatment range from 3 months to 20 years and the median duration was 36 months (IRQ: 24-73).

Contraceptive counseling

One-third of women discussed the risks of unintended pregnancy and future pregnancy plans with their care providers. In addition, 117 (41.2%) were counseled on contraceptive utilization whereas only 25% were linked with the family planning unit of the hospital.

Unmet need for contraception and associated factors

Figure 1 shows the stepwise algorithm used to calculate unmet need for contraception in the sampled population. The overall unmet need for contraception was 36.0 %, with 26.8% having unmet need for spacing and 9.2 % for limiting.

The main reasons for not using contraceptive methods were fear of side effects and drug interactions, not having frequent sex, and not being married (Table 2).

The contraceptive utilization (representing the met need) was 30.2%. Thus, the demand for contraception was 66.2% and the demand satisfied was 45.6% (Figure 2).

Table 2: Reasons for not using contraceptives among women with unmet need, Addis Ababa, Ethiopia, 2020

Reason for not using	Frequency (N)	Percentage (%)
Perceived low risk of pregnancy		
No having frequent sex	24	23.5
Not married	18	17.7
Breastfeeding	13	12.8
Up to God/fatalistic	8	7.8
Method related reasons		
Fear of drug side effect and interaction	30	29.4
Lack of awareness	3	2.9
Opposition to use		
Partner opposing	4	3.9
Other	2	2
Total	102	100

Bivariate and multivariate logistic regression analyses were done to explore factors associated with unmet need. Bivariate analyses showed that five variables: marital status, counseling on contraceptive use, previous use of a contraceptive method, counseling on risks of unintended pregnancy, and partner support on contraceptive use were associated with unmet need. In subsequent multivariate logistic regression marital status, counseling on contraceptive use, previous use of a contraceptive method, and partner support on contraceptive use remained independently associated with unmet need (Table 3).

Unmet need for contraception was found to be more likely among those who have not been counseled on contraceptive utilization (AOR 6.7, CI 1.8-24.7) and those who lack partner support on contraception use (AOR=6.2, CI: 1.91-19.8). Unmet need was also found to be more likely among those who have never used a contraceptive method in the past (AOR=3.2, 95% CI: 1.12-8.92) (Table 3).

Other variables like age, educational status, occupation, income, ever giving birth, and duration of follow-up were not found to be significantly associated with unmet need for contraception.

Table 3: Association of independent variables with unmet need for contraception among study subjects, Addis Ababa, Ethiopia, 2020.

Characteristics	Unmet need		Crudes OR (95% CI)	Adjusted OR (95%CI)	p-value
	No	Yes			
Marital status					0.04
Married	171	43	1.00	1.00	
Living with man	11	59	21.3 (10.3-44.1)	9.4 (2.9-30.6)*	
Counseled on use of contraceptives					<0.001
Yes	77	6	1.00	1.00	
No	105	96	11.7 (4.8-28.2)	6.7 (1.8-24.7)*	
Previously used a contraceptive method					<0.001
Yes	151	48	1.00	1.00	
No	31	54	5.5 (3.17-9.48)	3.2 (1.12-8.92)*	
Counseled on the risk of unintended pregnancy					0.06
Yes	71	21	1.00	1.00	
No	102	76	2.52 (1.42-4.46)	0.5 (0.15-1.81)	
Don't remember	9	5	1.88 (0.57-6.22)	0.8 (0.08-8.14)	
Partner support on contraceptive use					<0.001
Yes	135	45	1.000	1.00	
No	19	49	7.7 (4.13-14.5)	6.2 (1.91-19.8)*	
I don't know	28	8	0.86 (0.36-2.02)	1.3 (0.23-7.71)	
*Statically significant	CI- Confidence interval		OR- Odds ratio		

Discussion

Contraceptive utilization has been identified as an effective strategy to prevent maternal morbidity and mortality and enable women and couples to achieve their reproductive goals. However, unmet need for contraceptives continues to undermine efforts to achieve these global targets [17, 18]. While several studies evaluated levels of unmet need and associated factors among women in the general population,

there is a lack of evidence for women with medical comorbidities. This is particularly true in low-income settings. Thus, this study aimed to fill the evidence gap about unmet need among women with medical comorbidities in general and cardiovascular conditions in particular.

The overall unmet need for contraception was 36% in this study. This is higher than the figures reported in the Ethiopian Demographic and Health Survey (EDHS) 2016, 22% at the national level, and 11% in Addis Ababa [19]. Though the settings are different, these discrepancies are particularly important as contraceptive utilization in this particular patient population has a pivotal role to play in reducing maternal morbidity and mortality.

Women in this study had a higher demand for contraception compared to women in the general population (66.2% vs. 58%). Only 45.6% of this demand is met which is much lower than the demand satisfied at the national level (62%) and in Addis Ababa (84%) [19]. This clearly indicates how significant contraceptive service is for this group of population and the need to design tailored service provision models to address their needs.

The rate of contraceptive utilization in our study was low compared to studies from developed countries. Studies done in the USA and Germany showed 75% of adult women with congenital heart disease were using a method of contraception [10, 20]. Similarly, in a study done at Gondar University hospital in northern Ethiopia among diabetic and hypertensive patients, the contraceptive use rate was 53.3% [21]. These differences can be explained by differences in socio-demographic characteristics of study participants and institutional variations in contraceptive counseling and service provision.

In this study, the association between variables and unmet need was assessed. Women who have not been counseled on contraceptive utilization were six times more likely to have unmet need. Indeed, the most frequent reason for contraception non-use among women with unmet need was related to a perceived low risk of pregnancy. Furthermore, 30% of women with unmet need reported fear of side effects and drug interaction as a reason for not using a contraceptive method. This highlights the need to incorporate appropriate counseling sessions that inform women of the risk of unintended pregnancy and its impact on their health. A multidisciplinary team composed of cardiologists, family planning, and maternal-fetal medicine specialists can deliver individualized counseling on contraception and pregnancy [7, 22]. These sessions increase women's contraceptive knowledge, address their concerns and fears, and clear misconceptions about contraception. These coordinated efforts will also ensure women are provided with contraceptive methods that are effective and safe for their particular condition and can serve as a gateway for other reproductive health services other than family planning [22, 23].

Women who have never used a contraceptive method in the past were more likely to have unmet need. A possible explanation for this finding is that previous users are more likely to be well informed and experienced on potential adverse effects of contraceptive methods. This suggests that, once a woman has tried contraception methods, she is likely to continue using it provided that other barriers are addressed [24].

Having partner support on contraception use was another important factor associated with unmet need for contraception. Thus, strategies that engage male partners in contraceptive counseling sessions and foster open discussion among couples while respecting woman's autonomy can improve contraceptive utilization [25, 26].

The strength of this study includes the utilization of a standardized and validated DHS definition of unmet need. Though the algorithm was initially designed for women in the general population, it has been widely implemented across different subpopulations. Furthermore, this tool allows valid comparison across settings and over time [16]. Thus, this study can serve as a benchmark to track the impacts of future interventions.

Due to limited resources, this study did not examine provider factors related to contraceptive counseling or referral practice which can influence unmet need. Thus, further research that explores the knowledge, attitude, and practice of providers is warranted.

Conclusion

The study revealed a high rate of unmet need for contraception among women with CVD. The most common reasons for not using contraception appear to be amenable to tailored interventions. Individualized counseling by a multidisciplinary team that includes healthcare providers at the follow-up clinics can alleviate fear, correct misconceptions, address barriers to contraceptive use. Additionally, male partner involvement in contraceptive counseling should be encouraged.

Abbreviations

AOR
Adjusted Odds Ratio
CI
Confidence Interval
CVD
Cardiovascular Disease
EDHS
Ethiopia Demographic and Health Survey
MEC
Medical Eligibility Criteria
SPHMMC
Saint Paul's Hospital Millennium Medical College
WHO
World Health Organization

Declarations

Ethics approval and consent to participate

The study was approved by the institutional review board of Saint Paul's Hospital Millennium Medical College (Ref No. P.M 23/401). Permission to collect data was obtained from the Department of Internal Medicine and the Department of Obstetrics and Gynecology. All participants provided written informed consent.

Consent for publication

Not applicable

Availability of data and materials

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Competing interests

The authors declare that they have no competing interests

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Authors' contribution

NM and FAA conceptualized the study. NM, MN, HB, and FAA wrote the initial draft of the study. NM oversaw the data collection. NM and FAA did the analysis. NM wrote the first draft of the manuscript. MN and HB interpreted the data and provided critical revisions. All authors contributed to and approved the final version of the manuscript to be published.

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Figures

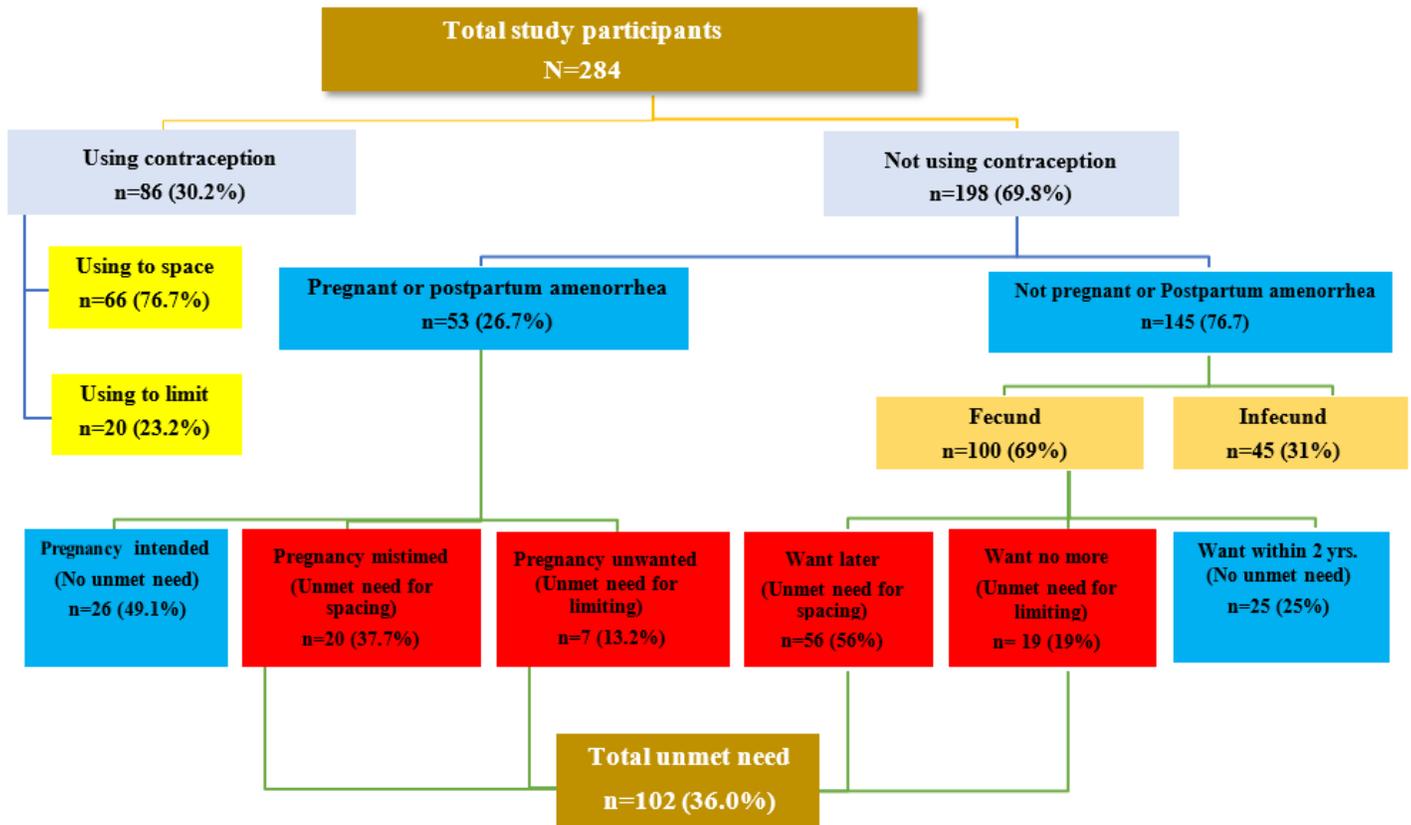


Figure 1

Illustration of calculated unmet need for contraception among study subjects, Addis Ababa, Ethiopia, 2020.

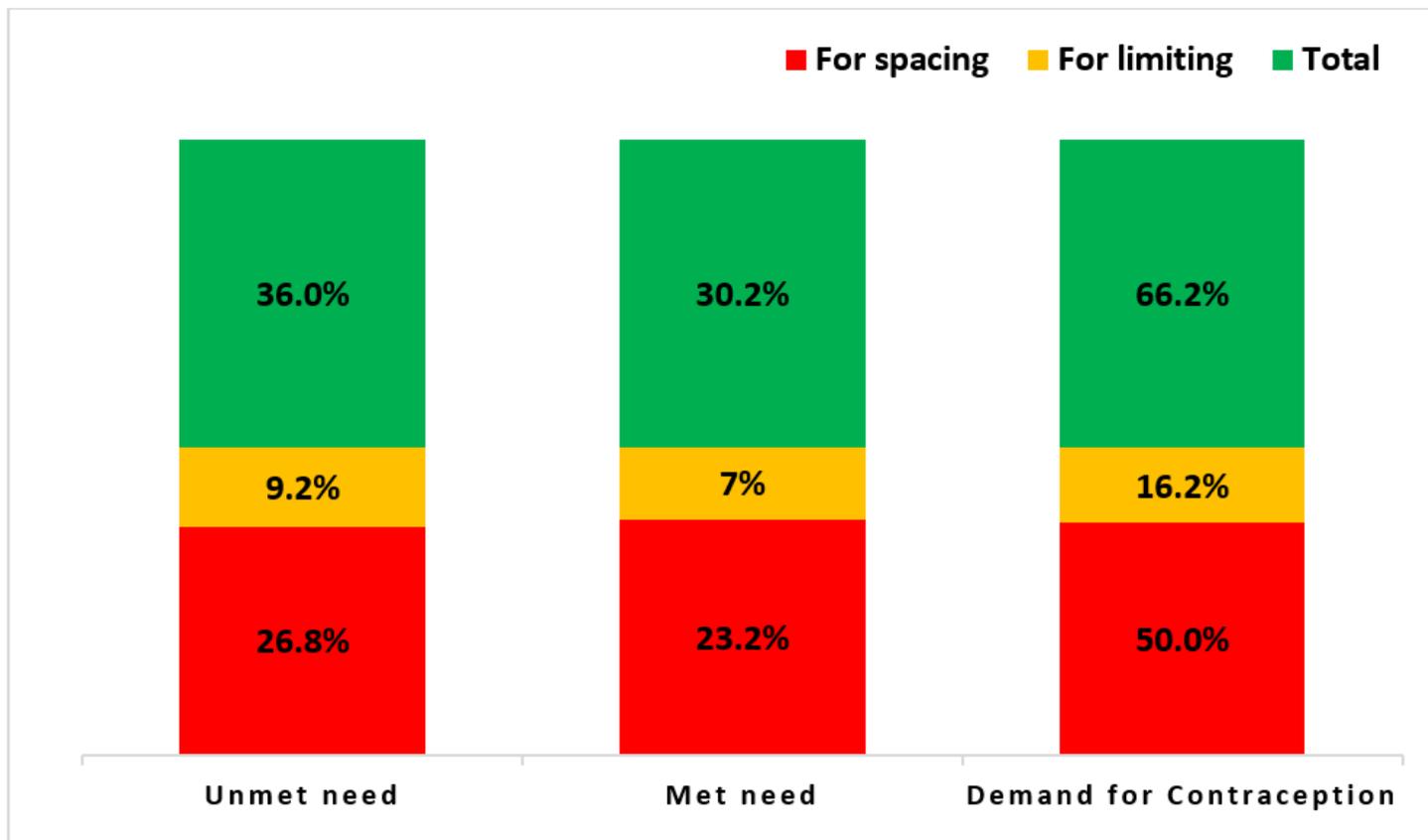


Figure 2

The percentage of unmet need, met need, and demand satisfied for contraception among study subjects, Addis Ababa, Ethiopia, 2020.